



# INDEPENDENT DEVELOPMENT TRUST

## VOLUME 1 OF 2

**TENDERING PROCEDURES, RETURNABLE DOCUMENTS, AGREEMENT AND  
CONTRACT DATA, SCOPE OF WORK AND SITE INFORMATION**

**APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO  
EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR:  
DEPARTMENT OF  
ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM  
(DEDECT) NORTH-WEST PROVINCE**

**BID No. DOT01NWER015**

**CLOSING DATE AND TIME: 27<sup>th</sup> SEPTEMBER 2023 at 12h00**

**Independent Development Trust**

***SCM / Technical Enquiries***

E-mail: [noxolod@idt.org.za](mailto:noxolod@idt.org.za)  
[andrewn@idt.org.za](mailto:andrewn@idt.org.za)

**Bidder:** .....

**CIDB Registration Number:** .....7GB GENERAL BUILDING OR HIGHER

**CSD Registration Number:** .....

**COIDA / FEMA Certificate Number:** .....

**Contact Person:** .....

**Contact Details:** .....

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## **T1.1 BID NOTICE AND INVITATION TO BID**

## INDEPENDENT DEVELOPMENT TRUST

### T1.1 Bid Notice and Invitation to Bid

On behalf of the Department: Economic Development, Environment, Construction and Tourism, North-West Province, the Independent Development Trust, invites bidders for the

#### **APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.**

The evaluation of the tender will be carried out in three (3) phases.

##### **Phase 1: Mandatory Requirements**

Only bidders who meet the following requirements will be eligible for further evaluation.

- The bidder must provide proof of valid CIDB registration or CIDB number– Grade **7GB** or higher.
- The bidder must provide a valid COIDA letter or Tender Letter obtainable from Department of Labour or FEMA certificate.
- Attendance to the compulsory site briefing meeting
- The bidder must duly complete and sign SBD 1, 4 and 6.1 in **full**
- The bidder must complete Form of Offer, fully signed and witnessed in the tender document **in full**.
- The bidder must provide a copy of the Joint Venture (JV) agreement signed by all parties (where JV is used)
- Acknowledgement of Addenda to Tender Documents **(If Applicable)**
- Letter of Authority for signatory and / or Board / company resolution.
- The bidder must provide proof of registration on Central Supplier Database (CSD) and / or CSD Number.

- Note:**
- (i) Failure to submit any of the above documents / requirements shall result in disqualification of the bid.
  - (ii) If any of the Directors are in the Employment of the State shall result in disqualification of the bid.
  - (iii) If the bidder is listed on the National Treasury List of Restricted Suppliers shall result in disqualification of the bid.
  - (iv) If any of its Directors are Listed on the Register of Defaulters shall result in disqualification of the bid.

**The Independent Development Trust (IDT) will assess all bids received based on its procurement policy in the event that information is required from the bidder/s, the IDT reserves its rights to request the information which shall be submitted within seven (7) Working Days from request and failure to submit will result in disqualification.**

##### **Non-Compulsory Document:**

- Tax Compliance Letter with a unique pin
- Compliant Central Supplier Database (CSD) Report



Only bidders who met all mandatory requirements will be evaluated further on functionality.

## Phase 2: Functionality criteria

| Criteria   | Points Allocation |
|--|-------------------|
| Relevant Previous Experience on completed projects of a similar nature and value in the last ten (10) years (Refer to Form T2.2.2)   | 15 points         |
| Similar Construction and Renovations building projects. <b>N.B. Site Inspection / visits will be conducted on listed projects.</b>   | 40 points         |
| Signed and stamped <b>Employer</b> references on the same projects listed above (both <b>Employer &amp; Employer Representative</b> ).OR Signed and Contactable reference letters from previous <b>Employers</b> . | 10 points         |
| Qualifications, Skills and Experience of project key resources   | 15 points         |
| Financial Viability  | 20 points         |
| Total  | <b>100 points</b> |
| NB: Minimum qualifying functionality threshold is <b>70 points out 100</b>   |                   |

**Similar Nature of work for evaluation** Construction and Renovations building projects (No points will be allocated for other nature and value of **Works** like Civil Engineering projects, Water projects, Transport Projects, Traffic Engineering Projects, and all Electrical & Mechanical Engineering projects)

### Similar Construction and Renovations building projects:

**Preferably experience in respect of the following building projects will be considered:**

- **Hotel buildings, Offices, Upmarket Residential Apartments, Healthcare Facilities, Retail Outlets and Educational & Research Buildings.**

### Supporting Documents Required

- CIPC Document
- Original certified ID Copies of directors (not older than 6 Months)
- Particulars of Tender's Projects (Appointment letters and completion certificates)
- Schedule of Tenderer's References
- Schedule of Subcontractors
- CV of Key Personnel including the OHS.
- Original certified copies of Certificates/qualifications (not older than 6 Months)
- Original certified copies of all Professional Registrations of Staff.

Only bidders who are competent and who have achieved the minimum functionality threshold of 70 points or higher will be evaluated on 80/20 (Price / Specific Goals) points based on the Preferential Procurement Regulations of 2022.

## Phase 3: Preferential Point System

The 80/20 Preferential Point System will be applied, where 80 points will be allocated for price and 20 points for specific goals. The 80/20 system will be used since the estimated value for this project is below R50 000 000 (all applicable taxes included).

Preferential Procurement regulation, Government Gazette dated 4 November 2022. IDT empowerment strategy allocated the 20 and 10 points respectively.

The Preferential Procurement Regulations, 2022 is applicable from 16 January 2023

80/20 preferential points:

- The 80/20 Evaluation System will be used for procuring items with values of equal or below R50 000 000 inclusive of Vat (PPPFA and IDT SCM Policy) Price (80 points)and
- Empowerment strategy:

The maximum points for this tender are allocated as follows:

|  | POINTS     |
|--|------------|
| <b>PRICE</b>                                     | <b>80</b>  |
| <b>SPECIFIC GOALS</b>                            | <b>20</b>  |
| <b>TARGETED GROUP</b>                            |            |
| Women Ownership                                  | 6          |
| Youth Ownership                                  | 6          |
| People with Disabilities Ownership               | 4          |
| Black Male Ownership                             | 4          |
| <b>Total points for Price and SPECIFIC GOALS</b> | <b>100</b> |

Source Documents to be submitted with the Tender:

- CIPC Document (Company Registration Document will be required for verification (CIPC DOC))
- Woman (Originally Certified ID Document)
- Youth (Originally Certified ID Document)
- People with Disability (Letter from the Dr. Confirming the Disability)
- Black Ownership (Originally Certified ID Document)

A **compulsory site briefing / clarification meeting** will be held on **5<sup>th</sup> September 2023 at 11h00** at the **Taung Hotel School & Convention Centre**. The GPS coordinates are **27°34'22" S** and **24°44'30" E**. (Dr. Ruth Segomotsi Mompati District Municipality, along N18 / Kimberley-Vryburg Road) **Tenderers must arrive on time.**

Note: Bidders are requested and encouraged to arrive early before the commencement of the briefing session. No late arrivals will be allowed in the briefing meeting. (i.e. Later than **5 September 2023: 11h00**).

The IDT may conduct a risk assessment on recommended bidder/s. Bidders are requested to price each line item of the Bills of Quantities (BOQ) in black ink. Should the bidder/s be deemed too risky to complete the project based on the IDT's risk assessment report, they will be subjected to further clarification.

Tender Documents may be downloaded from the IDT's website following the link <http://www.idt.org.za/business-opportunities/current-tenders/> as well as on the e-tenders portal, [www.etenders.gov.za](http://www.etenders.gov.za). Tenders must only be submitted on the tender documentation that is downloaded from the stipulated websites. The retyping of the tender document is not permitted.:

All SCM and Technical enquiries relating to this bid must be directed in writing to [NWTenders@idt.org.za](mailto:NWTenders@idt.org.za) during office hours (08h30 – 17h00) weekdays. Enquiries will be accepted until the **19<sup>th</sup> September 2023** at 17h00. No Verbal or telephonic queries will be attended to. Any attempt to verbally contact the IDT's **Agent** or IDT's employee to influence the outcome of this tender will lead to disqualification.

**On submission of Tender documents, the bidder must submit a signed original bid document in hard copy.**

Requirements for sealing, addressing, delivery, opening and assessment of bids are stated in the Tender Data. (Refer to Section T1.2)

The bid closing date is **27<sup>th</sup> September 2023 at 12h00** and bids shall be submitted in the tender box at IDT's North-West Regional Office.

**4071 Joules Street  
Industrial Site  
Mahikeng  
2735**

Telegraphic, telephonic, telex, facsimile, e-mail and late bids **WILL NOT** be accepted.

The Independent Development Trust does not bind itself to accept the lowest or any particular bid.

## T1.2 BID DATA

## INDEPENDENT DEVELOPMENT TRUST

### APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE

#### T1.2 Bid Data

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of the CIDB Standard for Uniformity in Construction Procurement. (See [www.cidb.org.za](http://www.cidb.org.za)) which are reproduced without amendment or alteration for the convenience of tenderers as an Annexure to this Tender Data.

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the standard conditions of tender. Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

The additional conditions of bid are:

| Clause number | BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.  |
|---------------|---|
| F.1.1         | The <b>Employer</b> is the <b>Independent Development Trust</b> on behalf of the <b>DEDECT, North - West Province</b>   |
| F.1.2         | <p>The bid documents issued by the <b>employer</b> comprises:</p> <p><b>THE BID</b></p> <p><b>Part T1: Bidding procedures</b><br/>T1.1 Bid notice and invitation to bid<br/>T1.2 Bid data.</p> <p><b>Part T2: Returnable documents</b><br/>T2.1 List of returnable documents<br/>T2.2 Returnable schedules</p> <p><b>THE CONTRACT</b></p> <p><b>Part C1: Agreements and contract data</b><br/>C1.1 Form of offer and acceptance<br/>C1.2 Contract data<br/>C1.3 Form of Guarantee<br/>C1.4 Adjudicator's<br/><b>Agreement</b><br/>C1.5 <b>Agreement</b> in terms of Occupational Health and Safety<br/>C1.6 Waiver of Lien</p> <p><b>Part C2: Pricing data</b><br/>C2.1 Pricing instructions<br/>C2.2 Bills of quantities</p> |

|  |  |
|--|--|
|  | <p><b>Part C3: Scope of work</b><br/>C3 Scope of work</p> <p><b>Part C4: Site Information</b><br/>C4 Site Information</p> <p><b>Addendum to the Contract</b></p>   |
| F.1.4  | <p>The employer's agent is:</p> <p><b>BOTAKI &amp; ASSOCIATES (PTY) LTD</b></p> <p><b>Mr. T. MOGOTSI</b></p> <p>21 Keurboom Street, Wilropark, Roodepoort</p> <p>E- mail: <a href="mailto:consult@botakiarchs.co.za">consult@botakiarchs.co.za</a></p>   |
| <p>F.2.1</p> <p>F.2.1.1</p> <p>F.2.1.1.1</p> | <p><b>Eligibility</b></p> <p>Only those bidders who satisfy the following eligibility criteria are eligible to submit tenders:</p> <p>CIDB Grading</p> <p>In order to be considered for an appointment in terms of this bid, the bidder must be registered with the CIDB, in a <b>Contractor</b> grading designation in accordance with the sum tendered for a <b>Grade 7GB</b> class of construction work.</p> <p>Joint ventures are eligible and preferred with particular reference to local participation and as such submit tenders provided that:</p> <ol style="list-style-type: none"> <li>1. every member of the joint venture is registered with the CIDB.</li> <li>2. the lead partner has a <b>contractor</b> grading designation in the <b>Grade 7GB</b> or above class of construction work; and</li> <li>3. the combined <b>contractor</b> grading designation calculated in accordance with the Construction Industry Development Regulations is equal to <b>7GB contractor</b> grading designation determined in accordance with the sum tendered for a <b>(GB) General Building</b> class of construction work.</li> </ol> |
| F.2.1.1.2                                    | <p><b>Key Personnel</b></p> <p>In order to be considered for an appointment in terms of this bid, the bidder must have key personnel in its permanent employment at the close of the bid. See <b>Form T2.2.5</b> stated elsewhere in this document. Alternatively, a signed undertaking from an organisation having the required personnel, stating that they will undertake the necessary work on behalf of the bidder in terms of a sub-consultant agreement, will be acceptable. Such an undertaking must be attached to the "Key Personnel" schedule, Part T2.2: Returnable Schedules.</p> <p>Individuals must be identified for each of the key personnel listed on the "Key Personnel" schedule, Part T2.2: Returnable Schedules.</p> <p>Where the key personnel are no longer accessible to undertake the necessary work after the award of the tender, the <b>contractor</b> shall within a period of five (5) <b>working days</b> replace the key personnel listed on the "Key Personnel" schedule, Part T2.2: Returnable Schedules with a person with equivalent competencies and subject to approval by the <b>employer</b>.</p>  |
| F.2.6  | <p><b>Acknowledge addenda.</b></p> <p>Acknowledge receipt of addenda to the bid documents, which the <b>employer</b> may issue, and if necessary, apply for an extension to the closing time. If the Addenda has financial implications, failure to acknowledge the addenda may eliminate your bid from evaluation. This is due to incomparability of offers with the rest of the bidders</p>  |

|                      |   |
|----------------------|---|
| <b>Clause number</b> | <b>BID DATA FOR BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO THE EXISTING TAUNG HOTEL SCHOOL &amp; CONVENTION CENTRE FOR: ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.<br/>BID NUMBER: DOT01NWER015</b>   |
| F.2.7                | <p><b>Clarification Meeting</b></p> <p>A compulsory site briefing / clarification meeting will be held on <b>5 September 2023 at 11h00</b> at <b>Taung Hotel School &amp; Convention Centre</b>. The GPS coordinates are <b>27°34'22" S</b> and <b>24°44'.30" E</b>.</p> <p>Bidders shall sign the attendance register in the name of the bidding entity. Addenda if any will be issued to bidders appearing on the attendance register.</p> <p><b>Note:</b> Bidders are advised to allow enough travelling time to the briefing meeting.</p>   |
| F.2.8                | <p><b>Seek clarification.</b></p> <p>Bidders can request clarification of the bid documents, if necessary, by notifying the <b>employer</b> in writing to <a href="mailto:noxolod@idt.org.za">noxolod@idt.org.za</a> / <a href="mailto:andrewn@gmail.com">andrewn@gmail.com</a> during office hours (08h30 – 17h00) weekdays at least 5 (five) <b>working days</b> before the closing time and date stated in F.2.15.</p>   |
| F.2.9                | <p><b>Insurances</b></p> <p>Refer to contract data for insurance requirements. (Refer to Section C1.2)</p>  |
| F.2.11               | <p><b>Alterations to documents</b></p> <p>Do not make any alterations or additions to the bid documents, except to comply with instructions issued by the <b>employer</b>, or necessary to correct errors made by the bidder.</p> <p>All signatories to the bid offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.</p>   |
| F.2.12               | <p><b>Alternative Bid Offers</b></p> <p>No alternative tender offers will be considered.</p>  |
| F.2.13               | <b>Submitting a Bid Offer</b>   |
| F.2.13.4             | The bidder will sign the original of the bid offer.   |
| F.2.13.5             | <p>The bidder must submit tender offer in a sealed envelope, clearly marked:</p> <p><b>BID DATA FOR THE APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL &amp; CONVENTION CENTRE FOR: DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE. BID NUMBER: DOT01NWER015</b></p> <p>On submission of Tender documents, the bidder must submit a signed original bid document in hard copy and one softcopy of the bid document using USB-memory stick / Disc (read only).</p> <p>The bid document softcopy on the USB-memory stick should be indexed the same way as the original bid hard copy document, which can be returned back to the bidder after the evaluation process is completed.</p> |
| F.2.13.6             | Two-envelope system – not applicable  |
| F.2.13.7             | <p>The employer's details and address for delivery of tender offers and identification details that are to be shown on each tender offer package are:</p> <p>Employer's address:<br/> <b>North - West Regional<br/> Office4071 Joules Street<br/> Industrial Site<br/> Mahikeng<br/> 2735</b></p>   |
| F.2.13.9             | <p>Identification details:<br/> <b>Tender No: DOT01NWER015</b><br/> <b>Description: APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO THE EXISTING TAUNG HOTEL SCHOOL &amp; CONVENTION CENTRE FOR: DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.</b></p> <p>Tender offers submitted by facsimile, e-mail or reproduced will be rejected by the <b>employer</b>. Tender documents must be submitted in an original format as issued by the <b>employer</b>.</p>   |

| Clause number | BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.: DOT01NWER015   |
|---------------|--|
| F.2.15        | <b>Closing Time of Tender</b>  |
| F.2.15.1      | <p>The closing date and time for submission of tender offers is by no later than <b>27<sup>th</sup> September 2023</b> at 12h00.</p> <p><b>Location of tender box:</b><br/> <b>North West Regional Office</b><br/> <b>4071 Joules Street</b><br/> <b>Industrial Site</b><br/> <b>Mahikeng</b><br/> <b>2735</b></p> <p>Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.</p>  |
| F.2.16        | <b>Tender Offer Validity</b>   |
| F.2.16.1      | The bidder is required to hold the bid offer valid for a period of <b>90 calendar days</b> ( <i>from the bid closing date</i> )  |
| F.2.19        | <b>Inspections, Tests and Analysis</b>   |
|               | Access shall be provided for inspections, tests and analysis as may be required by the <b>employer</b> .   |
| F.2.23        | <b>Certificates</b>  |
|               | <p>The bidder is required to submit with his tender a <b>contractor</b> Registration number issued by the Construction Industry Development Board (CIDB).</p> <p>Where a bidder bids through joint venture formation, such bidder should include a joint venture agreement duly signed by each partner of such joint venture and an original consolidated B-BBEE certificate.</p>  |
| F3.5          | Two-envelope system – <b>not applicable</b>  |
| F.3.1         | <b>Evaluation of Tender Offers</b>   |
|               | The procedure for the evaluation of a responsive tender will be in terms of the Preferential Procurement Regulations 2022 on a 80/20 or 90/10 preference point system.   |
| F.3.11.3      | <p>In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/documentation stated in the conditions of this tender:</p> <p>In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—</p> <p>(a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system: or</p> <p>(b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system, then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.</p> |



| Clause number   | BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.: DOT01NWER015  |   |  |   |   |   |                      |   |  |                      |   |  |   |   |  |                           |   |  |
|---|---|---|--|---|---|---|----------------------|---|--|----------------------|---|--|---|---|--|---------------------------|---|--|
| F.3.11.8  | <p><b>Scoring Preference</b></p> <p><b>Table 1: Specific goals for the tender and points claimed are indicated per the table below.</b></p> <p><i>(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.</i></p> <p><i>Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)</i></p> <table><tr><th>The specific goals allocated points in terms of this tender</th><th>Number of points allocated<br/>(80/20 system)<br/>(To be completed by the organ of state)</th><th>Number of points claimed<br/>(80/20 system)<br/>(To be completed by the tenderer)</th></tr><tr><td>Women 100% Ownership</td><td>6</td><td></td></tr><tr><td>Youth 100% Ownership</td><td>6</td><td></td></tr><tr><td>People with Disabilities 100% Ownership</td><td>4</td><td></td></tr><tr><td>Black Male 100% Ownership</td><td>4</td><td></td></tr></table> <p><b>Source Documents to be submitted with the Bid or RFQ</b></p> <p>*CIPC Document (Company Registration Document will be required for verification (CIPC DOC))</p> <p>*Woman (Originally Certified ID Document)</p> <p>*Youth (Originally Certified ID Document)</p> <p>*People with Disability (Letter from the Dr. Confirming the Disability) *Black *Ownership (Originally Certified ID Document)</p> |   |  | The specific goals allocated points in terms of this tender | Number of points allocated<br>(80/20 system)<br>(To be completed by the organ of state) | Number of points claimed<br>(80/20 system)<br>(To be completed by the tenderer) | Women 100% Ownership | 6 |  | Youth 100% Ownership | 6 |  | People with Disabilities 100% Ownership | 4 |  | Black Male 100% Ownership | 4 |  |
| The specific goals allocated points in terms of this tender | Number of points allocated<br>(80/20 system)<br>(To be completed by the organ of state)   | Number of points claimed<br>(80/20 system)<br>(To be completed by the tenderer) |  |   |   |   |                      |   |  |                      |   |  |   |   |  |                           |   |  |
| Women 100% Ownership  | 6   |   |  |   |   |   |                      |   |  |                      |   |  |   |   |  |                           |   |  |
| Youth 100% Ownership  | 6   |   |  |   |   |   |                      |   |  |                      |   |  |   |   |  |                           |   |  |
| People with Disabilities 100% Ownership                     | 4   |   |  |   |   |   |                      |   |  |                      |   |  |   |   |  |                           |   |  |
| Black Male 100% Ownership                                   | 4   |   |  |   |   |   |                      |   |  |                      |   |  |   |   |  |                           |   |  |

F.3.11.9

The quality criteria and maximum score in respect of each of the criteria are as follows:

| Criteria  | Points Allocation |
|---|-------------------|
| A. Relevant Previous Experience on completed projects of a similar nature and value in the last ten (10) years  | 15 points         |
| B. Similar Construction and Renovations building projects. <b>N.B. Site Inspection / visits will be conducted on listed projects.</b>   | 40 points         |
| C. Signed and stamped client references on the same projects listed above (both Client & Client Representative). OR Signed and Contactable reference letters from previous clients. | 10 points         |
| D. Qualifications, Skills, and Experience of project key resources  | 15 points         |
| E. Financial Viability  | 20 points         |
| <b>Total</b>  | <b>100 points</b> |
| NB: Minimum qualifying functionality threshold is <b>70 points out 100</b>  |                   |

**A. RELEVANT PREVIOUS EXPERIENCE ON COMPLETED PROJECTS OF A SIMILAR NATURE AND VALUE IN THE LAST TEN (10) YEARS (15 POINTS):**

Points allocated for proven track record based on previous projects executed to completion by the bidder in consideration of similar kind and complexity. The similarity refers to the construction and renovations of buildings projects in the past 10 years. Buildings (No points will be allocated for other nature and value of **works** like Civil Engineering projects, Water projects, Transport Projects, Traffic Engineering Projects, and all Electrical & Mechanical Engineering projects)

The scoring on this item will be carried out as follows:

- The bidder shall submit signed appointment letter(s) in the relevant official Client letterhead clearly showing the project value / amount.
- The bidder shall submit signed proof of project completion (JBCC or other Completion Certificate or letter from the client (client letter head) confirming completion of such a project).

**NOTE: Failure to submit any of the above requirements will result in no points being awarded to the bidder.**

Evaluation points will be awarded in terms of the following table below:

|               | Similar completed projects (as per CIDB level 7GB & above – Tender Value Limit between R 20 000 001 & above | Similar completed projects (as per CIDB level 6GB – Tender Value Limit between R 10 000 001 - R 20 000 000 | Similar Completed projects (as per CIDB level 5GB – Tender Value Limit between R 6 000 000 - R10 000 000 | Non-Submission, Irrelevant Evidence, Incomplete Evidence |
|---------------|---|--|--|--|
| Project A     | 3   | 2  | 1  | 0  |
| Project B     | 3   | 2  | 1  | 0  |
| Project C     | 3   | 2  | 1  | 0  |
| Project D     | 3   | 2  | 1  | 0  |
| Project E     | 3   | 2  | 1  | 0  |
| <b>Points</b> | <b>15</b>   | <b>10</b>  | <b>5</b>   | <b>0</b>   |

The scoring on this item will be carried out as follows:

- The bidder shall submit signed appointment letter(s) in the relevant official **employer** letterhead clearly showing the project value / amount.
- The bidder shall submit signed proof of project **completion**.

**NOTE: Failure to submit any of the above requirements will result in no points being awarded to the bidder.**

**B. Similar Construction and Renovations building projects (40 points)**

Evaluation points will be awarded in terms of the following table below:

|               | Similar<br>Completed<br>Construction and<br>Renovations<br>projects (as per<br>CIDB level 7GB<br>& above –<br>Tender Value<br>Limit between<br>R 20 000 001 &<br>higher | Similar completed<br>Construction and<br>Renovations<br>projects (as per<br>CIDB level 6GB –<br>Tender Value<br>Limit between<br>R 10 000 001 -<br>R 20 000 000 | Similar<br>Completed<br>Construction and<br>Renovations<br>projects (as per<br>CIDB level 5GB<br>– Tender Value<br>Limit between<br>R 6 000 000 -<br>R10 000 000 | Non-Submission,<br>Irrelevant<br>Evidence,<br>Incomplete<br>Evidence |
|---------------|---|---|--|--|
| Project A     | 8   | 5   | 3  | 0  |
| Project B     | 8   | 5   | 3  | 0  |
| Project C     | 8   | 5   | 3  | 0  |
| Project D     | 8   | 5   | 3  | 0  |
| Project E     | 8   | 5   | 3  | 0  |
| <b>Points</b> | <b>40</b>   | <b>25</b>   | <b>15</b>  | <b>0</b>   |

The scoring on this item will be carried out as follows:

- The bidder shall submit signed appointment letter(s) in the relevant official employer letterhead clearly showing the project value / amount.
- The bidder shall submit signed proof of project completion.

**NOTE: Failure to submit any of the above requirements will results in no points being awarded to the bidder.**

**C. SIGNED AND STAMPED CLIENT REFERENCES.**

Points allocated for **employer** reference (**As per returnable schedule T 2.2.4**) based on previous completed projects as above executed by the bidder in consideration:

Points will be allocated based on:

- Receipt of signed and stamped **employer** references in the forms supplied in this document.
- Favorable stamped **employer** reference letter

**NOTE: Failure to submit any of the above requirements will results in no points being awarded to the bidder.**

Evaluation points will be awarded in terms of the following table:

| Projects      | Not Acceptable | Favorable (Good)<br>Employer<br>reference |
|---------------|----------------|---|
| Project A     | 0              | 2   |
| Project B     | 0              | 2   |
| Project C     | 0              | 2   |
| Project D     | 0              | 2   |
| Project E     | 0              | 2   |
| <b>Points</b> | <b>0</b>       | <b>10</b>                                 |

**D. QUALIFICATIONS, SKILLS AND EXPERIENCE OF PROJECT KEY RECOURCES  
(13 POINTS):**

Points allocated for required.

- a. competencies,
- b. qualifications (i.e degree or diploma)
- c. submission of CV's
- d. submission of relevant certified (not older than 6 months) evidence of qualifications and certificates of allocated Required Key Project Resources.
- e. Professional registration within the built environment.

**NOTE:** Points allocation with submission of all required documentation and will be rounded off to the nearest lowest number

**Evaluation points will be awarded in terms of the following table A (13 points):**

| Category                         | Professional Registrati<br>on (2<br>points) | Qualification within the Built<br>Environment (4 points) |          |                                       | Years of experience within the Built<br>Environment (9 points) |                |                |             |
|----------------------------------|---|--|----------|---------------------------------------|--|----------------|----------------|-------------|
|                                  |   | Degree<br>or higher                                      | Diploma  | National<br>Certificate<br>or similar | 10 or<br>above<br>years  | 5 - 9<br>years | 1 - 4<br>years | < 1<br>year |
| Project /<br>Contract<br>Manager | 2   | 2  | 1        | 1                                     | 3  | 2              | 1              | 0           |
| Site Agent                       | Not required                                | 1  | 1        | 0.5                                   | 2  | 1              | 0.5            | 0           |
| Foreman                          | Not required                                | 1  | 1        | 0.5                                   | 2  | 1              | 0.5            | 0           |
| Total Points                     | <b>2</b>                                    | <b>4</b>   | <b>3</b> | <b>2</b>                              | <b>7</b>   | <b>4</b>       | <b>2</b>       | <b>0</b>    |

Evaluation points will be awarded in terms of the following table B (2 points):

| Category                   | Description  | Points |
|----------------------------|--|--------|
| Health and Safety Resource | Professional Registration with SACPCMP (Mandatory) | 2      |
|                            | No submission                                      | 0      |

Where the Health and Safety officer allocated to this project is no longer accessible to undertake the necessary work after the award of the tender, the **contractor** shall within a period of five (5) **working days** replace the Construction Health and Safety Officer with a person with equivalent competencies subject to approval by the **employer**.

#### D. FINANCIAL VIABILITY (20 POINTS):

Points are allocated to contractors who provide at least one of the following verifiable documents:

| Description   | Points |
|---|--------|
| <ul style="list-style-type: none"> <li>Signed and stamped bank rating Code "A" of R2 Million (whichever greater will be considered) over the period of 8 Months with the bank stamp not older than 12 months; or</li> <li>Recent audited annual financial statements Not older than 12 months with Cash &amp; Cash Equivalent of R2 Million and above signed by auditors and company representative; or</li> <li>Signed and stamped Credit facility of 2 Million from an accredited financial institution not older than 12 months or</li> <li>Signed and stamped Bank Overdraft of 2 Million not older than 12 months</li> </ul> | 20     |
| <ul style="list-style-type: none"> <li>Signed and stamped bank rating Code "B" of R1 Million (whichever greater will be considered) over the period of 12 Months with the bank stamp not older than 12 months; or</li> <li>Recent audited annual financial statements with Not older than 12 months Cash &amp; Cash Equivalent of R1 Million and above signed by auditors and company representative;</li> <li>Signed and stamped Credit facility of R1 Million from an accredited financial institution not older than 12 months or</li> <li>Signed and stamped Bank Overdraft of R1 Million not older 12 months</li> </ul>      | 10     |
| <ul style="list-style-type: none"> <li><b>Non-Submission:</b> thresholds lower than above</li> </ul>  | 0      |

**NOTE: 20 points will be scored if at least one of the required documents listed above. Failure to submit will result in zero points for these criteria.**

WQ=W/2 x So/Ms

|  |  |   |  |  |
|--|--|---|--|--|
| Quality Formula                                      | W2 =Total evaluation points for functionality as per Scorecard               |   | Formula used to calculate Functionality points         |  |
|  | So = <b>Functionality</b> points allocated to the bidder under consideration |   |  |  |
|  | Ms =Maximum possible score for functionality in respect of a submission      |   |  |  |
| Minimum points to be scored for Functionality is 60% |  |   |  |  |
| <b><u>FINANCIAL OFFER/PRICE</u></b>                  | 80/90  | Formula 2 Option 1,A=(1- {p-<br>pm/pm}))                                | Formula used to calculate Financial Offer/Price points |  |
|  |  | pm =The comparative Price offer of the mean/average qualifying tenderer |  |  |
|  |  | p =The comparative offer of the tender under consideration              |  |  |
|  | 80/90  |   |  |  |

**Notes:**

1. Bidders are required to score minimum points of **70%** for Functionality as stated in the tender data.
2. Bidders who fail to meet the required minimum number of points for functionality as stated in the tender data shall be disqualified.
3. Bidders who fail to disclose mandatory required information as per the returnable schedules shall be disqualified.

**4. Bidders to submit the following for means of verification:**

- a) Project list of similar completed projects
- b) Performance and quality reports from employers / consultants
- c) Certified certificates of qualification of key staff and CV's including references
- d) Traceable References for projects completed.
- e) Traceable references for suppliers

| Clause number | BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.   |
|---------------|--|
| <b>F.3.13</b> | <b>Acceptance of Bid Offers</b>  |
| F.3.13.1      | <p>Bid offers will only be accepted if:</p> <ul style="list-style-type: none"> <li>a) the bidder has submitted an original valid Tax Clearance Certificate issued by the South African Revenue Services;</li> <li>b) the bidder is registered with the Construction Industry Development Board in an appropriate <b>contractor</b> grading designation;</li> <li>c) the bidder or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;</li> <li>d) the bidder has not: <ul style="list-style-type: none"> <li>i) abused the employer's Supply Chain Management System; or</li> <li>ii) failed to perform on any previous contract and has been given a written notice to this effect;</li> </ul> </li> <li>e) the bidder has completed the Declaration of Interest and there are no conflicts of interest which may impact on the bidder's ability to perform the contract in the best interests of the <b>employer</b> or potentially compromise the bid process and persons in the employ of the state are not permitted to submit tenders;</li> <li>f) if there are no conflicts of interest which may impact on the bidder's ability to perform the contract in the best interests of the <b>employer</b> or potentially compromise the bid process</li> <li>g) the bidder has submitted the CIPC documentation and certified copies of IDs for all directors;</li> <li>h) the bidder completed, signed and witnessed form of offer;</li> <li>i) the bidder is in good standing with Compensation for Occupational Injuries and Disease Act (COIDA);</li> <li>j) the bidder has submitted a fully priced Bills of Quantities;</li> <li>k) The bidder attended a compulsory briefing session and completed attendance register or certificate of attendance is signed by the representative of the <b>employer</b>.</li> <li>l) The bidder is required to submit with his bid a Certificate of <b>contractor</b> Registration issued by the Construction Industry Development Board and proof of Registration on the Central Supplier Database (CSD) with a Compliant Tax Status; copy of the tax clearance with Tax Compliance Pin issued by the South African Revenue Services.</li> <li>m) The bidder and all its directors are South African Citizens <b>(For National Key Point Projects)</b>.</li> </ul> |

|        |  |
|--------|--|
| F.3.14 | <p><b>Notice to Unsuccessful Bidders</b></p> <p>Should bidders not hear from the IDT within ninety (90) <b>calendar days</b> of closure, they should consider their submission unsuccessful. The award will be posted on e-tender and CIDB website within 21 days of award. No written notification directed to each bidder will be issued by the <b>employer</b> to unsuccessful bidders.</p> |
| F.3.18 | <p><b>Provide Copies of the Contract</b></p> <p>The number of paper copies of the signed contract to be provided by the <b>employer</b> is one.</p>  |
|        | <p><b>The additional conditions of bid are:</b></p> <p>1        The <b>employer</b> is not obliged to accept the lowest or any bid.</p>  |



## **ANNEXURE F: STANDARD CONDITIONS OF BID**

*(As contained in ADDENDUM F of the CIDB Standard for Uniformity in Construction Procurement)*

# Standard Conditions of Tender

## F.1 General

### F.1.1 Actions

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

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

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

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

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

### F.1.2 Tender Documents

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

### F.1.3 Interpretation

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

**F.1.3.2** These conditions of tender, the tender data and tender schedules which are only required for tender evaluation purposes, shall not form part of any contract arising from the invitation to tender.

**F.1.3.3** For the purposes of these conditions for the calling for expressions of interest, the following definitions apply:

- a) **Conflict of interest** means any situation in which:
  - i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially.
  - ii) an individual or organisation is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
  - iii) Incompatibility or contradictory interests exist between an employee and the organisation which employs that employee.
- b) **Comparative offer** means the tenderer's financial offer after all tendered parameters that will affect the value of the financial offer have been taken into consideration in order to enable comparisons to be made between offers on a comparative basis.
- c) **Corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the **employer** or his staff or agents in the tender process; and
- d) **Fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the **employer**, including collusive practices intended to establish prices at artificial levels.

#### **F.1.4 Communication and Employer's Agent**

Each communication between the **employer** and a tenderer shall be to or from the employer's agent only (*i.e post contract award and signing*), and in a form that can be read, copied and recorded. Writing shall be in the English language. The **employer** shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the tender data.

#### **F.1.5 Cancellation and Re-Invitation of Tenders**

- F.1.5.1** An **employer** may, prior to the award of the tender, cancel a tender if-
- a) due to changed circumstances, there is no longer a need for the engineering and construction **works** specified in the invitation.
  - b) funds are no longer available to cover the total envisaged expenditure; or
  - c) no acceptable tenders are received.
  - d) there is a material irregularity in the tender process.
- F.1.5.2** The decision to cancel a tender invitation must be published in the same manner in which the original tender invitation was advertised.
- F.1.5.3** An **employer** may only with the prior approval of the relevant treasury cancel a tender invitation for the second time.

#### **F.1.6 Procurement procedures**

##### **F.1.6.1 General**

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

##### **F.1.6.2 Competitive negotiation procedure**

- F.1.6.2.1** Where the tender data requires that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of F.3.4, the **employer** shall announce only the names of the tenderers who make a submission. The requirements of F.3.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.
- F.1.6.2.2** All responsive tenderers, or not less than three responsive tenderers that are highest ranked in terms of the evaluation method and evaluation criteria stated in the tender data, shall be invited in each round to enter into competitive negotiations, based on the principle of equal treatment and keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of F.2.17, the **employer** may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.
- F.1.6.2.3** At the conclusion of each round of negotiations, tenderers shall be invited by the **employer** to make a fresh tender offer, based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.
- F.1.6.2.4** The contract shall be awarded in accordance with the provisions of F.3.11 and F.3.13 after tenderers have been requested to submit their best and final offer.

##### **F.1.6.3 Proposal procedure using the two stage-system (Not Applicable for this Bid)**

###### **F.1.6.3.1 Option 1**

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The **employer** shall evaluate each responsive submission in terms of the method of evaluation stated in the tender data, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

#### **F.1.6.3.2 Option 2**

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

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

### **F.2 Tenderer's obligations**

#### **F.2.1 Eligibility**

**F.2.1.1** Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with **employer** and/or the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector.

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

#### **F.2.2 Cost of tendering**

##### **F.2.2.1**

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

##### **F.2.2.2**

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

#### **F.2.3 Check documents.**

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

#### **F.2.4 Confidentiality and copyright of documents**

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

#### **F.2.5 Reference documents**

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

#### **F.2.6 Acknowledge addenda.**

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

#### **F.2.7 Clarification meeting**

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

#### **F.2.8 Seek clarification.**

Request clarification of the tender documents, if necessary, by notifying the **employer** at least five (5) **working days** before the closing time stated in the tender data. The tenderer is encouraged to go through all contents of the tender document as seek clarification where applicable. Any assumptions made by the bidder without prior confirmation by the **employer** and his **agent** shall be at the tenderer's own risk.

#### **F.2.9 Insurance**

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

#### **F.2.10 Pricing the tender offer**

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

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

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

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

#### **F.2.11 Alterations to documents**

Not make any alterations or additions to the tender documents, except to comply with instructions issued by the **employer**, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.

#### **F.2.12 Alternative tender offers**

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

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

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

#### **F.2.13 Submitting a bid offer**

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

**F.2.13.2** Return all returnable documents to the **employer** after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing in black ink.

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

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

**F.2.13.5** Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and

identification details stated in the tender data, as well as the tenderer's name and contact address.

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

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

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

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

**F.2.14 Information and data to be completed in all respects.**

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

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

**F.2.15 Closing time**

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

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

**F.2.16 Tender offer validity**

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

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

**F.2.16.3** Accept that a tender submission that has been submitted to the **employer** may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted.

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

**F.2.17 Clarification of tender offer after submission**

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

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

**F.2.18 Provide other material.**

**F.2.18.1** Provide, on request by the **employer**, any other material that has a bearing on the tender offer, the tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the **employer** for the purpose of a full and fair risk assessment. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the **employer** may regard the tender

offer as non-responsive.

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

**F.2.18.3**

**F.2.19 Inspections, tests and analysis**

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

**F.2.20 Submit securities, bonds, policies, etc.**

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

**F.2.21 Check final draft.**

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

**F.2.22 Return of other tender documents**

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

**F.2.23 Certificates**

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

**F.3 The Employer's undertakings**

**F.3.1 Respond to requests from the tenderer.**

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

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

- a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements.
- b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or
- c) in the opinion of the **employer**, acceptance of the material change would compromise the outcome of the prequalification process.

**F.3.2 Issue Addenda**

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

**F.3.3 Return late tender offers.**

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

**F.3.4 Opening of tender submissions**

**F.3.4.1** Unless the two-envelope system is to be followed, open valid tender submissions by the IDT's SCM Unit. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened publicly.

**F.3.4.2** Announce at the meeting held immediately after the opening of tender submissions the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices for the main tender offer only.

**F.3.4.3** Make available the record outlined in F.3.4.2 on the IDT's website.

**F.3.5 Two-envelope system (Not Applicable for this bid)**

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

**F.3.5.2** Evaluate the quality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the quality evaluation more than the minimum number of points for quality stated in the tender data, and announce the score obtained for the technical proposals and the total price and any preferences claimed. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for quality.

**F.3.6 Non-disclosure**

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

**F.3.7 Grounds for rejection and disqualification**

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

**F.3.8 Test for responsiveness**

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

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

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

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

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

**F.3.9 Arithmetical errors, omissions and discrepancies**

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

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

- a) the gross misplacement of the decimal point in any unit rate.
- b) omissions made in completing the pricing schedule or bills of quantities; or



- c) arithmetic errors in:
  - i) line-item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or
  - ii) the summation of the prices.

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

**F.3.9.4 .**

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

- a) If bills of quantities or pricing schedules apply and there is an error in the line-item total resulting from the product of the unit rate and the quantity, the line-item total shall govern, and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line-item total as quoted shall govern, and the unit rate shall be corrected.
- b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern, and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

**F.3.10 Clarification of a tender offer**

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

**F.3.11 Evaluation of tender offers**

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

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

**The CIDB Standard Conditions of Tender are based on a procurement system that satisfies the following system requirements: Fair Equitable, Transparent, Competitive**

**Requirement Qualitative interpretation of goal**

The process of offer and acceptance is conducted impartially without bias, providing simultaneous and timely access to participating parties to the same information.

Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.

The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the **employer**, lack of capability or capacity, legal impediments, and conflicts of interest.

The system provides for appropriate levels of competition to ensure cost effective and best value outcomes.

The activities associated with evaluating tender offers are as follows:

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

**F3.11.1 General**

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

#### **F.3.12 Insurance provided by the Employer.**

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

#### **F.3.13 Acceptance of tender offer**

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

- a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement,
- b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,
- c) has the legal capacity to enter into the contract,
- d) is not insolvent, in receivership, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,
- e) complies with the legal requirements, if any, stated in the tender data, and
- f) is able, in the opinion of the **employer**, to perform the contract free of conflicts of interest.

#### **F.3.14 Prepare contract documents.**

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

- a) addenda issued during the tender period,
- b) inclusion of some of the returnable documents, and
- c) other revisions agreed between the **employer** and the successful tenderer.

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

#### **F.3.15 Complete adjudicator's contract**

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

#### **F.3.16 Registration of the award**

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

#### **F.3.17 Provide copies of the contracts**

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

#### **F.3.18 Provide written reasons for actions taken.**

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

# SPECIAL CONDITIONS OF TENDER

## F.4 Special Conditions of Tender

### F.4.1 General

The Special Conditions of Principal Contract Tender generally contain clauses that are either deemed to be additions, elaborations or variations to the Standard Conditions of Principal Contract Tender. Accordingly, the Special Conditions of Principal Contract Tender be read in conjunction with the Standard Conditions of Principal Contract Tender, and it shall be deemed that the amended meanings and intentions of the clauses shall apply, if applicable.

### F.4.2 Tender Offers

Tenderers are advised that it is compulsory to submit offers for all Tender Options as set - out below and were indicated by a tick.

#### Subject To Escalation Price Offer

N/A

Tenderers are advised that this offer shall NOT be subject to Contract Price Adjustment Formulae basedon the Haylett Formulae.

#### Fixed Price Offer

√

Tenderers are advised that all rates, amounts, overhead and profit percentage mark-ups and amounts, profit and attendance amounts, prices, etc. submitted, shall not be subject to any form of Contract Price Adjustment Formulae e.g. Haylett Formulae. In this regard, it is deemed that the Tenderer has allowed for any potential increases (except any variation in the rate of Value Added Tax) in cost of labour, materials, transport, etc. in the Tender amounts, rates, etc. submitted.

This will only be applicable to the measured work priced by the main **Contractor** and will not apply to theprovisional sums or budgetary allowances.

Key: √ - Tender Option Applicable  
X - Not Required For This Tender

### F.4.3 Market Related Wage Rates

When pricing this document, respondents are to allow for wages, which are not less than the greater of:

The statutory wage rates in any labour category; and,  
The SAFCEC recommended minimum rates applicable at any time during the duration of the contract.

In this regard, a Tenderer may be called upon to demonstrate the wage rates utilised in calculating its Tender price.

### F.4.4 Letter of Intent

Tenderers are required to furnish with their tender documents, a letter of intent from a Bank or approved Insurance Company, to indicate that in the event of their tender being successful that a surety / guarantee as required will be provided when asked to do so.

### F.4.5 Information to be Submitted by Tenderers

All Tenderers are instructed to acknowledge that the information to be submitted must be strictly in accordance with the requirements stipulated in 2.3. Therefore, separate brochures, information other than which is specified in 2.3 must not be incorporated in the submission documents. Failure to comply with this instruction may render the submission liable for disqualification.

If the spaces in the Tender Returnables are insufficient, the relevant particulars should be documented on a separate sheet (s) with proper reference to the specific information requested.

#### **F.4.6 Interviews**

All Tenderers are advised that they may be required to attend interviews and / or submit further information, including making their premises, plant, equipment and details of **works** in progress, available for inspection after the receipt of Tender submissions.

#### **F.4.7 Detailed Construction Programme**

The Principal Contract for the project Commencement and Completion dates and any other relevant dates for this contract are stated in the Preliminaries.

Time and quality are to be considered the essence of this Contract. Accordingly, it shall be deemed that the Project Programme detailing each activity and duration as well as a detailed Method Statement be submitted by the Tenderer as part of the Tender submission and shall be the basis of monitoring progress on the project.

The programme should be a detailed double-linked critical path programme preferably in CCS format in both hard copy and electronic format and take into consideration the following.

Dividing the programme into convenient construction zones both horizontally and vertically;

Linking all activities as 'open ended' or 'open start' activities are not acceptable.

Detailing all holidays, Christmas/New Year break, etc.

Showing both the Date of Practical Completion given that the **employer** will take Occupation of the facility once the **Practical Completion Certificate** has been issued. Penalties will apply for Milestone; Practical Completion date not being achieved as detailed in the Preliminaries and **Contract Data**.

The programme must be a fully resourced "double linked" critical path programme clearly showing Start, Finish and any Interim completion dates as well as any Milestone dates for critical activities including.

- Dates for Practical Completion Inspections to be carried out.
- **Date of Practical Completion**
- Period required for attendance on, and completion of the Completion List issued at Practical Completion
- Date of Final Completion.

The successful tenderer's program is subject to review and mutual acceptance.

Any Queries / clarifications related to the Programme can be directed to the **employer**.

#### **F.4.8 Detailed Cash-flow**

Tenderers are advised that a fully detailed cash-flow based on the tenderers programme is required to be submitted together with their tender document. In this regard, tenderers are advised that the financial year start, and end dates are 01 April to 31 March respectively and therefore tenderers are requested to keep sub-totals for each financial year during the duration of the construction programme.

Tenders are advised that the targeted annual maximum percentages per financial year end for the contract duration are as follows and are not to be exceeded:

| <b>FINANCIAL YEAR</b>          |
|--------------------------------|
| 01 APRIL 2023 TO 31 MARCH 2024 |
| 01 APRIL 2024 TO 31 MARCH 2025 |

#### **F.4.9 Detailed Resourcing Schedule**

Tenderers are advised that a detailed resourcing schedule including skilled, unskilled and sub-contractor's staffing histograms is required to be submitted together with their tender document.

#### **F.4.10 Proposed Domestic Sub-Contracts**

The Tenderer shall submit in writing, when requested, a list of proposed domestic sub-contractors that is intended to be utilised on the project, should its offer be accepted.  
Proposed domestic sub-contractors shall take part in the work set aside for 30% Local Participation if possible.

#### **F.4.11 Adjudication and Independent Development Trust's Rights**

- F.4.11.1 The Independent Development Trust reserves the right to visit any Tenderer (without prior notice), to interview any shareholder of the Tenderer and to evaluate such Tenderer in accordance with the criteria as set out in the paragraph 1.11.3 below.
- F.4.11.2 All information obtained at such evaluation shall at all times be treated as confidential by Independent Development Trust.
- F.4.11.3 Adjudication of a Tender shall be in the discretion of Independent Development Trust and may take into account the following:
- (i) Tender Price.
  - (ii) Ability to perform, which may take into account previous experience in the relevant industry.
  - (iii) Suitability of employees and suitability of equipment and materials to be used.
  - (iv) Black dep Empowerment.
  - (v) Financial viability of the Tenderer.
  - (vi) Ownership of the Tenderer.
  - (vii) Compliance with all relevant laws; and
  - (viii) SCM policy and procedures.

#### **F.4.12 Form of Contract**

**The JBCC Series 2000 Principal Building Agreement (Edition 6.2 @ MAY 2018) shall be applicable to this contract.**

#### **F.4.13 Specialist Selected Sub-contract Procurement Process**

Due to the nature of the project, the procurement process of the following envisaged selected sub-contracts will be done upon appointment of the Principal Building Contractor:

- Clearing of site
- Excavation of footings and pipe trenches
- Painting
- Brickwork

Upon the appointment of a Principal Contractor, the Principal Contractor is to subsequently appoint the **selected sub-contractors** as instructed by the **principal agent** and the **employer**.

This is a material condition of appointment, and should the Tenderer have any objection to this condition the tenderer is to raise this in their tender submission. The appointment of the **selected sub-contractor** will be done in consultation with the appointed **contractor**.

#### **F.4.14 Damage to the Work**

Care shall be taken not to cause any damage to any part of the existing or new work or any adjoining property, if applicable. The **contractor** will be held responsible for damage caused to the **works** by his negligence and shall be liable for all costs incurred in making good any such damage to the satisfaction of the **principal agent**.

#### **F.4.15 Communication, Media Releases, Etc.**

The **contractor** shall not in any way communicate with the press, or any representative of the written or electronic media, on a question affecting this contract unless prior approval in writing is received from the **principal agent** as authorised by the **employer**.

All rights of publication of articles in the media, together with any advertising relating to, or in any way concerned with this project shall vest in the **employer**.

The **contractor** shall not, without the written consent of the **employer**, cause any statement or advertisement to be printed, screened or aired by the media.

#### **F.4.16 Copyright**

No part of this document and any document forming part of the contract documents may be copied, photographed or repeated in any manner or by any process without the written consent of the **principal agent**. Copyright is reserved on all designs, specifications, patents and patentable designs, systems and processes contained in documents pertaining to this contract. The person, firm, body, supplier, **contractor**, sub-contractor and any other contracting party is to be responsible jointly and severally, in their personal and corporate capacities for any contravention of this requirement.

#### **F.4.17 Workmanship and Quality Control**

The onus to produce work that conforms in quality and accuracy of detail, to the requirements of the specifications, rests with the **contractor**, and the **contractor** shall, at his own expense, institute a quality control system and provide other technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the **works** at all times.

The cost of supervision and process control, including testing carried out by the **contractor** shall be deemed to be included in the amount quoted for the **works**.

The **contractor's** attention is drawn to the normal standards regarding the minimum frequency of testing required for materials. The **contractor** shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

The **contractor** shall remain solely responsible for the work as defined in this contract document, up to the end of the Defects Liability Period.

The **contractor** needs to ensure that daily site diaries are kept on site at all times. These may be required for submission to the **employer** as and when needed.

The end-user **employer** and the NDPW may from time to time inspect the quality / workmanship on site and make the necessary comments and/or requirements for correction.

#### **F.4.18 Occupational Health and Safety Act**

The **contractor** shall comply with the requirements set out in the Construction Regulations, 2014 issued under the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

#### **F.4.19 Co-Operation of Contractor for Cost Control**

It is deemed that the **contractor** accepts the obligation of assisting the Professional Consultants in implementing proper cost control in ensuring that the final building cost does not exceed the budget.

#### **F.4.20 Application for Payment**

The **contractor** shall submit the following information on a monthly basis to the Quantity Surveyor in order to assist with the processing of the **Payment Certificate** and the preparation of the empowerment report:

- A detailed breakdown of the work done. (The work breakdown must be referenced strictly in

accordance with the Contract Document or the detailed priced Bills of Quantities, as applicable.)

- A detailed breakdown of all Variation Order costs claimed (With specific reference to work done by the **Nominated/Selected Subcontractor**) in the certificate concerned, together with copies of the relevant Contract Instructions.
- An empowerment report which shall contain an affidavit certifying that all information contained in the report as being true and correct and must be authenticated by the sub-contractor and a commissioner of oaths.
- EPWP Labour Report showing total work opportunities created on site.
- Tax Invoice: The **contractor** shall attach a tax invoice as prescribed in the Value Added Tax legislation to each payment certificate when presenting the certificate to the **employer** for payment. Such tax invoices shall correctly reflect the prescribed information and the amounts shall match precisely the amounts included in the **payment certificate**. Should the **contractor** fail to comply with these requirements, the date of presentation of the certificate shall be deemed to be delayed at the contractor's default until such time as the requirements are met.

Should anyone or any combination of the above requirements not be complied with, the **principal agent** and/or **employer** reserves the right to exclude any amounts that may have been due for certification from the Payment Certificate concerned and/or delay the issue of payment certificates and/or, revise the contractual payment date, as applicable, until such time compliance is achieved.

#### **F.4.21 Identification of Personnel**

All permanent staff that are utilised on the project by the **contractor**, Domestic and **Nominated/Selected Subcontractors** are at all times whilst on site, be clad with clothing that clearly identifies each staff member together with an identification document which includes, but not limited to the following:

A photograph of the staff member concerned.

The identification numbers of the staff member concerned; and

The name of company concerned

In addition, to that stated above, the **contractor** shall adhere to the premise's security rules and regulations.

No staff member will be permitted to execute the **works** if this condition is not adhered to.

#### **F.4.22 Intervention at Manufacture and / or Supplier and / or Contract Level**

The **employer** and its agents reserve the right to discuss and liaise on any issue pertaining to this Contract with the **contractor's** service providers i.e. manufacturers and / or suppliers and / or sub-contractors concerned. This right shall not create privity of contract between the **employer** and / or its **agents** and the said manufacturer and / or supplier and / or sub-contractors.

#### **F.4.23 Cession of Materials Supplied to the Site**

It shall be deemed that the **contractor** and its service providers upon delivery of each batch of materials to site, has ceded the said materials to the **employer**.

#### **F.4.24 Alterations in the Quantity and Value of Work**

The **employer** and / or its agents shall be permitted to either increase or decrease the quantity and value of work contracted for. In this regard, the **contractor** including its service providers shall not be entitled to claim for any additional expense incurred, or for any change in the rates for work done and / or any materials and services supplied. It shall be deemed that all costs associated with this item are included in the Tender Price.

#### **F.4.25 Change in the Scope of Work**

The **contractor** acknowledges that whilst drawings have been prepared for the **works**, the scope of work and value of the Contract may be substantially altered and that no claims for loss and expense shall be due by the **employer** for implementing any changes that may become necessary. It shall be deemed that the Tender Price includes for all costs that may arise due to compliance with this clause.

#### **F.4.26 Treasures, Relics, Etc.**

Any relics, treasure, articles of value or of potential historical or archaeological interest found on the site must be brought to the attention of the **principal agent**. All work at the specific area of the discovery shall stop for a reasonable time period until such time that the **principal agent** instructs continuation of the **works**.

Any relics, treasure, articles of value or of potential historical or archaeological interest found on the site shall remain the property of the **employer** and shall be handed over to the **principal agent** who shall be the sole arbitrator of what is an article of value.

#### **F.4.27 Priced Bills of Quantities**

The Tenderer shall submit a fully priced Bills of Quantities as well as a detailed breakdown and build-up of all items measured as lump sum items with the Tender Price. Lump sum items shall be measured in accordance with the Standard System of Measuring Building Work (Sixth Edition, including any subsequent amendments thereto), and shall form part of the Contract and shall be used for the purposes of preparing valuations, Payment Certificates, determining the value of Variation Orders, preparation of Final Accounts, etc.

Neither the **employer**, nor its agents shall be liable for any cost incurred for the award and subsequent withdrawal of the award of the Tender in terms of this clause.

#### **F.4.28 Prices and Net Measurements**

Prices throughout these Bills of Quantities shall be deemed to include for all obligations arising out of the Contract and unless otherwise specified, be held to include for making, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, patterns, models and templates, plant, temporary **works** and return of packaging.

Prices for all items contained in these Bills of Quantities and any additional authorised variations, shall be deemed to exclude all amounts due in terms of the Value-Added Taxation legislation. A provision for the addition of VAT shall be made on the Final Summary page of the Bills of Quantities and Final Statement of Accounts, as applicable.

#### **F.4.29 Value Added Tax (V.A.T)**

All prices and or rates tendered shall be deemed to be **exclusive** of Value Added Tax.

Value Added Tax shall be added as a lump sum were provided on the Final Summary page of the Bills of Quantities, and the Tender Price **inclusive** of Value Added Tax will be shown on the Form of Tender.

Value Added Tax shall be calculated at the National going rate at the time of submission of bids.

#### **F.4.30 Site and Information**

Tenderers must acquaint themselves with the conditions of the Site and generally obtain their own information on all matters affecting the submission of Tenders for the **works**. Tenderers will be held responsible for any misunderstanding or incorrect information obtained, except information which may have been given in writing over the signature of the **principal agent**.

The **contractor** is expected to establish a construction camp, office and workshop facility, for the fulfilment of the contract. Site establishment facilities to be removed after the completion of the project.

The **contractor** must strictly use the working area provided by the **employer**.

#### **F.4.31 Noise**

Tenderers must take note that the site is within the **Taung Hotel School & Convention Centre**. As such high noise level shall be restricted to times that will not disrupt the community. Tenderers are to ensure that they acquaint themselves with these conditions and adequately price for it accordingly as no additional time will be allowed for any delays that may be attributed to such.



The **contractor** will be restricted from working evening shifts but may be allowed to work weekend shifts with prior 1-weeks' notice. Such shall be included in the Contractor's pricing as no additional allowance for weekend shifts will be allowed for by the **employer**, post tender award.

**F.4.32 Water and Electricity**

The **contractor** is expected to make means for the provision of water and electricity for construction purposes. The use of such services from the site shall be at the discretion and on agreement with the end user department.

**F.4.33 Preliminaries Costs**

The Tenderer must allow in his pricing, or were provided for in the Tender Document, for all preliminaries costs deemed necessary for the proper execution and completion of the **works**, as no late claims whatsoever for additional costs in this respect will be considered.

**F.4.34 Protection of Existing Work**

The Tenderer shall allow for the protection of all existing work that is liable to be damaged during the execution of this Contract and work that is liable to be damaged once the **contractor** completes its Section of the **works**.

**F.4.35 Mock-Up / Samples, etc.**

Samples, mock-ups, etc. will be called for by the **principal agent** for approval and shall be provided at no extra cost as rates will be deemed to include for this.

**F.4.36 Substitution of Materials**

No substitution of the articles or materials specified in this Tender Document will be permitted unless the authority of the **principal agent** has been obtained, in writing, before Tender closing. The Tenderer will otherwise be required to provide / or use the specified articles or materials. Approval of any request for the substitution of any article or materials will only be considered when the **principal agent** is satisfied that if the substitution is approved, there is sufficient time remaining before Tender closing to advise all other Tenderers accordingly.

**F.4.37 Restriction on Site Access**

Tenderers are to price any items related to this under Clause 3.1 in the Preliminaries bill. The **principal agent** and /or the Compulsory Tender Briefing will provide further details of the restrictions, if any that will affect the **contractor**.

**F.4.38 Security**

The Tenderers are to note that upon award of the contract, they are to furnish the **employer** (within 21 days of award), the following:

Construction Guarantee equal in value to **10%** of the Contract Sum valid for the duration of the contract.

**F.4.39 Safety Requirements**

The **contractor** is referred to the safety requirements associated with the project.

The **contractor** shall comply with all Health and Safety Regulations and the Health and Safety

Plan. Management of safety on site shall remain the sole responsibility of the **contractor**.

Disposal of all rubble material and asbestos roof sheets / materials, to suitable legal dump sites, shall be carried out on a weekly basis. All costs for this exercise shall be included in the bid price (for the duration of the project plus a further extended **construction period** in the event of project overrunning its duration)

**The safety on site, Agreement and general information forms included in the Tender Returnables must be agreed and fully completed and submitted with the Tender Submission.**

**F.4.40 Budgetary Allowances / Provisional Sums**

Where applicable, these amounts have been included in the Tender Price where the work has not been defined at the date of Tender. It is intended that once the scope is defined, Tenders will be invited with a view to these **works** being awarded as Nominated / Selected Subcontract **works**.

- The Specialist Consultant responsible for the specific work package will prepare documentation which is to include drawings, specification and schedule of quantities that define the scope of **works** all in accordance with the Nominated / Selected Subcontract agreement.
- The Quantity Surveyor will prepare the necessary Tender documents.
- The **principal agent** will arrange for inviting / advertising of tenders subject to the payment of a non-refundable document fee, if applicable.
- The **employer** will arrange to issue the tender documents from their offices and take receipt of amounts paid.
- The Tenders for the **works** will be submitted to the employer's office in terms of the tender closing times stipulated. Tenders will be opened, and tender amounts read out at the time.
- The Quantity Surveyor will make copies of the returned Tender documents for distribution to the **principal agent**.
- The Quantity Surveyor will prepare an initial financial evaluation report of the Tenders, **principal agent** and Engineer will evaluate the Tenderer's technical compliance and capability and circulate to the **employer**.
- The **principal agent** will prepare a draft report, discuss it with the **contractor** to get their approval and circulate it to the other consultants for final comment. Thereafter the Tender Report with recommendations will be finalised and concluded by the **principal agent** and circulated to the **employer** for approval. On approval, the recommendation together with any instructions of award will be issued to the **contractor** who will be responsible for appointing the relevant party as a **Nominated/Selected Sub-Contractor**.

#### F.4.41 Community Liaison Officer (CLO)

The Tenderer shall allow for a CLO who is to be appointed and remunerated by the **contractor** following identification and selection by the Ward Councilor.

|                            |  |
|----------------------------|--|
| <u>Purpose of the Job:</u> | The primary role of the CLO shall be liaison and facilitation of communication between the <b>contractor</b> , the Local community and the Ward Councilor.   |
| <u>Job title:</u>          | Community Liaison Officer (CLO)  |
| <u>Reporting to:</u>       | The Contracts Manager or other delegated representative of the <b>contractor</b> .<br>The CLO must report to the <b>contractor</b> and remain on site daily.   |
| <u>Experience:</u>         | Relevant experience and knowledge of building construction, community facilitation and relevant labour legislation.  |
| <u>Remuneration:</u>       | Rate payable for the CLO will be 100% of the Civil Engineering Industry minimum wage for unskilled labour.   |
| <u>Minimum Skills:</u>     | <ol style="list-style-type: none"> <li>1. Ability to work with others.</li> <li>2. Ability to communicate in local language of the project location and English.</li> <li>3. Ability to communicate in writing.</li> <li>4. Sound Interpretation skill.</li> </ol> |

The Ward Councilor in whose wards work is to be done will collectively identify 3 (three) CLO candidates for the project and make such persons known to the **contractor** within 5 (five) days of being requested to do so. The **contractor** will be required to enter a written contract with the CLO that specifies:

- (a) The hours of work and the wage rate of the CLO which could include:
- (b) The duration of the appointment
- (c) The duties to be undertaken by the CLO which could include:
  - Assisting in all respects relating to the recruitment of local labour and advising them of their rights
  - Acting as a source of information for the community and councilors on issues related to the contract.
  - Keeping the **contractor** advised on community issues and issues pertaining to local security.
  - Assisting in setting up any meeting or negotiations with affected parties
  - Keeping a written record of any labour or community issues that may arise.

- The CLO needs to be seen to be neutral by all parties and therefore should endeavor not to take sides should conflict arise.
- Should the CLO function not involve a full day's work, the CLO will be expected to undertake other work allocated by the **contractor** for the balance of each day.

Procedures for local labour recruitment:

- The **contractor** submits a list of his/her requirements to the CLO, stating the numbers required in each labour category (general worker, bricklayer, etc.) and a programme that shows when these resources will be required.
- During the **construction period**, the CLO uses the list to identify candidates for employment, who are interviewed and if successful employed by the **contractor**.
- The **contractor** keeps the CLO informed by providing him/her with employee's details at the start of their employment (name, residential address, ID number, wage, employment, start and finish date, task, etc.) and notify the CLO when their employment ends.

## **T2.1 LIST OF RETURNABLE DOCUMENTS**

## T2.1 List of Returnable Documents

List of returnable documents are for ensuring that everything the **employer** requires a tenderer to submit with his tender is included in, or returned with, his tender submission. Tick below if returnable document is attached or completed properly.

| #       | LIST OF RETURNABLE DOCUMENTS   | TICK IF ATTACHED |
|---------|--|------------------|
| T2.1.1  | Invitation to bid  |                  |
| T2.1.2  | Preference Points Claim Form in Terms of The Preferential Procurement Regulations 2022                                     |                  |
| T2.1.4  | Tax clearance certificate  |                  |
| T2.1.5  | Joint Venture Agreement Between Parties  |                  |
| T2.1.6  | Contractors copy of registration   |                  |
| T2.1.7  | CIDB Registration Number   |                  |
| T2.1.8  | Copy of a Letter of Good standing with Compensation For Occupational And Injuries Diseases Act (COIDA) Registration Number |                  |
| T2.1.9  | Compulsory enterprise questionnaire  |                  |
| T2.1.10 | Bidder's Disclosure  |                  |
| T2.1.14 | Attendance At Compulsory Briefing  |                  |
| T2.1.15 | Certificate of Authority for Signatory   |                  |
| T2.1.16 | Record of Addenda to The Tender Documents  |                  |
| T2.1.17 | Tenderers financial standing   |                  |
| T2.1.18 | Amendments, Qualifications and Alternatives  |                  |
| T2.1.19 | Socio economic upliftment strategy   |                  |
| T2.1.20 | Proposed sub-Contractors   |                  |
| T2.1.21 | Contractors' health and safety declaration   |                  |

**T2.2 RETURNABLE SCHEDULES (ALL COMPULSORY)**

## T2.2 RETURNABLE SCHEDULES

Contains documents that the tenderer is required to complete for the purpose of evaluating tenders and other schedules which upon acceptance become part of the subsequent contract.

| #      | QUALITY EVALUATION SCHEDULES  |
|--------|---|
| T2.2.1 | Safety health environmental and quality management system (SHEQ) plan   |
| T2.2.2 | Project Experience  |
| T2.2.3 | Letters of Appointment, and Relevant Completion Certificates (Practical Completion, Work Completion & Final Completion) |
| T2.2.4 | Employer references   |
| T2.2.5 | Key Personnel   |
| T2.2.6 | Programme schedule  |
| T2.2.7 | Plant and equipment   |

## RETURNABLE SCHEDULES THAT WILL BE INCORPORATED INTO THE CONTRACT (to be attached with submission)

|  |
|--|
|  |
| Record of Addenda to Tender Documents                                    |
| Declaration Concerning Fulfillment of the Construction Regulations, 2003 |
| First Programme and Method Statement                                     |
| Preliminary Health and Safety Plan for completion                        |
| Form of offer and acceptance   |
| Contract data  |
| Forms of securities  |

## T2.1.1 INVITATION TO BID

SBD 1

### PART A

### INVITATION TO BID

|   |  |               |   |  |   |
|---|--|---------------|---|--|---|
| <b>YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE INDEPENDENT DEVELOPMENT TRUST</b>  |  |               |   |  |   |
| BID NUMBER:   | DOT01NWER015   | CLOSING DATE: | 27 <sup>th</sup> September 2023   | CLOSING TIME:  | 12h00   |
| DESCRIPTION   | BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE. |               |   |  |   |
| <b>BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)</b>  |  |               |   |  |   |
| IDT North West Regional Office  |  |               |   |  |   |
| 4071 Joules Street, Industrial Site   |  |               |   |  |   |
| Mahikeng  |  |               |   |  |   |
| 2735  |  |               |   |  |   |
| <b>BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO</b>   |  |               | <b>TECHNICAL ENQUIRIES MAY BE DIRECTED TO:</b>                              |  |   |
| CONTACT PERSON  | Andrew Ngobeni   |               | CONTACT PERSON  | Noxolo Dikobe  |   |
| TELEPHONE NUMBER  |  |               | TELEPHONE NUMBER  |  |   |
| FACSIMILE NUMBER  |  |               | FACSIMILE NUMBER  |  |   |
| E-MAIL ADDRESS  | <a href="mailto:andrewn@idt.org.za">andrewn@idt.org.za</a>   |               | E-MAIL ADDRESS  | <a href="mailto:noxolod@idt.org.za">noxolod@idt.org.za</a> |   |
| <b>SUPPLIER INFORMATION</b>   |  |               |   |  |   |
| NAME OF BIDDER  |  |               |   |  |   |
| POSTAL ADDRESS  |  |               |   |  |   |
| STREET ADDRESS  |  |               |   |  |   |
| TELEPHONE NUMBER  | CODE   |               | NUMBER  |  |   |
| CELLPHONE NUMBER  |  |               |   |  |   |
| FACSIMILE NUMBER  | CODE   |               | NUMBER  |  |   |
| E-MAIL ADDRESS  |  |               |   |  |   |
| VAT REGISTRATION NUMBER   |  |               |   |  |   |
| SUPPLIER COMPLIANCE STATUS  | TAX COMPLIANCE SYSTEM PIN:   |               | OR  | CENTRAL SUPPLIER DATABASE No:                              | MAAA  |
| B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE  | TICK APPLICABLE BOX]<br><br><input type="checkbox"/> Yes <input type="checkbox"/> No   |               | B-BBEE STATUS LEVEL SWORN AFFIDAVIT   |  | TICK APPLICABLE BOX]<br><br><input type="checkbox"/> Yes <input type="checkbox"/> No                      |
| <b>[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES &amp; QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]</b> |  |               |   |  |   |
| a) ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?  | <input type="checkbox"/> Yes <input type="checkbox"/> No<br><br>[IF YES ENCLOSE PROOF]   |               | b) ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED? |  | <input type="checkbox"/> Yes <input type="checkbox"/> No<br><br>[IF YES, ANSWER THE QUESTIONNAIRE BELOW ] |
| <b>QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS</b>   |  |               |   |  |   |



IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?

☐ YES ☐ NO

DOES THE ENTITY HAVE A BRANCH IN THE RSA?

☐ YES ☐ NO

DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?

☐ YES ☐ NO

DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?

☐ YES ☐ NO

IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?

☐ YES ☐ NO

**IF THE ANSWER IS “NO” TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 BELOW.**

## PART B

### TERMS AND CONDITIONS FOR BIDDING

|  |
|--|
| <b>1. BID SUBMISSION:</b>  |
| 1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.   |
| 1.2. <b>ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.</b>  |
| 1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE JOINT BUILDING CONTRACT COMMITTEE (JBCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT. |
| 1.4. <b>THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).</b>   |
| <b>2. TAX COMPLIANCE REQUIREMENTS</b>  |
| 2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.   |
| 2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.  |
| 2.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.   |
| 2.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.   |
| 2.5 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED; EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.   |
| 2.6 WHERE NO TCS PIN IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.  |
| 2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."                            |

**NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.**

SIGNATURE OF BIDDER: .....

CAPACITY UNDER WHICH THIS BID IS SIGNED: .....  
(Proof of authority must be submitted e.g. company resolution)

DATE: .....

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

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

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

---

**1. GENERAL CONDITIONS**

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

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

**1.2 To be completed by the organ of state**

*(delete whichever is not applicable for this tender).*

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

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

- (a) Price; and
- (b) Specific Goals.

#### 1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

|   | POINTS |
|---|--------|
| PRICE                                     | 80     |
| SPECIFIC GOALS                            | 20     |
| TARGETED GROUP                            |        |
| Women 100% Ownership                      | 6      |
| Youth 100% Ownership                      | 6      |
| People with Disabilities 100% Ownership   | 4      |
| Black Male 100% Ownership                 | 4      |
| Total points for Price and SPECIFIC GOALS | 100    |

- 1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender will be interpreted to mean that preference points for specific goals are not claimed.
- 1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

## 2. DEFINITIONS

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation.
- (b) **“price”** means an amount of money tendered for goods or services and includes all applicable taxes less all unconditional discounts.
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes.
- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

## 3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

### 3.1. POINTS AWARDED FOR PRICE

#### 3.1.1 THE 80/20 PREFERENCE POINT SYSTEMS

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

$$\begin{array}{ccc}
 \mathbf{80/20} & \mathbf{or} & \mathbf{90/10} \\
 \mathbf{Ps = 80 \left( 1 - \frac{Pt - P_{min}}{P_{min}} \right)} & \mathbf{or} & \mathbf{Ps = 90 \left( 1 - \frac{Pt - P_{min}}{P_{min}} \right)}
 \end{array}$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

### 3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

#### 3.2.1. POINTS AWARDED FOR PRICE

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

$$\mathbf{Ps = 80 \left( 1 + \frac{80/20 \quad \frac{Pt - P_{max}}{P_{max}}}{P_{max}} \right)}$$

Where

- Ps = Points scored for price of tender under consideration  
Pt = Price of tender under consideration  
Pmax = Price of highest acceptable tender

#### 4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:
- 4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—
- (a) an invitation for tender for income-generating contracts, that either the 80/20 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system: or
  - (b) any other invitation for tender, that either the 80/20 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

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

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

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

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

| The specific goals allocated points in terms of this tender | Number of points allocated (80/20 system)<br>(To be completed by the organ of state) | Number of points claimed (80/20 system)<br>(To be completed by the tenderer) |
|---|--|--|
| Women Ownership   | 6  |  |
| Youth Ownership   | 6  |  |
| People with Disabilities Ownership                          | 4  |  |
| Black Male Ownership  | 4  |  |

**Source Documents to be submitted with the Bid or RFQ**

|                         |  |
|-------------------------|--|
| *CIPC Document          | (Company Registration Document will be required for verification (CIPC DOC)) |
| *Woman                  | (Originally Certified ID Document)   |
| *Youth                  | (Originally Certified ID Document)   |
| *People with Disability | (Letter from the Dr. Confirming the Disability)                              |
| *Black Ownership        | (Originally Certified ID Document)   |

**DECLARATION WITH REGARD TO COMPANY/FIRM**

4.3. Name of company/firm.....

4.4. Company registration number: .....

4.5. TYPE OF COMPANY/ FIRM

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

[TICK APPLICABLE BOX]

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

- i) The information furnished is true and correct.
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form.
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct.
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
  - (a) disqualify the person from the tendering process.
  - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct.
  - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favorable arrangements due to such cancellation.
  - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
  - (e) forward the matter for criminal prosecution, if deemed necessary.

|                                    |       |
|------------------------------------|-------|
| .....                              |       |
| <b>SIGNATURE(S) OF TENDERER(S)</b> |       |
| <b>SURNAME AND NAME:</b>           | ..... |
| <b>DATE:</b>                       | ..... |
| <b>ADDRESS:</b>                    | ..... |
|                                    | ..... |
|                                    | ..... |
|                                    | ..... |



**Source Documents to be submitted with the Bid or RFQ**

\*CIPC Document (Company Registration Document will be required for verification (CIPC DOC))

\*Woman (Originally Certified ID Document)

\*Youth (Originally Certified ID Document)

\*People with Disability (Letter from the Dr. Confirming the Disability)

\*Black Ownership (Originally Certified ID Document)

***Tax Clearance Certificate or Unique Pin obtained from SARS to be inserted here]***

***Attached hereto is our duly signed, Joint Venture Agreement. Our failure to submit the Agreement with our tender document will lead to the conclusion that the joint venture has not been formally formed and all parties were not involved in the tender process.***

***Attached hereto is my / our copies of company registration of incorporation or company registration documents. My failure to submit the copy with my / our tender document will lead to the conclusion that I am / we are not registered as claimed.***

***Attached hereto is my / our registration certificate with the Construction Industry Development Board. My / our failure to submit the certificate with my / our tender document will lead to the conclusion that my / our company is not registered with CIDB.***

***NOTE: The CIDB can be contacted or visited on [www.cidb.org.za](http://www.cidb.org.za) for more information and registration. Obtain a “Code of Conduct for all parties engaged in construction procurement” for your information.***

**OCCUPATIONAL AND INJURIES DISEASES ACT (CIDA OR  
TENDER LETTER OBTAIN FROM DEPARTMENT OF LABOUR OR  
FEMA) REGISTRATION CERTIFICATE**

***Attached hereto is my / our certified copy of a Letter of Good Standing with the Compensation for Occupational Injuries and Diseases, e.g. Letter of Good Standing. Failure to submit the certificate with your tender offer will lead to the conclusion that your entity/company is not registered with CIDA / FEMA. If Joint Venture (JV) attach one for every service provider.***

**Note: Compulsory Enterprise Questionnaire must be completed by each member of a JV or consortium**

| <b>Section 3: CIDB registration number, if any: .....</b>   |   |   |                       |
|---|---|---|-----------------------|
| <b>Section 4: Particulars of sole proprietors and partners in partnerships</b>  |   |   |                       |
| <b>Name*</b>  | <b>Identity number*</b>   | <b>Personal income tax number*</b>          |                       |
|   |   |   |                       |
|   |   |   |                       |
|   |   |   |                       |
| * Complete only if sole proprietor or partnership and attach separate page if more than 3 partners  |   |   |                       |
| <b>Section 5: Particulars of companies and close corporations</b>   |   |   |                       |
| Company registration number .....   |   |   |                       |
| Close corporation number .....  |   |   |                       |
| Tax reference number .....  |   |   |                       |
| <b>Section 6: Record in the service of the state</b>  |   |   |                       |
| Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months in the service of any of the following:                                   |   |   |                       |
| <input type="checkbox"/> a member of any municipal council  | <input type="checkbox"/> an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999) |   |                       |
| <input type="checkbox"/> a member of any provincial legislature   | <input type="checkbox"/> a member of an accounting authority of any national or provincial public entity  |   |                       |
| <input type="checkbox"/> a member of the National Assembly or the National Council of Province  | <input type="checkbox"/> an employee of Parliament or a provincial legislature  |   |                       |
| <input type="checkbox"/> a member of the board of directors of any municipal entity   |   |   |                       |
| <input type="checkbox"/> an official of any municipality or municipal entity  |   |   |                       |
| <b>If any of the above boxes are marked, disclose the following:</b>  |   |   |                       |
| Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder   | Name of institution, public office, board or organ of state and position held   | Status of service (tick appropriate column) |                       |
|   |   | Current                                     | Within last 12 months |
|   |   |   |                       |
|   |   |   |                       |
|   |   |   |                       |
|   |   |   |                       |
|   |   |   |                       |
| *insert separate page if necessary  |   |   |                       |
| <b>Section 7: Record of spouses, children and parents in the service of the state</b>   |   |   |                       |
| Indicate by marking the relevant boxes with a cross, if any spouse, child or parent of a sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months been in the service of any of the following: |   |   |                       |
| <input type="checkbox"/> a member of any municipal council  | <input type="checkbox"/> an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999) |   |                       |
| <input type="checkbox"/> a member of any provincial legislature   |   |   |                       |
| <input type="checkbox"/> a member of the National Assembly or the National Council of Province  |   |   |                       |





|   |  |
|---|--|
| <input type="checkbox"/> a member of the board of directors of any municipal entity | <input type="checkbox"/> a member of an accounting authority of any national or provincial public entity |
| <input type="checkbox"/> an official of any municipality or municipal entity        | <input type="checkbox"/> an employee of Parliament or a provincial legislature                           |

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

\*insert separate page if necessary

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

- authorizes the **Employer** to obtain a tax clearance certificate from the South African Revenue Services that my / our tax matters are in order.
- confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004.
- confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption.
- confirms that I / we are not associated, linked or involved with any other bidding entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and
- confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

|                 |          |
|-----------------|----------|
| Signed          | Date     |
| Name            | Position |
| Enterprise name |          |

**BIDDER'S DISCLOSURE**

1. PURPOSE OF THE FORM

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

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

2. Bidder's declaration

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest1 in the enterprise, employed by the state? YES/NO

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

| Full Name | Identity Number | Name of State institution |
|-----------|-----------------|---------------------------|
|           |                 |                           |
|           |                 |                           |
|           |                 |                           |
|           |                 |                           |
|           |                 |                           |
|           |                 |                           |
|           |                 |                           |
|           |                 |                           |
|           |                 |                           |

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

2.2.1 If so, furnish particulars:  
.....  
.....

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

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

2.3.1 If so, furnish particulars:  
.....  
.....

3 DECLARATION

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

- 3.1 I have read and I understand the contents of this disclosure.
- 3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect.
- 3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium<sup>2</sup> will not be construed as collusive bidding.
- 3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.4 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
- 3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
- 3.6 I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

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

|                    |                         |
|--------------------|-------------------------|
| .....<br>Signature | .....<br>Date           |
| .....<br>Position  | .....<br>Name of bidder |

---

Indicate the status of the tenderer by ticking the appropriate box hereunder. The tenderer must complete the certificate set out below for the relevant category, **and attach their Registration Certificates for Companies, Close Corporations and Partnerships, or Agreements and Powers of Attorney for Joint Ventures, or ID documents to the page provided at the end of this form.**

| (I)<br>COMPANY | (II)<br>CLOSE<br>CORPORATION | (III)<br>PARTNERSHIP | (IV)<br>JOINT VENTURE | (V)<br>SOLE<br>PROPRIETOR |
|----------------|------------------------------|----------------------|-----------------------|---------------------------|
|                |                              |                      |                       |                           |

**(I) CERTIFICATE FOR COMPANY**

I, ....., Id number.....chairperson of the Board of Directors of.....hereby confirm that by resolution of the Board (copy attached) taken on ..... 20....., Mr/Ms.....acting in the capacity of....., was authorised to sign all documents in connection with the tender for Contract No ..... and any contract resulting from it, on behalf of the company.

**Chairman:** .....

**As Witnesses:** 1. ....

2. .... **Date:** .....

**(II) CERTIFICATE FOR CLOSE CORPORATION**

We, the undersigned, being the key members in the business trading as ..... hereby authorise Mr/Ms ....., acting in the capacity of....., to sign all documents in connection with the tender for Contract No ..... and any contract resulting from it, on our behalf.

| NAME       | ADDRESS | SIGNATURE | DATE |
|------------|---------|-----------|------|
| ID No..... | .....   |           |      |
| ID No..... | .....   |           |      |
| ID No..... | .....   |           |      |
| ID No..... | .....   |           |      |

**Note :** *This certificate is to be completed and signed by all of the key members upon whom rests the direction of the affairs of the Close Corporation as a whole.*

### (III). CERTIFICATE FOR PARTNERSHIP

We, the undersigned, being the key partners in the business trading as, .....

..... hereby authorize Mr/Ms

.....

acting in the capacity of ....., to sign all

documents in connection with the tender for Contract No..... and any contract resulting from it, on our behalf.

| NAME | ADDRESS | SIGNATURE | DATE |
|------|---------|-----------|------|
|      |         |           |      |
|      |         |           |      |
|      |         |           |      |
|      |         |           |      |

**Note :** *This certificate is to be completed and signed by all of the key partners upon whom rests the direction of the affairs of the Partnership as a whole.*

### (IV) CERTIFICATE FOR JOINT VENTURE

We, the undersigned, are submitting this tender offer in Joint Venture and hereby authorize Mr/Ms

....., authorized signatory of the company,.....

acting in the capacity of lead partner, to sign all documents in connection with the tender offer for

Contract No ..... and any contract resulting from it, on our behalf.

This authorization is evidenced by the attached power of attorney signed by legally authorized signatories of all the partners to the Joint Venture.

| NAME OF FIRM | ADDRESS | AUTHORISING SIGNATURE,<br>NAME AND CAPACITY |
|--------------|---------|---|
| Lead partner |         |   |
|              |         |   |
|              |         |   |

**Note : This certificate is to be completed and signed by all of the key partners upon whom rests the direction of the affairs of the Partnership as a whole.**

**(V) CERTIFICATE FOR SOLE PROPRIETOR**

I, ....., hereby confirm that I am the sole owner of the business  
trading as .....

Signature of Sole owner: .....

As Witnesses:

1. ....

2. ....

Date: .....

We confirm that the following communications received from the Employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer

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

Attach additional pages if more space is required.

Signed .....

Date .....

Name .....

ID number .....

Position .....

Tenderer .....



The Tenderer shall provide information about his commercial position, which includes information necessary for the Employer to evaluate the Tenderer's financial standing.

To that end the Tenderer must provide with his tender a bank rating, certified by his banker, to the effect that he will be able to successfully complete the contract at the tendered amount within the specified time for completion.

However, should the Tenderer be unable to provide a bank rating with his tender, he shall state the reasons as to why he is unable to do so, and in addition provide the following details of his banker and bank account that he intends to use for project:

Name of account holder: \_\_\_\_\_

Name of Bank : \_\_\_\_\_

Branch : \_\_\_\_\_

Account number : \_\_\_\_\_

Type of account : \_\_\_\_\_

Telephone number : \_\_\_\_\_

Facsimile number : \_\_\_\_\_

Name of contact person (at bank : \_\_\_\_\_

***Failure to provide either the required bank details or a certified bank rating with his tender, will lead to the conclusion that the Tenderer does not have the necessary financial resources at his disposal to complete the contract successfully within the specified time for completion.***

The **Employer** undertakes to treat the information thus obtained as confidential, strictly for the use of evaluation of the tender submitted by the Tenderer.

SIGNATURE: \_\_\_\_\_

IDENTITY NUMBER: \_\_\_\_\_

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

DATE: \_\_\_\_\_

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

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

**(a) AMENDMENTS**

| PAGE, CLAUSE OR<br>ITEM NO | PROPOSED AMENDMENT |
|----------------------------|--------------------|
|                            |                    |
|                            |                    |
|                            |                    |
|                            |                    |
|                            |                    |
|                            |                    |

**[Notes: (1) Proposals for amendments to the General and Special Conditions of Contract are not acceptable and will be ignored.**

**(2) The Tenderer must give full details of all the financial implications of the amendments and qualifications in a covering letter attached to his tender.**

**(b) ALTERNATIVES**

| PROPOSED<br>ALTERNATIVE | DESCRIPTION OF ALTERNATIVE |
|-------------------------|----------------------------|
|                         |                            |
|                         |                            |
|                         |                            |
|                         |                            |
|                         |                            |
|                         |                            |

**[Notes: (1) Individual alternative items that do not justify an alternative tender, and an alternative offer for time for completion should be listed here.**

**(2) In the case of a major alternative to any part of the work, a separate Bills of Quantities, programme, etc, and a detailed statement setting out the salient features of the proposed alternatives must accompany the tender.**

**(3) Alternative tenders involving technical modifications to the design of the works and methods of construction shall be treated separately from the main tender offer.]**

(c) DISCOUNTS

| ITEM ON WHICH<br>DISCOUNT IS OFFERED | DESCRIPTION OF DISCOUNT OFFERED |
|--------------------------------------|---------------------------------|
|                                      |                                 |
|                                      |                                 |
|                                      |                                 |
|                                      |                                 |
|                                      |                                 |
|                                      |                                 |

***[Note: The Tenderer must give full details of the discounts offered in a covering letter attached to his tender, failing which, the offer for a discount may have to be disregarded. Only unconditional discounts will be considered]***

SIGNATURE: ..... IDENTITY NUMBER: .....

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

DATE:.....

## T2.1.19 SOCIO ECONOMIC UPLIFTMENT STRATEGY

***Attached hereto are my / our proposed socio-economic upliftment strategy. The strategy will as a minimum address items such as skills upliftment, training, sub-contracting, skilled and semi-skilled labour employment, procurement of local labour and materials, employment of woman, youth and disabled, etc.***

Notes:

- a) The contractor has a commitment to utilising the local community resources and labour, and as such preference will be shown to bidders who prioritise local employment.
- b) As part of the tender documentation a methodology is to be submitted proposing as to how the main contractor will deal with the social economic expectations of the surrounding community.

The proposal is to allow for a suitable employment ratio of local community members and any additional measures that will enable future local community upliftment.

- c) The main contractor is required to familiarise himself with the community and local authority to ascertain for himself the full extent of the community's requirements and minimum wages.
- d) The contractor shall appoint a community liaison officer and shall be responsible for all community negotiations etc.

**T2.1.20 PROPOSED SUB-CONTRACTORS**

I/We hereby notify you that it is my/our intention to employ the following domestic sub-contractors for work on this contract, to be appointed and finalized after the award of the contract, apart from client's identified SMME packages.

If I/we am/are awarded a contract I/we agree that this notification does not change the requirement for me/us to submit the names of proposed subcontractors in accordance with requirements of the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us. I/We confirm that all subcontractors who are contracted to construct a house or building, are registered as home builders with the National Home Builders Registration Council.

| NAMES AND ADDRESSES OF PROPOSED SUBCONTRACTORS | COMPANY REGISTRATION No. AND CIDB CLASSIFICATION | DESCRIPTION OF WORK TO BE EXECUTED BY SUBCONTRACTOR | VALUE OF SUBCONTRACT WORK |
|--|--|---|---------------------------|
|  |  |   |                           |
|  |  |   |                           |
|  |  |   |                           |
|  |  |   |                           |
|  |  |   |                           |
|  |  |   |                           |

SIGNATURE: ..... IDENTITY NUMBER: .....

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

DATE: .....

## T2.1.21 CONTRACTOR'S HEALTH AND SAFETY DECLARATION

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

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

### Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHSA 1993 Construction Regulations 2014.
2. I hereby declare that my company / enterprise has the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the **Employer's** Health and Safety Specifications.
3. I hereby undertake, if my tender is accepted, to provide a sufficiently documented Health and Safety Plan in accordance with Regulation 5(1) of the Construction Regulations, approved by the **Employer** or his representative, before I could be allowed to commence with construction work under the contract. I hereby agree that my company/enterprise will not have a claim for compensation for delay or extension of time because of my failure to obtain the necessary approval for the said safety plan.
4. I confirm that copies of my company's approved Health and Safety Plan, the Employer's Safety Specifications as well as the OHSA 1993 Construction Regulations 2014 will be provided on site and will at all times be available for inspection by the Contractor's personnel, the Employer's personnel, the Engineer, visitors, and officials and inspectors of the Department of Labour.
5. I hereby confirm that adequate provision has been made in my tendered rates and prices in the bill of quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHSA 1993 Construction Regulations 2014, including the cost for specific items that may be scheduled in the bill of quantities.
6. I hereby confirm that I will be liable for any penalties that may be applied by the Employer in terms of the said Regulations for failure on my part to comply with the provisions of the Act and the Regulations as set out in Regulation 33 of the Regulations.
7. I agree that my failure to complete and execute this declaration to the satisfaction of the Employer will mean that I am unable to comply with the requirements of the OHSA 1993 Construction Regulations 2014 and accept that my tender will be prejudiced and may be rejected at the discretion of the Employer.
8. I am aware of the fact that, should I be awarded the contract, I must submit the notification required in terms of Regulation 4 of the OHSA 1993 Construction Regulations 2014 (*example attached hereafter*) before I could be allowed to proceed with any work under the contract.

SIGNATURE: \_\_\_\_\_

IDENTITY NUMBER: \_\_\_\_\_

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

DATE: \_\_\_\_\_

**T2.2.1      SAFETY HEALTH ENVIRONMENTAL AND QUALITY MANAGEMENT  
SYSTEM (SHEQ) PLAN**

Attached hereto are my / our SHEQ Plan, all in compliance with the Health and Safety Specification – Annexure A or Letter of Undertaking from a Qualified OHS Consultant.

**(PLEASE ATTACHED HERE)**

## T2.2.2 EVALUATION SCHEDULE: PROJECT EXPERIENCE

The Tenderer shall provide details of his relevant experience on similar large-scale projects completed in the past 10 years. In support tenderers are to complete the “Project Experience” schedule below and attach thereto copies of (a) Letters of Appointment, and (b) all the relevant Completion Certificates (Practical Completion, work completion & Final Completion)

| PROJECT NAME and EMPLOYER     | BRIEF PROJECT DESCRIPTION | PROJECT VALUE (Incl VAT) | START DATE              | COMPLETION DATE         |
|-------------------------------|---------------------------|--------------------------|-------------------------|-------------------------|
| A.<br>_____<br>_____<br>_____ | _____<br>_____<br>_____   | _____<br>_____<br>_____  | _____<br>_____<br>_____ | _____<br>_____<br>_____ |
| B.<br>_____<br>_____<br>_____ | _____<br>_____<br>_____   | _____<br>_____<br>_____  | _____<br>_____<br>_____ | _____<br>_____<br>_____ |
| C.<br>_____<br>_____<br>_____ | _____<br>_____<br>_____   | _____<br>_____<br>_____  | _____<br>_____<br>_____ | _____<br>_____<br>_____ |



| PROJECT NAME and<br>EMPLOYER | BRIEF PROJECT DESCRIPTION | PROJECT VALUE<br>(Incl VAT) | START DATE        | COMPLETION DATE   |
|------------------------------|---------------------------|-----------------------------|-------------------|-------------------|
| D.<br><hr/> <hr/> <hr/>      | <hr/> <hr/> <hr/>         | <hr/> <hr/> <hr/>           | <hr/> <hr/> <hr/> | <hr/> <hr/> <hr/> |
| E.<br><hr/> <hr/> <hr/>      | <hr/> <hr/> <hr/>         | <hr/> <hr/> <hr/>           | <hr/> <hr/> <hr/> | <hr/> <hr/> <hr/> |
| F.<br><hr/> <hr/> <hr/>      | <hr/> <hr/> <hr/>         | <hr/> <hr/> <hr/>           | <hr/> <hr/> <hr/> | <hr/> <hr/> <hr/> |

**T2.2.3            EVALUATION SCHEDULE: LETTERS OF APPOINTMENT, AND  
RELEVANT COMPLETION CERTIFICATES (PRACTICAL COMPLETION,  
WORK COMPLETION & FINAL COMPLETION)**

Tenderer is to attach all letter of appointment and completion certificate corresponding to the project listed in T1.2

The Tenderer shall provide details of his performance on each of the previous projects listed in the “Relevant Experience” returnable schedule. “Employer Reference Scorecards” will be completed by each of the respective Employers for the projects listed in the “Relevant Experience” returnable schedule OR The tenderer shall provide contactable reference letter/s in the same format as this form (T2.2.4) to measure performance, the letter must be signed and dated by Employer.

# **REPORT ON CONTRACTOR’S COMPETENCE & PERFORMANCE ON A SIMILAR PROJECT FOR TENDER RECOMMENDATION PURPOSES**

The following are to be completed by the Client and Principal Agent and is to be supported in each case by a letter of award and the completion certificate. (*Only completed Projects shall be considered*)

**PROJECT NAME A:**

**Principal Agent:** .....

**Employer:** .....

**Contract Amount:** .....

**Contract Duration:** .....

**Actual Contract Duration:** .....

| Description / Performance  | Not Acceptable | Poor | Satisfactory | Good | Very Good |
|--|----------------|------|--------------|------|-----------|
| Project Performance / Time Management – Project completed before contractual period (time) |                |      |              |      |           |
| Project Performance / Time Management - Project completed on contractual period (time)     |                |      |              |      |           |
| Quality of site management   |                |      |              |      |           |
| Quality of workmanship   |                |      |              |      |           |
| Quality of materials   |                |      |              |      |           |
| Financial Management – Cashflow Management   |                |      |              |      |           |
| Financial Management – Payment of Subcontractors   |                |      |              |      |           |
| Financial Management – Payment of labour force   |                |      |              |      |           |
| Financial Management – Procurement of Materials  |                |      |              |      |           |

Any other remarks considered necessary to assist in evaluation of the contractor?

.....

**Principal Agent Firm:** .....

**Telephone:** .....

Stamp

**PA / Client Signature:** .....

**Date:**.....

The Tenderer shall provide details of his performance on each of the previous projects listed in the “Relevant Experience” returnable schedule. “Employer Reference Scorecards” will be completed by each of the respective Employers for the projects listed in the “Relevant Experience” returnable schedule OR The tenderer shall provide contactable reference letter/s in the same format as this form (T2.2.4) to measure performance, the letter must be signed and dated by Employer

# **REPORT ON CONTRACTOR’S COMPETENCE & PERFORMANCE ON A SIMILAR PROJECT FOR TENDER RECOMMENDATION PURPOSES**

The following are to be completed by the Client and Principal Agent and is to be supported in each case by a letter of award and the completion certificate. (*Only completed Projects shall be considered*)

**PROJECT NAME B:**

**Principal Agent:** .....

**Employer:** .....

**Contract Amount:** .....

**Contract Duration:** .....

**Actual Contract Duration:** .....

| Description / Performance  | Not Acceptable | Poor | Satisfactory | Good | Very Good |
|--|----------------|------|--------------|------|-----------|
| Project Performance / Time Management – Project completed before contractual period (time) |                |      |              |      |           |
| Project Performance / Time Management - Project completed on contractual period (time)     |                |      |              |      |           |
| Quality of site management   |                |      |              |      |           |
| Quality of workmanship   |                |      |              |      |           |
| Quality of materials   |                |      |              |      |           |
| Financial Management – Cashflow Management   |                |      |              |      |           |
| Financial Management – Payment of Subcontractors   |                |      |              |      |           |
| Financial Management – Payment of labour force   |                |      |              |      |           |
| Financial Management – Procurement of Materials  |                |      |              |      |           |

Any other remarks considered necessary to assist in evaluation of the contractor?

.....

**Principal Agent Firm:** .....

Stamp

**Telephone:**.....

**PA / Client Signature:** .....

**Date:**.....

The Tenderer shall provide details of his performance on each of the previous projects listed in the “Relevant Experience” returnable schedule. “Employer Reference Scorecards” will be completed by each of the respective Employers for the projects listed in the “Relevant Experience” returnable schedule OR The tenderer shall provide contactable reference letter/s in the same format as this form (T2.2.4) to measure performance, the letter must be signed and dated by Employer.

#### REPORT ON CONTRACTOR’S COMPETENCE & PERFORMANCE ON A SIMILAR PROJECT FOR TENDER RECOMMENDATION PURPOSES

The following are to be completed by the Client and Principal Agent and is to be supported in each case by a letter of award and the completion certificate. (*Only completed Projects shall be considered*)

**PROJECT NAME C:**

**Principal Agent:** .....

**Employer:** .....

**Contract Amount:** .....

**Contract Duration:** .....

**Actual Contract Duration:**.....

| Description / Performance  | Not Acceptable | Poor | Satisfactory | Good | Very Good |
|--|----------------|------|--------------|------|-----------|
| Project Performance / Time Management – Project completed before contractual period (time) |                |      |              |      |           |
| Project Performance / Time Management - Project completed on contractual period (time)     |                |      |              |      |           |
| Quality of site management   |                |      |              |      |           |
| Quality of workmanship   |                |      |              |      |           |
| Quality of materials   |                |      |              |      |           |
| Financial Management – Cashflow Management   |                |      |              |      |           |
| Financial Management – Payment of Subcontractors   |                |      |              |      |           |
| Financial Management – Payment of labour force   |                |      |              |      |           |
| Financial Management – Procurement of Materials  |                |      |              |      |           |

Any other remarks considered necessary to assist in evaluation of the contractor?

.....

**Principal Agent Firm:** .....

Stamp

**Telephone:**.....

**PA / Client Signature:** .....

**Date:**.....



The Tenderer shall provide details of his performance on each of the previous projects listed in the “Relevant Experience” returnable schedule. “Employer Reference Scorecards” will be completed by each of the respective Employers for the projects listed in the “Relevant Experience” returnable schedule OR The tenderer shall provide contactable reference letter/s in the same format as this form (T2.2.4) to measure performance, the letter must be signed and dated by Employer

#### REPORT ON CONTRACTOR’S COMPETENCE & PERFORMANCE ON A SIMILAR PROJECT FOR TENDER RECOMMENDATION PURPOSES

The following are to be completed by the Client and Principal Agent and is to be supported in each case by a letter of award and the completion certificate. (*Only completed Projects shall be considered*)

**PROJECT NAME D:**

**Principal Agent:** .....

**Employer:** .....

**Contract Amount:** .....

**Contract Duration:** .....

**Actual Contract Duration:**.....

| Description / Performance  | Not Acceptable | Poor | Satisfactory | Good | Very Good |
|--|----------------|------|--------------|------|-----------|
| Project Performance / Time Management – Project completed before contractual period (time) |                |      |              |      |           |
| Project Performance / Time Management - Project completed on contractual period (time)     |                |      |              |      |           |
| Quality of site management   |                |      |              |      |           |
| Quality of workmanship   |                |      |              |      |           |
| Quality of materials   |                |      |              |      |           |
| Financial Management – Cashflow Management   |                |      |              |      |           |
| Financial Management – Payment of Subcontractors   |                |      |              |      |           |
| Financial Management – Payment of labour force   |                |      |              |      |           |
| Financial Management – Procurement of Materials  |                |      |              |      |           |

Any other remarks considered necessary to assist in evaluation of the contractor?

.....

**Principal Agent Firm:** .....

Stamp

**Telephone:**.....

**PA / Client Signature:** .....

**Date:**.....

The Tenderer shall provide details of his performance on each of the previous projects listed in the “Relevant Experience” returnable schedule. “Employer Reference Scorecards” will be completed by each of the respective Employers for the projects listed in the “Relevant Experience” returnable schedule OR The tenderer shall provide contactable reference letter/s in the same format as this form (T2.2.4) to measure performance, the letter must be signed and dated by Employer.

#### REPORT ON CONTRACTOR’S COMPETENCE & PERFORMANCE ON A SIMILAR PROJECT FOR TENDER RECOMMENDATION PURPOSES

The following are to be completed by the Client and Principal Agent and is to be supported in each case by a letter of award and the completion certificate. (*Only completed Projects shall be considered*)

**PROJECT NAME E:**

**Principal Agent:** .....

**Employer:** .....

**Contract Amount:** .....

**Contract Duration:** .....

**Actual Contract Duration:**.....

| Description / Performance  | Not Acceptable | Poor | Satisfactory | Good | Very Good |
|--|----------------|------|--------------|------|-----------|
| Project Performance / Time Management – Project completed before contractual period (time) |                |      |              |      |           |
| Project Performance / Time Management - Project completed on contractual period (time)     |                |      |              |      |           |
| Quality of site management   |                |      |              |      |           |
| Quality of workmanship   |                |      |              |      |           |
| Quality of materials   |                |      |              |      |           |
| Financial Management – Cashflow Management   |                |      |              |      |           |
| Financial Management – Payment of Subcontractors   |                |      |              |      |           |
| Financial Management – Payment of labour force   |                |      |              |      |           |
| Financial Management – Procurement of Materials  |                |      |              |      |           |

Any other remarks considered necessary to assist in evaluation of the contractor?

.....

**Principal Agent Firm:** .....

Stamp

**Telephone:**.....

**PA / Client Signature:** .....

**Date:**.....

In terms of the Project Specification and the Conditions of Tender, unskilled workers may only be brought in from outside the local community if such personnel are not available locally.

**The Tenderer shall list below the personnel that he intends to utilize on the Works, including key personnel that may have to be brought in from outside if not available locally. (definition of local)**

| CATEGORY OF EMPLOYEE  | NUMBER OF PERSONS   |         |   |         |   |         |
|---|---|---------|---|---------|---|---------|
|   | KEY PERSONNEL,<br>PART OF THE<br>CONTRACTOR'S<br>ORGANISATION |         | KEY PERSONNEL TO<br>BE IMPORTED IF NOT<br>AVAILABLE LOCALLY |         | UNSKILLED<br>PERSONNEL TO BE<br>RECRUITED FROM<br>LOCAL COMMUNITY |         |
|   | HDI   | NON-HDI | HDI   | NON-HDI | HDI   | NON-HDI |
| <b>Construction<br/>Manager, Site Agent,<br/>Project Managers</b> |   |         |   |         |   |         |
| <b>Foremen, Quality<br/>Control and Safety<br/>Personnel</b>      |   |         |   |         |   |         |
| <b>Technicians,<br/>Surveyors, etc</b>                            |   |         |   |         |   |         |
| <b>Artisans and other<br/>Skilled workers</b>                     |   |         |   |         |   |         |
| <b>Plant Operators</b>  |   |         |   |         |   |         |
| <b>Others:.....</b><br>.....<br>.....<br>.....<br>.....<br>...    |   |         |   |         |   |         |

The Tenderer is referred to Clause F.2.1.1.2 of the Tender Data and shall insert in the spaces provided on the following pages details of the key personnel required to be in the employment of the tenderer or other organization, in order for the tenderer to be eligible to submit a tender for this project. Proof of professional registration must be appended to these schedules, together with the Curriculum Vitae of each individual.

SIGNATURE: ..... IDENTITY NUMBER: .....

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

DATE:.....

**(COMPULSORY)**

*(CVs are required only for site Agent, contract or project manager and technician and foreman)*

**CV FOR CONTRACTS OR PROJECT MANAGER**

|  |                                  |                             |
|--|----------------------------------|-----------------------------|
| <b>Name:</b>   |                                  | <b>Date of birth:</b>       |
| <b>Profession:</b>   |                                  | <b>Nationality:</b>         |
| <b>Qualifications:</b>   |                                  |                             |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Name of Employer (firm):</b>  |                                  |                             |
| <b>Current position:</b>   |                                  | <b>Years of Experience:</b> |
| <b><u>Employment Record:</u></b><br><br><br><br><br><br><br><br><br><br>                               |                                  |                             |
| <b><u>Experience Record Pertinent to Required Service:</u></b><br><br><br><br><br><br><br><br><br><br> |                                  |                             |

**Certification:**

I, the undersigned, certify that, to the best of my knowledge and belief, this data correctly describes me, my qualifications and my experience.

SIGNATURE: ..... IDENTITY NUMBER: .....

*(of person authorised to sign on behalf of the Tenderer)*  
**(OWNER OF THE CV)**

DATE:.....

|  |                                  |                             |
|--|----------------------------------|-----------------------------|
| <b>Name:</b>   |                                  | <b>Date of birth:</b>       |
| <b>Profession:</b>   |                                  | <b>Nationality:</b>         |
| <b>Qualifications:</b>   |                                  |                             |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Name of Employer (firm):</b>  |                                  |                             |
| <b>Current position:</b>   |                                  | <b>Years of Experience:</b> |
| <b><u>Employment Record:</u></b><br><br><br><br><br><br><br><br><br>                               |                                  |                             |
| <b><u>Experience Record Pertinent to Required Service:</u></b><br><br><br><br><br><br><br><br><br> |                                  |                             |

**Certification:**

I, the undersigned, certify that, to the best of my knowledge and belief, this data correctly describes me, my qualifications and my experience.

.....  
SIGNATURE OF THE INCUMBANT IN THE SCHEDULE

.....  
DATE

.....  
INCUMBANT'S IDENTITY NUMBER

|  |                                  |                             |
|--|----------------------------------|-----------------------------|
| <b>Name:</b>   |                                  | <b>Date of birth:</b>       |
| <b>Profession:</b>   |                                  | <b>Nationality:</b>         |
| <b>Qualifications:</b>   |                                  |                             |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Name of Employer (firm):</b>  |                                  |                             |
| <b>Current position:</b>   |                                  | <b>Years of Experience:</b> |
| <b><u>Employment Record:</u></b><br><br><br><br><br><br><br><br>                               |                                  |                             |
| <b><u>Experience Record Pertinent to Required Service:</u></b><br><br><br><br><br><br><br><br> |                                  |                             |

**Certification:**

I, the undersigned, certify that, to the best of my knowledge and belief, this data correctly describes me, my qualifications and my experience.

.....  
SIGNATURE OF THE INCUMBANT IN THE SCHEDULE

.....  
DATE

.....  
INCUMBANT'S IDENTITY NUMBER



|  |                                  |                             |
|--|----------------------------------|-----------------------------|
| <b>Name:</b>   |                                  | <b>Date of birth:</b>       |
| <b>Profession:</b>   |                                  | <b>Nationality:</b>         |
| <b>Qualifications:</b>   |                                  |                             |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Professional Body:</b>  | <b>Category of Registration:</b> | <b>Registration Number:</b> |
| <b>Name of Employer (firm):</b>  |                                  |                             |
| <b>Current position:</b>   |                                  | <b>Years of Experience:</b> |
| <b><u>Employment Record:</u></b><br><br><br><br><br><br><br><br>                               |                                  |                             |
| <b><u>Experience Record Pertinent to Required Service:</u></b><br><br><br><br><br><br><br><br> |                                  |                             |

**Certification:**

I, the undersigned, certify that, to the best of my knowledge and belief, this data correctly describes me, my qualifications and my experience.

.....  
SIGNATURE OF THE INCUMBANT IN THE SCHEDULE

.....  
DATE

.....  
INCUMBANT'S IDENTITY NUMBER

## T2.2.6 EVALUATION SCHEDULE: PROGRAMME

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

**PROGRAMME (EXAMPLE ONLY)**

| ACTIVITY | MONTHS |   |   |   |   |   |   |   |   |    |
|----------|--------|---|---|---|---|---|---|---|---|----|
|          | 1      | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |
|          |        |   |   |   |   |   |   |   |   |    |

*[Note: The programme must be based on the completion time as specified in the Contract Data. No other completion time that may be indicated on this programme will be regarded as an alternative offer, unless it is listed in Table (b) of Form I hereafter and supported by a detailed statement to that effect, all as specified in the Tender Data]*

SIGNATURE: ..... IDENTITY NUMBER: .....

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

DATE:.....

## T2.2.7 EVALUATION SCHEDULE: SCHEDULE OF PLANT & EQUIPMENT

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

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

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

*Attach additional pages if more space is required*

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

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

*Attach additional pages if more space is required*

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

***Failure to complete this form properly and correctly will lead to the conclusion that the tenderer does not have the necessary plant and equipment resources at his disposal and will prejudice his tender.***

SIGNATURE: ..... IDENTITY NUMBER: .....

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

DATE:.....



## **PART C1 : AGREEMENT AND CONTRACT DATA**

**C1.1 Form of Offer and Acceptance**

**C1.2 Contract Data**

**C1.3 Form of Guarantee (Pro Forma as per specific contract)**

**C1.4 Adjudicators Agreement**

## **C1.1 FORM OF OFFER AND ACCEPTANCE**

## **C1.1 Form of Offer and Acceptance**

### ***A. Offer [Failure of a Tenderer to sign this form will invalidate the tender]***

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

**BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR:DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE– BID NUMBER: DOT01NWER015**

The Tenderer, identified in the Offer signature block below, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

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

**The offered total of the prices inclusive of Value Added Tax is:.....**

**Amount in Words:**

.....  
.....

This Offer may be accepted by the **Employer** by signing the Acceptance part of this **Form of Offer and Acceptance** and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the **Contractor** in the Conditions of Contract identified in the **Contract Data**.

|   |  |
|---|--|
| <p>.....<br/>SIGNATURE(S) OF AUTHORISED BIDDERS(S)</p> <p>NAME: .....</p> <p>CAPACITY: .....</p> <p>DATE: .....</p> <p>ADDRESS .....</p> <p>.....</p> <p>.....</p> <p>CONTACT:: .....</p> | <p>WITNESSES</p> <p>3. ....</p> <p>4. ....</p> |
|---|--|

B. ACCEPTANCE

By signing this part of the **Form of Offer and Acceptance**, the **Employer** identified below accepts the Tenderer's Offer. In consideration thereof, the **Employer** shall pay the **Contractor** the amount due in accordance with the Conditions of Contract identified in the **Contract Data**. Acceptance of the Tenderer's Offer shall form an agreement between the **Employer** and the Tenderer upon the terms and conditions contained in this agreement and in the Contract that is the subject of this agreement.

The terms of the contract are contained in

- Part C1 Agreements and **Contract Data** (which includes this Agreement)
- Part C2 Pricing Data, including the Bills of Quantities
- Part C3 Scope of Work

and the bills, forms, drawings and documents or parts thereof, which may be incorporated by reference into Parts 1 to 4 above.

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

The Tenderer shall deliver the Guarantee in terms of Clause 11 of the JBCC Principal Building Agreement, Edition 6.2 of May 2018 within the period stated in the **Contract Data**, and he shall, immediately after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the **Employer's Agent** (whose details are given in the Contract Data) to arrange the delivery of any other bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the **Contract Data**, within 14 (fourteen) days of the date on which this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now **Contractor**) within 5 (five) days of the date of such receipt notifies the **Employer** in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

|            |                               |      |       |
|------------|-------------------------------|------|-------|
| Signature  | .....                         | Date | ..... |
| Name       | .....                         |      |       |
| Capacity   | .....                         |      |       |
| for the    |                               |      |       |
| Employer   | Independent Development Trust |      |       |
|            | .....                         |      |       |
|            | .....                         |      |       |
|            | .....                         |      |       |
|            | .....                         |      |       |
| Name and   |                               |      |       |
| Signature  |                               |      |       |
| Of witness | .....                         | Date | ..... |

## C. SCHEDULE OF DEVIATIONS

By the duly authorised representatives signing this Agreement, the **Employer** and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as listed in the tender schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the **Employer** during this process of offer and acceptance.

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

1 Subject .....

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Details .....

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2 Subject .....

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Details .....

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3 Subject .....

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Details .....

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|                 |       |
|-----------------|-------|
| .               | ..... |
| .               |       |
| 4 Subject ..... |       |
| .               |       |
| Details .....   |       |
| ..              |       |
| .               | ..... |
| .               | ..... |
| .               | ..... |
| .               |       |
| 5 Subject ..... |       |
| .               |       |
| Details .....   |       |
| ..              |       |
| .               | ..... |
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| .               | ..... |
| .               |       |

## C1.2 CONTRACT DATA

## INDEPENDENT DEVELOPMENT TRUST

**BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.**

### **C1.2 Contract Data for BID NO: DOT01NWER015**

The Conditions of Contract are clauses of the **JBCC Series 2000 Principal Building Agreement (Edition 6.2 @ MAY 2018)** published by the Joint Building Contracts Committee.

The JBCC Principal Building **Agreement** makes several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. Should there be any contradictions between the **Contract Data** and the JBCC Principal Building Agreement, the **Contract Data** shall take precedence.

Each item of data given below is cross-referenced to the clause in the JBCC Principal Building Agreement to which it mainly applies.

The additions, deletions and alterations to the JBCC Principal Agreement are:

| Clause | Amendments   |
|--------|--|
| 1.0    | <p><b>DEFINITIONS AND INTERPRETATION</b></p> <p>Clause 1.1 is deemed to be amended by the addition and amendments of the following:</p> <p>Change the Definition of "<b>AGREEMENT</b>" to read as follows:<br/>This <b>JBCC</b> Principal Building <b>Agreement</b>, the <b>Contractor's</b> tender document accepted by the <b>Employer</b>, the form of offer signed by the <b>Contractor</b>, <b>special conditions of contract</b>, <b>contract data</b> and other <b>contract documents</b>.</p> <p>The completed <b>JBCC®</b> Principal Building <b>Agreement</b> and <b>JBCC®</b> <b>contract data</b>, the <b>contract drawings</b>, the <b>priced document</b> and any other documents reduced to writing and signed by the authorised representatives of the <b>parties</b>.</p> <p>Change the Definition of "<b>BILLS OF QUANTITIES</b>" to read as follows:<br/>The document drawn up in accordance with the pricing instructions contained in the pricing data.</p> <p>Change the Definition of "<b>CONSTRUCTION PERIOD</b>" to read as follows:<br/>The period commencing on the intended date [CD] of possession of the <b>site</b> by the <b>Contractor</b> and ending on the date of <b>Practical Completion</b></p> <p>Change the Definition of "<b>CONTRACT DOCUMENTS</b>" to read as follows:<br/>The <b>Agreement</b> and all documents referenced therein. The <b>contract documents</b> shall be taken to be mutually explanatory of one another but in the event of ambiguity, discrepancy, divergence or inconsistency in or between them, the <b>Contract Data</b> shall prevail over all other <b>contract documents</b>.</p> <p>Change the definition of "<b>PAYMENT CERTIFICATE</b>" to read as follows:<br/>A certificate prepared at regular agreed intervals by the <b>principal agent</b> to the <b>contractor</b> certifying the value of work done and verified by the <b>employer</b> for payment, delivered to the <b>employer</b> and properly recorded on</p> |
| Clause | Amendments   |
|        | <p>delivery, and the certificate will only become due and payable once the <b>employer</b> has verified and signed the certificate. Note: The <b>employer</b> reserves the right to withhold or reject the certificate within ten (10) <b>working days</b> should there be a reason to do so, and the <b>contractor</b> may resort to the dispute resolution process should the rejection fails to be resolved.</p> <p>Change the Definition of "<b>PRACTICAL COMPLETION</b>" to read as follows:<br/>The stage of completion where the <b>Works</b> or a section thereof, in the opinion of the <b>principal agent</b>, has been reached and where the work on the <b>practical completion</b> list (and patent's list if applicable) has been completed and free of latent defects other than minor defects identified in the list for completion and can be used for the intended purpose and certified as complete by the <b>principal agent</b>.</p> <p>Change the Definition of "<b>CONTRACT DRAWINGS</b>" to read as follows:<br/>The drawings listed in the Scope of <b>Works</b>.</p>   |

|     |  |
|-----|--|
|     | <p>Change the Definition of "<b>CONTRACT SUM</b>" to read as follows:<br/>The total of prices in the Form of Offer and Acceptance.</p> <p>Change the Definition of "<b>INTEREST</b>" to read as follows:<br/>The interest rates applicable to this contract, whether specifically indicated in the relevant clauses or not, will be the rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999).</p> <p>A monetary guarantee [CD] provided by the <b>employer</b> to the <b>contractor</b>, or vice versa, in terms of this <b>agreement</b> from which either <b>party</b> may recover expense and loss in the event of default.</p> <p>Add the following to the list of definitions:</p> <p><b>SCHEDULE</b> means the variables listed in the Contract Data.</p> <p><b>DATE OF SITE HANDOVER</b> means the date the <b>contractor</b> is given possession of the site, which shall always be after the signing of the agreement and approval of the construction permits from the relevant authorities including Departments of Labour and Environmental Affairs and local municipality (where applicable).</p> <p><b>EXCEPTIONALLY INCLEMENT WEATHER</b> means weather which is not only extreme or severe but exceeding that which, on the evidence of the past 10 (ten) years, could reasonably have not been expected.</p> <p><b>TENANT LIST</b> means a list compiled by the tenant or in his absence the <b>principal agent</b> defining the incomplete or defective work to be rectified to achieve <b>practical completion</b>. Such list shall be scrutinised and endorsed by the <b>principal agent</b> and shall not be unreasonable in the context of his contract.</p> <p><b>CORRUPT PRACTICE</b> means the offering, giving, receiving and soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.</p> <p><b>FRAUDULENT PRACTICE</b> means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any tenderer and includes collusive practice among tenderers (prior to or after the tender submission) designed to establish tender prices at artificial non-competitive levels and to deprive the tenderer of the benefits of free and open competition.</p> |
| 3.0 | <p><b>OFFER AND ACCEPTANCE</b></p> <p>Clause 3.3 deleted and replaced with the following:-</p> <p>3.3 This <b>agreement</b> shall come into force on the date of signature of the contract by the <b>employer</b> and after all statutory requirements have been met, and continue to be of force and effect until the end of the <b>latent defects liability period</b> notwithstanding termination or the certification and final payment [22.0; 25.0; 29.0]</p>   |

| Clause | Amendments   |
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| 4.0    | <p><b>CESSION AND ASSIGNMENT</b></p> <p>Clause 4.2 deleted and replaced with the following:-</p> <p><b>4.2.</b> The <b>contractor</b> shall not consent to a <b>nominated/selected subcontractor</b> assigning or ceding rights or obligations in terms of this <b>agreement</b> without obtaining the prior written consent of the <b>principal agent</b> with written approval from the <b>employer</b>.</p> <p>Clause 4.3 deleted and replaced with the following:-</p> <p>4.3. Where the <b>contractor</b> intends to cede any right to monies due or to become due under this <b>agreement</b> as security in favour of a financial institution, a written consent in accordance with clause 4.1, shall be obtained from the <b>employer</b> prior to entering into such cession.</p> <p>Clause 4.0 is amended by adding the following new clauses:</p> <p>4.4 Any cession entered into without the necessary written consent from either <b>party</b> shall be null and void.</p> <p>4.5 The <b>employer</b> shall not consent to a cession of monies due or to become due under this <b>agreement</b> as security in favour of a financial institution, unless such financial institution submitted to the Independent Development Trust (IDT) a Valid Tax Clearance Certificate, is registered as a credit provider in terms of the National Credit Act and as a vendor in the IDT's Vendor Management System and in line with the IDT's SCM processes.</p> <p>4.6 The <b>contractor</b> shall adhere to the list of <b>subcontractors</b> indicated in the returnable schedules. Any changes to the <b>subcontractors</b> and their subcontract work shall be approved by the <b>employer</b> in writing. The <b>contractor</b> shall not subcontract more than 25% of the <b>works</b> to <b>subcontractors</b> whose BEE status is less than his at the time of appointment. Failure to comply with this shall constitute a breach of contract.</p> |
| 5.0    | <p><b>CONTRACT DOCUMENTS</b></p> <p>Clause 5.1 deleted and replaced with the following:-</p> <p>5.1. The parties shall sign the original contract document and shall each be issued with the copy thereof. The original signed contract document shall be held by the <b>employer</b>.</p> <p>Clause 5.6 deleted and replaced with the following:-</p> <p>5.6. The contract documents shall be deemed to be mutually explanatory of one another. In the event of ambiguity, discrepancy, divergence or inconsistency in or between them, the <b>Contract Data</b> shall prevail over all other contract documents.</p>   |
| 6.0    | <p><b>EMPLOYER'S AGENTS</b></p> <p>Clause 6.1 deleted and replaced with the following:-</p> <p>6.1. The <b>employer</b> warrants that the <b>principal agent</b> has authority and obligation to act and bind the <b>employer</b> in terms of this <b>agreement</b>, subject to certain restrictions contained herein this document.</p> <p>Clause 6.4 deleted and replaced with the following:-</p> <p>6.4. Where any <b>agent</b> fails to act in terms of delegated authority, the <b>contractor</b> shall give notice to the <b>principal agent</b> and the <b>employer</b> to respond to such default within five (5) <b>working days</b> or any agreed period. Where such default has not been responded to within the specified or the agreed period, the <b>contractor</b> may give not less than ten (10) <b>working days</b> notice of intention to suspend the <b>works</b> [28.0].</p> <p>Clause 6.5 deleted and replaced with the following:-</p>   |

| Clause | Amendments   |
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|        | <p>6.5 Where any <b>agent</b> fails to act or is unable to act, or ceases to be an <b>agent</b>, in terms of this <b>agreement</b>, the <b>employer</b> shall appoint an interim <b>agent</b> within ten (10) <b>working days</b> from the date of the <b>employer</b> being aware of such event pending procurement of a replacement <b>agent</b> through normal employer's Supply Chain Management (SCM) processes.</p>  |
| 9.0    | <p><b>INDEMITIES</b></p> <p>Clause 9.0 is amended by the addition of the following clause:-</p> <p>Clause 9.1.4. Physical loss or damage to an existing structure in the <b>works</b> that are the subject of the contract and to existing structures as well.</p> <p>Delete 9.2.7.</p> <p>Delete 9.2.10.</p>  |
| 10.0   | <p><b>INSURANCES</b></p> <p>Clause 10.0 is amended by the addition of the following clauses to the end thereof:</p> <p>10.12 Damage to the <b>works</b></p> <ul style="list-style-type: none"> <li>(a) Without any way limiting the contractor's obligations in terms of the contract, the <b>contractor</b> shall bear the full risk of damage to and/or destruction of the <b>works</b> by whatever cause during construction of the <b>works</b> and hereby indemnifies and holds harmless the <b>employer</b> against any such damage. The <b>contractor</b> shall take such precautions and security measures and other steps for the protection and security of the <b>works</b> as the <b>contractor</b> may deem necessary.</li> <li>(b) The <b>contractor</b> shall at all times proceed immediately to remove or dispose of any debris arising from damage or destruction of the <b>works</b> and to rebuild, restore, replace and/or repair the <b>works</b>.</li> <li>(c) Where the <b>employer</b> bears the risk in terms of this contract, the <b>contractor</b> shall, if requested to do so, reinstate any damage or destroyed portions of the <b>works</b> and the costs of such reinstatement shall be measured and valued in terms of 25.0 and 26.0 hereof.</li> </ul> <p>10.13 Injury to Persons or loss of or damage to Properties</p> <ul style="list-style-type: none"> <li>(a) The <b>contractor</b> shall be liable for and hereby indemnifies the <b>employer</b> against any liability, loss, claim or proceeding whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever arising out of or in the course of or caused by the execution of the <b>works</b> unless due to any act or negligence of any person for whose actions the <b>employer</b> is legally liable</li> <li>(b) The <b>contractor</b> shall be liable for and hereby indemnifies the <b>employer</b> against any liability, loss, claim or proceeding consequent upon loss of or damage to any moveable, or immovable property or personal property or property contiguous to the <b>site</b>, whether belonging to or under the control of the <b>employer</b> or any other body or person, arising out of or in the course of or by reason of the execution of the <b>works</b> unless due to any act or negligence of any person for whose actions the <b>employer</b> is legally liable.</li> <li>(c) The <b>contractor</b> shall upon receiving a <b>contract instruction</b> from the <b>principal agent</b> cause the same to be made good in a perfect and workmanlike manner at his own cost and in default thereof the <b>employer</b> shall be entitled to cause it to be made good and to recover the cost therefore from the <b>contractor</b> or to deduct the same from amounts due to the <b>contractor</b>.</li> <li>(d) The <b>contractor</b> shall be responsible for the protection and safety of such portions of the premises placed under his control by the <b>employer</b> for the purpose of executing the <b>works</b> until the issue of the <b>certificate of practical completion</b>.</li> </ul> |

| Clause | Amendments   |
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|        | <p>(e) Where the execution of the <b>works</b> involves the risk of removal of or interference with support to adjoining properties including land or structures or any structures to be altered or added to, the <b>contractor</b> shall obtain adequate insurance and <del>will</del> remain adequately insured or insured to the specific limit stated in the contract against the death of or injury to persons or damage to such property consequent on such removal or interference with the support until such portion of the <b>works</b> has been completed.</p> <p>(f) The <b>contractor</b> shall at all times proceed immediately at his own cost to remove or dispose of any debris and to rebuild, restore, replace and / or repair such property and execute the <b>works</b>.</p> <p>10.14 High Risk Insurance</p> <p>In the event of the project being executed in a geological area classified as a "High Risk Area", that is an area which is subject to highly unstable subsurface conditions which might result in catastrophic ground movement evident by sinkhole or dolomite formation the following will apply:</p> <p>10.14.1 Damage to the <b>works</b></p> <p>The <b>contractor</b> shall, from the <b>commencement date</b> of the <b>works</b> until the date of the <b>certificate of practical completion</b>, bear the full risk of and hereby indemnifies and hold harmless the <b>employer</b> against any damage to and/or destruction of the <b>works</b> consequent upon a catastrophic ground movement as mentioned above. The <b>contractor</b> shall take such precautions and security measures and other steps for the protection of the <b>works</b> as he may deem necessary.</p> <p>When so instructed to do so by the <b>principal agent</b>, the <b>contractor</b> shall proceed immediately to remove and/or dispose of any debris arising from damage to or destruction of the <b>works</b> and to rebuild, replace and/or repair the <b>works</b>, at the contractor's own costs.</p> <p>10.14.2 Injury to persons or loss of or damage to property</p> <p>The <b>contractor</b> shall be liable for and hereby indemnifies and holds harmless the <b>employer</b> against any liability, loss, claim or proceeding arising at any time during the period of the contract whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever resulting from, arising out of or caused by a catastrophic ground movement as mentioned above.</p> <p>The <b>contractor</b> shall be liable for and hereby indemnifies the <b>employer</b> against any and all liability, loss, claim or proceeding consequent upon loss of or damage to any moveable, or immovable property or property contiguous to the <b>site</b>, whether belonging to or under the control of the <b>employer</b> or any other body or person whomsoever arising out of or caused by a catastrophic ground movement, as mentioned above, which occurred during the period of construction.</p> <p>10.14.3 It is the responsibility of the <b>contractor</b> to ensure that he has adequate insurance to cover his risk and liability as mentioned in 10.14.1 and 10.14.2. Without limiting the contractor's obligations in terms of the contract, the <b>contractor</b> shall, within twenty-one (21) <b>calendar days</b> of the <b>commencement date</b> but before commencement of the <b>works</b> submit to the <b>employer</b> proof of such insurance policy. <del>if requested to do so.</del></p> <p>10.14.4 The <b>employer</b> shall be entitled to recover any and all losses and/or damages of whatever nature suffered or incurred subsequent upon the contractor's default of his obligations as set out in 10.14.1, 10.14.2 and 10.14.3. Such losses or damages may be recovered from the <b>contractor</b> or by deducting the same from any amounts still due under this contract or under any other contract presently or hereafter existing between the <b>employer</b> and the <b>contractor</b> and for this purpose all these contracts shall be considered on indivisible whole.</p> |
| 11.0   | <p><b>SECURITY</b></p> <p>Delete clause 11.1.2. and replace with the following:-</p>   |



| Clause | Amendments  |
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|        | <p>11.1.2. The <b>contractor</b> shall furnish the <b>employer</b> with a fixed <b>construction guarantee</b> equal in value to ten per cent (10%) of the <b>contract sum</b> within fifteen (15) <b>working days</b> from the offer of appointment <b>date</b> and keep such <b>security</b> valid and enforceable until the <b>final payment certificate</b> has been issued.</p> <p>Amend clause 11.4 to read as following:</p> <p>11.4 Where a <b>contractor</b> fails to provide the <b>security</b> for projects of value less than R5 million, the <b>employer</b> may:</p> <p>Amend clause 11.4.1 to read as follows:</p> <p>11.4.1 Hand over the site to the <b>contractor</b> and withhold in interim <b>payment certificates</b> to the <b>contractor</b> an amount equal to ten percent (10%) of the <b>contract sum</b>. The amount withheld shall be reduced at <b>practical completion</b> [19.0] to five percent (5%) of the <b>contract sum</b> and to zero percent (0%) in the <b>final payment certificate</b> [25.9, 25.15]</p> <p>Delete Clauses 11.2; 11.5</p> <p>Delete 11.7 and replace with the following</p> <p>11.7. A security held by the <b>employer</b> shall be for the due fulfillment of the contractor's obligation in terms of this <b>agreement</b></p> <p>Delete clause 11.10 and replace with the following</p> <p>11.10 The <b>contractor</b> hereby waives, in favour of the <b>employer</b>, any lien or right of retention that is or may be held in respect of the <b>works</b> to be executed on the <b>site</b>.</p> <p>Clause 11.0 is amended by adding the following new clauses:</p> <p>11.11 Within fifteen (15) <b>working days</b> of the date of <b>final completion</b> of the <b>works</b> the <b>employer</b> shall release all <b>construction guarantees</b> to the <b>contractor</b>.</p> <p>11.12 Where the <b>employer</b> has a right of recovery against the <b>contractor</b>, the <b>employer</b> may issue a written demand in terms of the <b>construction guarantee</b>.</p> <p>11.13 <b>Construction guarantees</b> shall only expire at <b>final completion</b> date.</p> <p>11.14 The <b>employer</b>, as an Organ of State, shall not be required to provide payment guarantees</p> |
| 12.0   | <p><b>OBLIGATIONS OF THE PARTIES</b></p> <p>Delete clause 12.1.1</p> <p>Delete clause 12.1.10</p> <p>Clause 12.0 is further amended by adding the following new clauses:</p> <p>12.4 The <b>contractor</b> shall:</p> <p>12.4.1 Immediately on award of the contract and prior to the commencement on <b>site</b>, the <b>contractor</b> shall prepare a working <b>programme</b> covering the first month of the <b>construction period</b>. This working <b>programme</b> shall be prepared in conjunction with the <b>principal agent</b> and shall be subject to his approval.</p>  |

| Clause | Amendments  |
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|        | <p>During the first month of the <b>construction period</b> the <b>contractor</b> shall prepare and draw up the <b>programme</b> for the balance of the <b>works</b> for approval by the <b>principal agent</b></p> <p>12.4.2 This <b>programme</b> shall be drawn up in accordance with the dates in the <b>agreement</b> for possession, sectional completion and <b>practical completion</b> and shall be in sufficient and approved detail to ensure control over the <b>works</b>.</p> <p>12.4.3 The <b>programme</b> shall be compiled based on the Critical Path Method of Programming with the critical activities clearly highlighted. It shall be compiled in such a way that logic is not constrained by resource limitations unless specifically approved by the <b>principal agent</b>.</p> <p>12.4.4 Documentation will not be available in complete detail at the commencement stage. However the <b>contractor</b>, in conjunction with the <b>principal agent</b>, shall progressively plan the <b>works</b> on provisional information available and with sufficient scope to include future detail without disrupting the basic logic initially approved by the <b>principal agent</b>.</p> <p>The quantities contained in these <b>bills of quantities</b> are provisional and shall be utilized as a guide only for the drawing up of the <b>programme</b>.</p> <p>Where assumptions are made in regard to programming aspects, such assumptions shall be recorded in the <b>programme</b>.</p> <p>12.4.5 The <b>programme</b> shall be updated and modified to accommodate a material change in circumstances or whenever reasonably required by the <b>principal agent</b>, or when the <b>principal agent</b> has revised the date for <b>practical completion</b> [12.2.10].</p> <p>Any acceleration and/or special measures sanctioned by the <b>principal agent</b> together with associated effects shall be incorporated in a revision to the <b>programme</b>.</p> <p>12.4.6 The <b>programme</b> (including each revision thereof) shall be prepared in conjunction with the <b>principal agent</b> and shall be subject to his approval. The approval of the <b>principal agent</b> shall be deemed to be given on the basis that the <b>contractor</b> represents that the <b>programme</b> complies with the requirements of this <b>agreement</b>.</p> <p>The <b>contractor</b> shall be responsible at all times for maintaining the accuracy, validity and reasonableness of the <b>programme</b> and the implementation thereof. The fact that a <b>programme</b> has been <del>prepared in conjunction with the principal agent</del> or approved by the <b>principal agent</b> shall not release or relieve the <b>contractor</b> from any of his obligations or responsibilities under this <b>agreement</b>. Without derogating from the foregoing, the <b>contractor</b> shall at all times bear the onus to demonstrate that the <b>programme</b> complies with the requirement of this <b>agreement</b> and, where applicable constitute an appropriate baseline <b>programme</b> for any purpose in connection with this <b>agreement</b>.</p> <p>12.4.7 The <b>contractor</b> and the <b>principal agent</b> shall, at regular intervals not exceeding one month, assess the state of progress of the <b>works</b> relative to the latest agreed revision of the <b>programme</b>. Such agreement shall include the recording of actual commencement and completion dates for each activity and shall constitute the official record of the progress at such point in time.</p> <p>12.4.7 The <b>contractor</b> shall comply with his tendered subcontractors as stipulated in clause 4.6.</p> <p>12.5 The <b>contractor</b> shall not remove, cut back or disturb trees and shrubs without a <b>contract instruction</b> from the <b>principal agent</b>.</p> <p>12.6 The <b>contractor</b> shall ensure that any relics, treasure or other articles of potential value found on the site remain the property of the <b>employer</b> and shall be handed over to the <b>principal agent</b> who shall be the sole arbiter of what is an article of value.</p> |
| 14.0   | <p><b>NOMINATED SUBCONTRACTORS</b></p> <p>Delete clause 14.1 and replace with the following:</p> <p>14.1 The <b>principal agent</b> and/or <b>agents</b>, on written instruction from the <b>employer</b>, shall:</p> <p>Delete clause 14.1.5</p> <p>Amend clause 14.3 to read as follows:</p>  |

| Clause | Amendments  |
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|        | <p>14.3 Where such <b>subcontractor</b> is not appointed by the <b>contractor</b> for the reasons stated (14.2), or where the appointment of a <b>subcontractor</b> has been terminated, another <b>subcontractor</b> shall be nominated and be appointed on instruction from the <b>principal agent</b> on written instruction from the <b>Employer</b>.</p> <p>Amend clause 14.7.1 to read as follows:</p> <p>The <b>principal agent</b>, on written instruction from the <b>employer</b>, shall instruct the <b>contractor</b> to appoint another <b>nominated subcontractor</b> (14.1.4) to complete the n/s subcontract <b>works</b>.</p>  |
| 15.0   | <p><b>SELECTED SUBCONTRACTORS</b></p> <p>Amend clause 15.1 to read as follows:</p> <p>The <b>principal agent</b> and/or agents, on written instruction from the <b>employer</b>, shall:</p> <p>Clause 15.1.2 deleted and replaced with:</p> <p>15.1.2. Call for tenders from a list of tenderers agreed between the <b>contractor</b>, the <b>principal agent</b> and the <b>employer</b>.</p> <p>15.1.5. Delete</p> <p>Amend clause 15.4 to read as follows:</p> <p>15.4. Where such <b>subcontractor</b> is not appointed by the <b>contractor</b> for the reasons stated (15.3), or where the appointment of a <b>subcontractor</b> has been terminated, another <b>subcontractor</b> shall be chosen and be appointed on instruction from the <b>principal agent</b> on written instruction from the <b>employer</b>.</p> <p>Amend clause 15.7.1 to read as follows:</p> <p>15.7.1 The <b>contractor</b> shall appoint another <b>selected subcontractor</b> (15.1.4) to complete the n/s subcontract <b>works</b> in consultation with <b>principal agent</b> and/agents on written instruction from the <b>employer</b></p> |
| 16.0   | <p>Amend clause 16.1.1 by adding the following sub-clause:</p> <p>16.1.1.1 The <b>employer</b> will appoint direct <b>contractors</b> for the following direct contract work and the <b>contractor</b> shall be expected to accommodate them in his planning and execution of work:</p> <p>a) .....</p> <p>b) .....</p>   |

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| 17.0   | <p><b>CONTRACT INSTRUCTIONS</b></p> <p>Amend Clause 17.0 by adding the following sub clauses under clause 17.1.2.</p> <p>The word “substantially” in the main clause above is qualified by the following four sub clauses:</p> <p>17.1.2.1 Quantity as per line item in fixed Bills of Quantities of more than 5%.</p> <p>17.1.2.2. Variation in standards that result in rate adjustment within the Bills of Quantities of more than 5%</p> <p>17.1.2.3. Variation in the design that varies the <b>contract sum</b> by more than 5%</p> <p>17.1.2.4. Should any of the clauses 17.1.2.1-3 be triggered the <b>employer</b> must be notified within 24 hours of becoming aware of the change in writing. The 5% variance includes the exceeding or reduction of the amount as stated above.</p> <p>Amend clause 17.1.13 to read as follow:</p> <p>17.1.13 Expenditure of <b>budgetary allowances, prime cost amount</b> and <b>provisional sums</b> will only be allowed with the express, explicit and unique written consent of the <b>employer</b>.</p> |
| Clause | Amendments  |

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| 19.0 | <p><b>PRACTICAL COMPLETION</b></p> <p>Amend Clause 19.0 by adding the following clauses:</p> <p>19.4.1. In the event of failure as contemplated in the main clause, The <b>employer</b> reserves the right to issue a <b>practical completion list</b> in excess of the <b>principal agent</b> list or in replacement thereof.</p> <p>19.4.2. No default <b>practical completion</b> will be deemed to be given, in light of sub clause 19.4.1.</p> <p>19.8 Without derogating from the generality of the requirements for <b>practical completion</b> the following specific requirements shall apply:</p> <p>19.8.1 <b>Defects</b> occurring after the issue of the <b>practical completion</b> list requiring remedial work that will, in the opinion of the <b>principal agent</b>, cause disruption, will cause the issue of the certificate of <b>practical completion</b> to be withheld until such <b>defects</b> have been rectified to the satisfaction of the <b>principal agent</b>.</p> <p>19.8.2 The following certificates of compliance shall be required (excluding others that may be required by the local/national authority) from the <b>contractor</b> to achieve <b>practical completion</b> and completion certificate shall be invalid if one of them is missing:</p> <ul style="list-style-type: none"> <li>a) A certificate from the <b>contractor</b> that all aspects of the construction regulations of 2003 have been complied with.</li> <li>b) A certificate from the <b>contractor</b> that the National Building Regulations have been complied with</li> <li>c) An occupancy certificate.</li> <li>d) occupational Health and Safety certificate</li> <li>e) A certificate of compliance with respect to plumbing and drainage</li> <li>f) An electrical certificate of compliance</li> <li>g) A certificate of compliance with respect to all glazing</li> <li>h) A certificate of compliance and fire clearance certificate from the <b>contractor</b> and fire chief respectively.</li> <li>i) A galvanizing and painting guarantee.</li> <li>j) All mechanical certificate of compliance.</li> <li>k) All structural certificate of compliance.</li> <li>l) A palisade certificate of compliance.</li> <li>m) A smoke extraction certificate of compliance.</li> <li>n) A fire signage certificate of compliance.</li> <li>o) A tiling certificate of compliance.</li> <li>p) A waterproofing certificate of compliance.</li> <li>q) A generator guarantee.</li> <li>r) Commissioning reports</li> <li>s) Maintenance and operational manuals</li> <li>t) Training of end users on equipment, etc.</li> <li>u) Any other applicable guarantees.</li> </ul> <p>19.8.3 A complete set of maintenance and operating manuals together with all workmanship and material warranties and guarantees are to be compiled and issued to the <b>principal agent</b> prior to <b>practical completion</b> being granted. In addition to the abovementioned documentation, a formal "on site" handover will be required to be conducted with every discipline in the presence of the <b>contractor</b> as well as the applicable services <b>subcontractor</b>.</p> |
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| Clause | Amendments  |
|--------|---|
|        | <p>Add clause 19.9 to Clause 19.0 to read as follows:</p> <p>19.9 After the issue of the <b>certificate of practical completion</b>, entry upon the <b>works</b> to make good <b>defects</b> shall be at such reasonable times as shall be agreed by the <b>principal agent</b>.</p> <p>The <b>contractor</b> shall not receive any mark-up for overheads and profit on any omission of tenant installation work or tenant installation work by others. Claims of loss of profit shall not be entertained.</p>  |
| 22.0   | <p><b>LATENT DEFECT LIABILITY PERIOD</b></p> <p>Amend Clause 22.1 to read as follow:</p> <p>22.1 The <b>latent defect liability period</b> for the <b>works</b> shall commence at the start of the <b>construction period</b> and end ten (10) years from the certified date of <b>final completion</b>.</p> <p>Amend 22.2.1 to read as follow:</p> <p>22.2.1 Where termination of this <b>agreement</b> occurs before the date of <b>final completion</b>, the <b>latent defect liability period</b> shall end ten (10) years from the date of termination (29.10; 29.23) for the completed portion of the <b>works</b> only.</p> <p>Delete clause 22.2</p>  |
| 23.0   | <p><b>REVISION OF THE DATE FOR PRACTICAL COMPLETION</b></p> <p>Amend 23.2 to read as follow:</p> <p>23.2 The <b>Contractor</b> is entitled to a revision of the date for <b>Practical Completion</b> with an adjustment of the <b>contract value</b> (26.0) by the <b>principal Agent</b> subject to a written approval from the <b>Employer</b>, for a delay to <b>Practical Completion</b> caused by one or more of the following events:</p> <p>Amend 23.7 to read as follow:</p> <p>23.7. The <b>principal agent</b> shall, within twenty (20) <b>working days</b> of receipt of the claim, with the written approval of the <b>employer</b>, grant in full, reduce, refuse the <b>working days</b> claimed, and:</p> |
| 25.0   | <p><b>PAYMENT</b></p> <p>Amend 25.1. to read as follow:</p> <p>25.1 The <b>Contractor</b> shall cooperate with and assist the <b>principal agent</b> in the preparation of the cash flow statement and payment valuation by providing all required documents and quantified amount of work duly executed. Where the <b>contractor</b> has not provided such information, the <b>principal agent</b> shall make a fair estimate of the work executed.</p> <p>Amend Clause 25.0 by adding the following sub clauses under clause 25.1:</p>  |

|               |   |
|---------------|---|
|               |   |
| <b>Clause</b> | <b>Amendments</b>   |
|               | <p>25.1.1. The <b>principal agent</b> shall prepare in full the <b>payment certificate</b> for signature and effect by the <b>employer</b> as stipulated in the contract.</p> <p>25.1.2. No <b>payment certificate</b> will be concluded and effected without the employer's authorized signature on the certificate.</p> <p>25.1.3 The <b>employer</b> reserves the right to demand a valid Tax Clearance Certificate prior to making any payment to the <b>contractor</b>, should it become aware that the tax clearance certificate has expired.</p> <p>25.1.4 The <b>contractor</b> shall submit the valid Tax Clearance Certificate within fifteen (15) <b>working days</b> or any extended period, from the date of expiry of the Tax Clearance Certificate.</p> <p>Add to clause 25.10 to read as follows:</p> <p>25.10.1 <b>Default Interest</b>, shall only be effective after the thirty (30) <b>calendar days</b> from the date of submission of undisputed <b>payment certificate and Contractor Invoice</b> to the <b>employer</b> at the rate of repo rate plus 3%.</p> <p>Add to clause 25.10 to read as follows:</p> <p>25.10.2 The <b>employer</b> shall, in accordance with clause 8.2.3 of the Treasury Regulation of March 2005, pay to the <b>contractor</b> the amount certified in an interim <b>payment certificate</b> within <b>thirty (30) calendar days</b> from the date of submission of undisputed <b>payment certificate</b> to the <b>employer</b> after verification, unless there is an objection of the certificate by the <b>employer</b>. <i>The employer cannot reject a certificate once the employer signs it.</i></p> <p>Amend Clause 25.9 by adding the following sub clauses:</p> <p>25.9.1 The <b>employer</b> shall only be liable for the payment for materials and/or goods offsite if ownership is proven by the <b>contractor</b> (paid in full) and the <b>contractor</b> submits a bank guaranteed cheque of the value of materials and/or goods in favour of the <b>employer</b> and such ownership shall pass on to the <b>employer</b> upon payment.</p> |

|      |   |
|------|---|
| 26.0 | <p><b>ADJUSTMENT OF THE CONTRACT VALUE AND FINAL ACCOUNT</b></p> <p>Add the followings sub clauses to clause 26.1.</p> <p>26.1.1. Upon receipt of the change request, the <b>principal agent</b> must professionally consider the merits of the change request and make a recommendation to the <b>employer</b>.</p> <p>26.1.2. The <b>principal agent</b> shall not have the power to approve any deviation or variation which has financial implications on the <b>employer</b> without the necessary written approval of the <b>employer</b>, except under emergency circumstances wherein failure to undertake the work may result in loss of life.</p> |
|------|---|



| Clause | Amendments  |
|--------|---|
|        | <p>26.1.3. The <b>employer</b> must communicate the approval of the change request in writing to the <b>principal agent</b> and the <b>principal agent</b> shall, upon receipt of confirmation of the change request, issue the necessary <b>contract instruction</b> to the <b>contractor</b> to undertake the <b>works</b>.</p> <p>26.1.4. The <b>contractor</b> shall not commence with any change request <b>works</b> without proof of the written approval of the Variation Order from the <b>employer</b>, except under circumstances mentioned in paragraph 26.1.2 above.</p> <p>26.1.5 Should the <b>contractor</b> undertakes the change request <b>works</b> without the necessary written approval of the change request from the <b>employer</b>, the <b>contractor</b> shall be entirely liable for any financial and any related implications and hereby indemnify and hold harmless the <b>employer</b> from and against any and all claims, actions, damages, liabilities, injuries, costs, fees, expenses, or losses, including and without limitation, reasonable attorney's fees and costs of investigation and litigation, whatsoever which may be incurred by, or for which liability may be asserted against, the <b>employer</b> arising out of the contractor's performance or non-performance of unauthorized <b>works</b>, but only to the extent caused by the negligent acts, errors or omissions of the <b>contractor</b>.</p> <p>26.1.6. The <b>contractor</b> shall not accept any instructions from any party, including beneficiary Department, other than the <b>principal agent</b>.</p> <p>Amend clause 26.7 to read as follow:</p> <p>26.7 The <b>principal agent</b>, in consultation with the <b>employer</b>, shall assess the claim and on approval by the <b>employer</b>, shall adjust the <b>contract value</b> within twenty (20) <b>working days</b> of receipt of such details.</p> |
| 27.0   | <p><b>RECOVERY OF EXPENSE AND/OR LOSS</b></p> <p>27.1.4. Refer clause 25.10.1</p>   |
| 28.0   | <p><b>SUSPENSION BY THE CONTRACTOR</b></p> <p>Amend clause 28.1. to read as follow:</p> <p>28.1 The <b>contractor</b> may give fourteen (14) <b>working days</b>' notice to the <b>employer</b> and the <b>principal agent</b> of the intention to suspend the <b>works</b> where the <b>employer</b> and the <b>principal agent</b> have failed to:</p> <p>Add the followings clause to clause 28.0:</p> <p>28.5. The date of resumption of the <b>works</b> shall be the date on which the default has been remedied by the <b>employer</b>.</p>  |
| 29.0   | <p><b>TERMINATION</b></p> <p>Clause 29.1.1 is amended by the addition of the following sub-clauses:</p> <p>29.1.1a the <b>contractor</b> refuses or neglects to comply strictly with any of the conditions of contract.</p> <p>29.1.1b the Contractor's estate being sequestrated, liquidated or surrendered in terms of the insolvency laws in force with the Republic of South Africa.</p> <p>29.1.1c the <b>contractor</b>, in the judgment of the <b>employer</b>, has engaged in <b>corrupt</b> or <b>fraudulent practices</b> in competing for or in executing the contract.</p>  |

| Clause | Amendments  |
|--------|---|
|        | <p>29.1.1d the <b>contractor</b> fails to perform in terms of the <b>agreement</b> or the <b>employer</b> on reasonable ground believe that the <b>contractor</b> may not be able to comply with his obligation.</p> <p>Amend 29.10 to read as follow:</p> <p>29.10 The <b>latent defects</b> liability period for the completed portion of the <b>works</b> shall end (22.2.1) 10 years from the date of termination.</p> <p>Amend 29.23 to read as follow:</p> <p>29.23 The <b>latent defects</b> liability period for the completed portion of <b>works</b> shall end ten (10) years from the dateof termination (22.3.2).</p> |
| 30.0   | <p><b>DISPUTE RESOLUTION</b></p> <p>Delete clauses 30.3, 30.4, 30.5 and 30.6</p>  |

## A PROJECT INFORMATION

### A 1.0 Works [1.1]

|                          |  |
|--------------------------|--|
| Project name             | APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL AND CONVENTION CENTRE |
| Reference number         | BID NO. DOT01NWER015   |
| <b>Works</b> description | REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL AND CONVENTION CENTRE                              |

### A 2.0 Site [1.1]

|                     |  |
|---------------------|--|
| Erf / stand number  | EXISTING TAUNG HOTEL SCHOOL AND CONVENTION CENTRE, DR RUTH SEGOMOTSI MOMPATI DISTRICT MUNICIPALITY, ALONG N18 / KIMBERLY-VRYBURG ROAD.<br>GPS CO-ORDINATES - 27 34' 22" AND 24 44' 30" |
| Township / Suburb   | TAUNG, NORTH WEST PROVINCE   |
| <b>Site</b> address | EXISTING TAUNG HOTEL SCHOOL AND CONVENTION CENTRE, DR RUTH SEGOMOTSI MOMPATI DISTRICT MUNICIPALITY, ALONG N18 / KIMBERLY-VRYBURG ROAD.<br>GPS CO-ORDINATES - 27 34' 22" AND 24 44' 30" |
| Local authority     |  |

### A 3.0 Employer [1.1]

|  |   |                  |      |
|--|---|------------------|------|
| Official Name of Organ of State / Public Sector Body | INDEPENDENT DEVELOPMENT TRUST                 |                  |      |
| Business registration number                         |   |                  |      |
| VAT/GST number                                       |   |                  |      |
| Country  | SOUTH AFRICA                                  |                  |      |
| Employer's representative: Name                      | ANDREW NGOBENI                                |                  |      |
| E-mail   | ANDREWN@IDT.CO.ZA                             | Telephone number |      |
| Mobile number  |   |                  |      |
| Postal address                                       |   |                  |      |
|  |   | Postal code      |      |
| Physical address                                     | 4071 JOULES STREET, INDUSTRIAL SITE, MAHIKENG |                  |      |
|  |   | Postal code      | 2375 |

### A 4.0 Principal agent [1.1]

|                       |                                    |                  |               |
|-----------------------|------------------------------------|------------------|---------------|
| Name                  | BOTAKI AND ASSOCIATES              |                  |               |
| Legal entity of above | PTY LTD                            | Contact person   | THATO MOGOTSI |
| Practice number       |                                    | Telephone number |               |
|                       |                                    | Mobile number    |               |
| Country               |                                    | E-mail           |               |
| Postal address        | PO BOX 2038, FLORIDA               |                  |               |
|                       |                                    | Postal code      | 1710          |
| Physical address      | 21 KEURBOOM, WILROPARK, ROODEPOORT |                  |               |
|                       |                                    | Postal code      | 1724          |

|                               |            |           |
|-------------------------------|------------|-----------|
| <b>A 5.0 Agent</b> [1.1; 6.2] | Discipline | ARCHITECT |
|-------------------------------|------------|-----------|

|                       |                                    |                  |                           |
|-----------------------|------------------------------------|------------------|---------------------------|
| Name                  | BOTAKI AND ASSOCIATES              |                  |                           |
| Legal entity of above | PTY LTD                            | Contact person   | THATO MOGOTSI             |
| Practice number       |                                    | Telephone number | 011 764 1307              |
|                       |                                    | Mobile number    |                           |
| Country               | SOUTH AFRICA                       | E-mail           | CONSULT@BOTAKIARCHS.CO.ZA |
| Postal address        | PO BOX 2038, FLORIDA               |                  |                           |
|                       |                                    | Postal code      | 1710                      |
| Physical address      | 21 KEURBOOM, WILROPARK, ROODEPOORT |                  |                           |
|                       |                                    | Postal code      | 1724                      |

|                               |            |                   |
|-------------------------------|------------|-------------------|
| <b>A 6.0 Agent</b> [1.1; 6.2] | Discipline | QUANTITY SURVEYOR |
|-------------------------------|------------|-------------------|

|                       |                             |                  |                 |
|-----------------------|-----------------------------|------------------|-----------------|
| Name                  | RAJULI AND MASI CONSULTANTS |                  |                 |
| Legal entity of above | CC                          | Contact person   | PAUL KGOLE      |
| Practice number       |                             | Telephone number | 011 620 3181    |
|                       |                             | Mobile number    |                 |
| Country               | SOUTH AFRICA                | E-mail           | RMQS@MWEB.CO.ZA |
| Postal address        | PO BOX 2626, HOUGHTON       |                  |                 |
|                       |                             | Postal code      | 2041            |
| Physical address      | 9 RIVER ROAD, MORNINGHILL   |                  |                 |
|                       |                             | Postal code      | 2007            |

|                               |            |                               |
|-------------------------------|------------|-------------------------------|
| <b>A 7.0 Agent</b> [1.1; 6.2] | Discipline | CIVIL AND STRUCTURAL ENGINEER |
|-------------------------------|------------|-------------------------------|

|                       |   |                  |                    |
|-----------------------|---|------------------|--------------------|
| Name                  | PHB ENGINEERS   |                  |                    |
| Legal entity of above |   | Contact person   | SIMBA GANJE        |
| Practice number       |   | Telephone number | 011 678 8628       |
|                       |   | Mobile number    |                    |
| Country               | SOUTH AFRICA  | E-mail           | INFO@ENSYNC.AFRICA |
| Postal address        |   |                  |                    |
|                       |   | Postal code      |                    |
| Physical address      | 1ST FLOOR, UNIT 2, BENTLEY OFFICE PARK, CNR RIVONIA AND WESSELS ROAD, RIVONIA |                  |                    |
|                       |   | Postal code      | 2191               |

|                               |            |                                    |
|-------------------------------|------------|------------------------------------|
| <b>A 8.0 Agent</b> [1.1; 6.2] | Discipline | ELECTRICAL AND MECHANICAL ENGINEER |
|-------------------------------|------------|------------------------------------|

|                       |   |                  |                         |
|-----------------------|---|------------------|-------------------------|
| Name                  | GREEN VISION ENGINEERING CONSULTANCY      |                  |                         |
| Legal entity of above |   | Contact person   | TAMUKA MATUKU           |
| Practice number       |   | Telephone number | 012 664 3823            |
|                       |   | Mobile number    | INFO@GREEN-VISION.CO.ZA |
| Country               | SOUTH AFRICA                              | E-mail           |                         |
| Postal address        |   |                  |                         |
|                       |   | Postal code      |                         |
| Physical address      | 3A JASPER AVENUE, DOORINGKLOOF, CENTURION |                  |                         |
|                       |   | Postal code      | 0157                    |

**A 9.0 Agent** [1.1; 6.2]

|            |                              |
|------------|------------------------------|
| Discipline | HEALTH AND SAFETY CONSULTANT |
|------------|------------------------------|

|                       |  |                  |                   |
|-----------------------|--|------------------|-------------------|
| Name                  | REMOFILWE OHS                                  |                  |                   |
| Legal entity of above | PTY LTD  | Contact person   | KEHILWE LEEPO     |
| Practice number       |  | Telephone number |                   |
|                       |  | Mobile number    | 076 179 7538      |
| Country               | SOUTH AFRICA                                   | E-mail           | KFLWP83@GMAIL.COM |
| Postal address        |  |                  |                   |
|                       |  | Postal code      |                   |
| Physical address      | NO. 24 KALDI PLACE, JOUBERT STREET, RUSTENBURG |                  |                   |
|                       |  | Postal code      | 0299              |

**A 10.0 Agent** [1.1; 6.2]

|            |  |
|------------|--|
| Discipline |  |
|------------|--|

|                       |  |                  |  |
|-----------------------|--|------------------|--|
| Name                  |  |                  |  |
| Legal entity of above |  | Contact person   |  |
| Practice number       |  | Telephone number |  |
|                       |  | Mobile number    |  |
| Country               |  | E-mail           |  |
| Postal address        |  |                  |  |
|                       |  | Postal code      |  |
| Physical address      |  |                  |  |
|                       |  | Postal code      |  |

**A 11.0 Agent** [1.1; 6.2]

|            |  |
|------------|--|
| Discipline |  |
|------------|--|

|                       |  |                  |  |
|-----------------------|--|------------------|--|
| Name                  |  |                  |  |
| Legal entity of above |  | Contact person   |  |
| Practice number       |  | Telephone number |  |
|                       |  | Mobile number    |  |
| Country               |  | E-mail           |  |
| Postal address        |  |                  |  |
|                       |  | Postal code      |  |
| Physical address      |  |                  |  |
|                       |  | Postal code      |  |

**A 12.0 Agent** [1.1; 6.2]

|            |  |
|------------|--|
| Discipline |  |
|------------|--|

|                       |  |                  |  |
|-----------------------|--|------------------|--|
| Name                  |  |                  |  |
| Legal entity of above |  | Contact person   |  |
| Practice number       |  | Telephone number |  |
|                       |  | Mobile number    |  |
| Country               |  | E-mail           |  |
| Postal address        |  |                  |  |
|                       |  | Postal code      |  |
| Physical address      |  |                  |  |
|                       |  | Postal code      |  |

## B CONTRACT INFORMATION

### B 1.0 Definitions [1.1]

|  |                 |
|--|-----------------|
| <b>Bills of quantities:</b> System/Method of measurement | SEVENTH EDITION |
|--|-----------------|

### B 2.0 Law, regulations and notices [2.0]

|   |              |
|---|--------------|
| <b>Law</b> applicable to the <b>works</b> , state country [2.1] | SOUTH AFRICA |
|---|--------------|

### B 3.0 Offer and acceptance [3.0]

|  |                          |
|--|--------------------------|
| Currency applicable to this <b>agreement</b> [3.2] | SOUTH AFRICAN RAND (ZAR) |
|--|--------------------------|

### B 4.0 Documents [5.0]

|  |                 |
|--|-----------------|
| The original signed <b>agreement</b> is to be held by the <b>principal agent</b> [5.2], if not, indicate by whom | <b>Employer</b> |
| Number of copies of <b>construction information</b> issued to the <b>contractor</b> at no cost [5.6]             | 3 (THREE)       |

|   |              |
|---|--------------|
| Documents comprising the <b>agreement</b>   | Page numbers |
| The <b>JBCC</b> ® Principal Building Agreement, Edition 6.2 May 2018  | 1 to 30      |
| The <b>JBCC</b> ® Principal Building Agreement - Contract Data for Organs of State and other Public Sector Bodies, Edition 6.2 May 2018 | 1 to 14      |
| The <b>JBCC</b> ® General Preliminaries for use with the <b>JBCC</b> ® Principal Building Agreement, Edition 6.2 May 2018               | 1 to 7       |
|   |              |
|   |              |
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| Contract drawings – description | Number | Revision | Date |
|---------------------------------|--------|----------|------|
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## B 5.0 Employer's agents [6.0]

|   |
|---|
| Authority is delegated to the following <b>agents</b> to issue <b>contract instructions</b> and perform duties for specific aspects of the <b>works</b> [6.2]   |
| <ul style="list-style-type: none"> <li>- ARCHITECT</li> <li>- QUANTITY SURVEYOR</li> <li>- CIVIL AND STRUCTURAL ENGINEER</li> <li>- MECHANICAL AND ELECTRICAL ENGINEER</li> <li>- HEALTH AND SAFETY CONSULTANT</li> </ul> |

|  |
|--|
| <b>Principal agent's</b> and <b>agents'</b> interest or involvement in the <b>works</b> other than a professional interest [6.3] |
|  |

## B 6.0 Insurances [10.0]

| Insurances by <b>employer</b>                       |   |                       | Amount including <b>tax</b> | Deductible amount including <b>tax</b> |
|---|---|-----------------------|-----------------------------|--|
| Yes/no?   | <b>NO</b>   |                       |                             |  |
| Contract works insurance:                           |   |                       |                             |  |
|   | New <b>works</b> [10.1.1] ( <b>contract sum</b> or amount)  |                       |                             |  |
| or  | <b>Works</b> with <b>practical completion</b> in <b>sections</b> [10.2] ( <b>contract sum</b> or amount)                            |                       |                             |  |
| or  | <b>Works</b> with alterations and additions [10.3] (reinstatement value of existing structures with or including new <b>works</b> ) |                       |                             |  |
|   | <b>Direct contractors</b> [10.1.1; 10.2] where applicable, to be included in the contract works insurance                           |                       |                             | X                                      |
|   | <b>Free issue</b> [10.1.1; 10.2] where applicable, to be included in the contract works insurance                                   |                       |                             | X                                      |
|   | Escalation, professional fees and reinstatement costs if not included above   |                       |                             | X                                      |
| Total of the above contract works insurance amount  |   |                       |                             | X                                      |
| Supplementary insurance [10.1.2; 10.2]              |   |                       |                             |  |
| Public liability insurance [10.1.3; 10.2]           |   |                       |                             |  |
| Removal of lateral support insurance [10.1.4; 10.2] |   |                       |                             |  |
| Other insurances [10.1.5]                           |   |                       |                             |  |
| Yes/no?   |   | If yes, description 1 |                             |  |
|   |   |                       |                             |  |
| Yes/no?   |   | If yes, description 2 |                             |  |
|   |   |                       |                             |  |

and/or

| Insurances by <b>contractor</b>                    |   |                       | Amount including <b>tax</b> | Deductible amount including <b>tax</b> |
|--|---|-----------------------|-----------------------------|--|
| Yes/no?  | <b>YES</b>  |                       |                             |  |
|  | New <b>works</b> [10.1.1] ( <b>contract sum</b> or amount)  |                       |                             |  |
| or   | <b>Works</b> with <b>practical completion</b> in <b>sections</b> [10.2] ( <b>contract sum</b> or amount)                            |                       |                             |  |
| or   | <b>Works</b> with alterations and additions [10.3] (reinstatement value of existing structures with or including new <b>works</b> ) |                       | CONTRACT SUM PLUS 20%       | CONTRACTOR'S POLICY                    |
|  | <b>Direct contractors</b> [10.1.1; 10.2] where applicable, to be included in the contract works insurance                           |                       |                             |  |
|  | <b>Free issue</b> [10.1.1; 10.2] where applicable, to be included in the contract works insurance                                   |                       |                             |  |
|  | Escalation, professional fees and reinstatement costs if not included above   |                       |                             |  |
| Total of the above contract works insurance amount |   |                       |                             |  |
| Supplementary insurance [10.1.2]                   |   |                       |                             |  |
| Public liability insurance [10.1.3]                |   |                       | R 10 000 000.00             |  |
| Removal of lateral support insurance [10.1.4]      |   |                       |                             |  |
| Other insurances [10.1.5]: Refer B17.0             |   |                       |                             |  |
| Yes/no?  | Yes   | If yes, description 1 |                             |  |
| Hi Risk Insurance [10.1.5.1]                       |   |                       |                             |  |
| Yes/no?  |   | If yes, description 2 |                             |  |
|  |   |                       |                             |  |

## B 7.0 Obligations of the employer [12.1]

|   |   |         |            |
|---|---|---------|------------|
| Existing premises will be in use and occupied [12.1.2]                                      |   | Yes/no? | <b>NO</b>  |
| If yes, description   |   |         |            |
| Restriction of working hours [12.1.2]   |   | Yes/no? | <b>YES</b> |
| If yes, description   | - NO WORK DONE AFTER HOURS / DURING THE NIGHT |         |            |
| Natural features and known services to be preserved by the <b>contractor</b> [12.1.3]       |   | Yes/no? | <b>YES</b> |
| If yes, description   | - TO BE IDENTIFIED BY THE PRINCIPAL AGENT     |         |            |
| Restrictions to the <b>site</b> or areas that the <b>contractor</b> may not occupy [12.1.4] |   | Yes/no? | <b>YES</b> |
| If yes, description   | - HOTEL SCHOOL, STUDENT RESIDENCES            |         |            |
| Supply of <b>free issue</b> [12.1.10]   |   | Yes/no? | <b>NO</b>  |
| If yes, description   |   |         |            |



**B 8.0 Nominated subcontractors [14.0]**

|                  |  |                                       |
|------------------|--|---------------------------------------|
| Yes/no?          |  | If yes, description of specialisation |
| Specialisation 1 |  |                                       |
| Specialisation 2 |  |                                       |
| Specialisation 3 |  |                                       |
| Specialisation 4 |  |                                       |
| Specialisation 5 |  |                                       |

**B 9.0 Selected subcontractors [15.0]**

|                  |  |                                       |
|------------------|--|---------------------------------------|
| Yes/no?          |  | If yes, description of specialisation |
| Specialisation 1 |  |                                       |
| Specialisation 2 |  |                                       |
| Specialisation 3 |  |                                       |
| Specialisation 4 |  |                                       |
| Specialisation 5 |  |                                       |

**B 10.0 Direct contractors [16.0]**

|                          |  |                                       |
|--------------------------|--|---------------------------------------|
| Yes/no?                  |  | If yes, description of extent of work |
| Extent of work [12.1.11] |  |                                       |
| Extent of work [12.1.11] |  |                                       |
| Extent of work [12.1.11] |  |                                       |
| Extent of work [12.1.11] |  |                                       |
| Extent of work [12.1.11] |  |                                       |

**B 11.0 Description of sections [20.1]**

|                  |  |                               |
|------------------|--|-------------------------------|
| <b>Section 1</b> |  |                               |
| <b>Section 2</b> |  |                               |
| <b>Section 3</b> |  |                               |
| <b>Section 4</b> |  |                               |
| <b>Section 5</b> |  |                               |
| <b>Section 6</b> |  |                               |
| <b>Section</b>   |  | Remainder of the <b>works</b> |

**B 12.0 Possession of site [12.1.5], practical completion [19.0; 20.0] and penalty [24.0]**

|   |  |   |   |  |
|---|--|---|---|--|
| <b>Practical completion</b> for the <b>works</b> as a whole | Intended date of possession of the <b>site</b><br>Refer B17.0<br>[12.1.5; 12.2.22] | Period for inspection by the <b>principal agent</b><br>[19.3] | The date for <b>practical completion</b> shall be the period as indicated below from the date of possession of the <b>site</b> by the <b>contractor</b><br>[12.2.7; 24.1] | <b>Penalty</b> for late completion<br>[24.1]               |
|   |  | <b>working days</b>   | Period in months  | Penalty amount per <b>calendar day</b> (excl. <b>tax</b> ) |
|   |  | 5 (FIVE)  | 12 (TWELVE)   | R16 500.00   |

or where **sections** are applicable

| Practical completion of a section of the works | Intended date of possession of a section<br>Refer B17.0<br>[12.1.5; 12.2.22] | Period for inspection by the principal agent<br>[19.3] | The date for practical completion shall be the period as indicated below from the date of possession of the site by the contractor<br>[12.2.7; 24.1] | Penalty for late completion<br>[24.1]       |
|--|--|--|--|---|
|  |  | working days   | Period in months   | Penalty amount per calendar day (excl. tax) |
| Section 1                                      |  |  |  |   |
| Section 2                                      |  |  |  |   |
| Section 3                                      |  |  |  |   |
| Section 4                                      |  |  |  |   |
| Section 5                                      |  |  |  |   |
| Section 6                                      |  |  |  |   |
| Section 7                                      |  |  |  |   |
| Section 8                                      |  |  |  |   |
| Remainder of the works                         |  |  |  |   |

| Criteria to achieve <b>practical completion</b> not covered in the definition of <b>practical completion</b> |
|--|
|  |

### B 13.0 Defects liability period [21.0]

|  |   |         |            |
|--|---|---------|------------|
| Extended defects liability period: Refer B17.0 [21.13] |   | Yes/no? | <b>YES</b> |
| If yes, description of applicable elements             | eg: Electrical reticulation / Air conditioning system / Landscaping |         |            |
|  | 13.1  |         |            |
|  | 13.2  |         |            |
|  | 13.3  |         |            |
|  | 13.4  |         |            |
|  | 13.5  |         |            |
|  | 13.6  |         |            |

## B 14.0 Payment [25.0]

|   |                                      |           |  |
|---|--------------------------------------|-----------|--|
| Date of month for issue of regular <b>payment certificates</b> [25.2] | 25 (TWENTY-FIVE)                     |           |  |
| Contract price adjustment / Cost fluctuations [25.3.4; 26.9.5]        | Yes/no?                              | <b>NO</b> |  |
| If yes, method to calculate   |                                      |           |  |
| <b>Employer</b> shall pay the <b>contractor</b> within: [25.10]       | Twenty-one (21) <b>calendar days</b> |           |  |

## B 15.0 Dispute resolution [30.0]

|  |                              |     |                            |
|--|------------------------------|-----|----------------------------|
| Adjudication [30.6.1; 30.10]<br>Name of nominating body  |                              |     |                            |
| Applicable rules for adjudication [30.6.2]   |                              |     |                            |
| Arbitration [30.7.4; 30.10]<br>If Yes, name of nominating body<br>* If No, then dispute will be referred to litigation | Yes/no? *                    | YES | ASSOCIATION OF ARBITRATORS |
| Applicable rules for arbitration [30.7.5]  | CURRENT - WHEN DISPUTE ARISE |     |                            |

## B 16.0 JBCC® General Preliminaries - selections

|   |  |           |            |
|---|--|-----------|------------|
| Provisional bills of quantities [P2.2]  | Yes/no?  | <b>NO</b> |            |
| Availability of construction information - is the construction information complete? [P2.3] | Yes/no?  | <b>NO</b> |            |
| Previous work - dimensional accuracy - details of previous contract(s) [P3.1]               |  |           |            |
| Previous work - <b>defects</b> - details of previous contract(s) [P3.2]                     |  |           |            |
| Inspection of adjoining properties - details [P3.3]   |  |           |            |
| Handover of <b>site</b> in stages - specific requirements [P4.1]                            |  |           |            |
| Enclosure of the <b>works</b> - specific requirements [P4.2]                                | - 1.8M HIGH HOARDING AROUND THE WORKS TO BE PROVIDED BY THE CONTRACTOR |           |            |
| Geotechnical and other investigations - specific requirements [P4.3]                        |  |           |            |
| Existing premises occupied - details [P4.5]   |  |           |            |
| Services - known - specific requirements [P4.6]   |  |           |            |
| Water [P8.1]  | By <b>contractor</b>   | Yes/no?   | <b>YES</b> |
|   | By <b>employer</b>   | Yes/no?   | <b>NO</b>  |
|   | By <b>employer</b> – metered   | Yes/no?   | <b>NO</b>  |
| Electricity [P8.2]  | By <b>contractor</b>   | Yes/no?   | <b>YES</b> |
|   | By <b>employer</b>   | Yes/no?   | <b>NO</b>  |
|   | By <b>employer</b> – metered   | Yes/no?   | <b>NO</b>  |
| Ablution and welfare facilities [P8.3]  | By <b>contractor</b>   | Yes/no?   | <b>YES</b> |
|   | By <b>employer</b>   | Yes/no?   | <b>NO</b>  |

|   |  |
|---|--|
| Communication facilities - specific requirements<br>[P8.4]  |  |
| Protection of the <b>works</b> - specific requirements<br>[P11.1]   |  |
| Protection / isolation of existing <b>works</b> and <b>works</b><br>occupied in <b>sections</b> - specific requirements [P11.2] |  |
| Disturbance - specific requirements [P11.5]   |  |
| Environmental disturbance - specific requirements<br>[P11.6]  |  |

## C TENDERER'S SELECTIONS

### C 1.0 Securities [11.0]

Guarantee for construction: Select Option A or B ☐

|   |   |
|---|---|
| Option A  | Guarantee for construction (variable) by <b>contractor</b> [11.1.1] |
| Option B  | Guarantee for construction (fixed) by <b>contractor</b> [11.1.2]    |
| Guarantee for payment by employer [11.5.1; 11.10]                                 | Not applicable  |
| Advance payment, subject to a <b>guarantee for advance payment</b> [11.2.2; 11.3] | Not applicable  |

### C 2.0 Contractor's annual holiday periods during the construction period

|  |            |  |          |  |
|--|------------|--|----------|--|
| Year 1 <b>contractor's</b> annual holiday period | start date |  | end date |  |
| Year 2 <b>contractor's</b> annual holiday period | start date |  | end date |  |
| Year 3 <b>contractor's</b> annual holiday period | start date |  | end date |  |

### C 3.0 Payment of preliminaries [25.0]

#### Contractor's selection

Select Option A or B ☐

Where the **contractor** does not select an option, Option A shall apply

#### Payment methods

|          |  |
|----------|--|
| Option A | The <b>preliminaries</b> shall be paid in accordance with an amount prorated to the value of the <b>works</b> executed in the same ratio as the amount of the <b>preliminaries</b> to the <b>contract sum</b> , which <b>contract sum</b> shall exclude the amount of <b>preliminaries</b> . Contingency sum(s) and any provision for cost fluctuations shall be excluded for the calculation of the aforesaid ratio   |
| Option B | The <b>preliminaries</b> shall be paid in accordance with an amount agreed by the <b>principal agent</b> and the <b>contractor</b> in terms of the <b>priced document</b> to identify an initial establishment charge, a time-related charge and a final dis-establishment charge. Payment of the time-related charge shall be assessed by the <b>principal agent</b> and adjusted from time to time as may be necessary to take into account the rate of progress of the <b>works</b> |

#### Lump sum contract

Where the amount of **preliminaries** is not provided it shall be taken as 7.5% (seven and a half per cent) of the **contract sum**, excluding contingency sum(s) and any provision for cost fluctuations

### C 4.0 Adjustment of preliminaries [26.9.4]

#### Contractor's selection

Select Option A or B ☐

Where the **contractor** does not select an option, Option A shall apply

#### Provision of particulars

The **contractor** shall provide the particulars for the purpose of the adjustment of **preliminaries** in terms of his selection. Where completion in **sections** is required, the **contractor** shall provide an apportionment of **preliminaries per section**

|          |   |
|----------|---|
| Option A | An allocation of the <b>preliminaries</b> amounts into Fixed, Value-related and Time-related amounts as defined for adjustment method Option A below, within fifteen (15) <b>working days</b> of the date of acceptance of the tender   |
| Option B | A detailed breakdown of the <b>preliminaries</b> amounts within fifteen (15) <b>working days</b> of possession of the <b>site</b> . Such breakdown shall include, inter alia, the administrative and supervisory staff, the use of <b>construction equipment</b> , establishment and dis-establishment charges, insurances and guarantees, all in terms of the <b>programme</b> |

### Adjustment methods

The amount of **preliminaries** shall be adjusted to take account of the effect which changes in time and/or value have on **preliminaries**. Such adjustment shall be based on the particulars provided by the **contractor** for this purpose in terms of Options A or B, shall preclude any further adjustment of the amount of **preliminaries** and shall apply notwithstanding the actual employment of resources by the **contractor** in the execution of the **works**

|          |  |
|----------|--|
| Option A | <p>The <b>preliminaries</b> shall be adjusted in accordance with the allocation of <b>preliminaries</b> amounts provided by the <b>contractor</b>, apportioned to <b>sections</b> where completion in <b>sections</b> is required</p> <p>Fixed - An amount which shall not be varied</p> <p>Value-related - An amount varied in proportion to the <b>contract value</b> as compared to the <b>contract sum</b>. Both the <b>contract sum</b> and the <b>contract value</b> shall exclude the amount of <b>preliminaries</b>, contingency sum(s) and any provision for cost fluctuations</p> <p>Time-related - An amount varied in proportion to the number of <b>calendar days</b> extension to the date of <b>practical completion</b> to which the <b>contractor</b> is entitled with an adjustment of the <b>contract value</b> [23.2; 23.3] as compared to the number of <b>calendar days</b> in the initial <b>construction period</b> [26.9.4]</p> |
| Option B | <p>The adjustment of <b>preliminaries</b> shall be based on the number of <b>calendar days</b> extension to the date of <b>practical completion</b> to which the <b>contractor</b> is entitled with an adjustment of the <b>contract value</b> [23.2; 23.3] as compared to the number of <b>calendar days</b> in the initial <b>construction period</b> [26.9.4]</p> <p>The adjustment shall take into account the resources as set out in the detailed breakdown of the <b>preliminaries</b> for the period of construction during which the delay occurred</p>   |

### Failure to provide particulars within the period stated

|          |  |
|----------|--|
| Option A | <p>Where the allocation of <b>preliminaries</b> amounts for Option A is not provided, the following allocation of <b>preliminaries</b> amounts shall apply:</p> <p>Fixed - Ten per cent (10%)<br/>Value-related - Fifteen per cent (15%)<br/>Time-related - Seventy-five per cent (75%)</p> <p>Where the apportionment of the <b>preliminaries</b> per <b>section</b> is not provided, the categorised amounts shall be prorated to the cost of each <b>section</b> within the <b>contract sum</b> as determined by the <b>principal agent</b></p> |
| Option B | Where the detailed breakdown of <b>preliminaries</b> amounts for Option B is not provided, Option A shall apply  |

### Lump sum contract

Where the amount of **preliminaries** is not provided it shall be taken as 7.5% (seven and a half per cent) of the **contract sum**, excluding contingency sum(s) and any provision for cost fluctuations

## **C1.2.1 Special Conditions of Contract**

### **INTRODUCTION**

**WHEREAS** the Independent Development Trust (“IDT”) made an Offer of Appointment, and the **Contractor** has accepted such appointment subject to the conditions stipulated in the aforesaid Offer of Appointment Letter, which conditions include signing of the JBCC Principal Building Agreement, Edition 6.2 @ May 2018 (hereinafter referred to as “**Main Agreement**”) and the **Contract Data**.

**AND WHEREAS**, this Special Conditions of Contract shall form part of the **Main Agreement** between the **employer** and the **contractor**.

### **a) ADDITIONS TO THE MAIN AGREEMENT AND THE CONTRACT DATA**

#### **1.1 JOINT VENTURE AGREEMENT**

- 1.1.1** Should the Joint Venture (JV) Agreement be dissolved or any of the JV partner pullout of the JV Agreement for any reasons whatsoever, the **employer** hereby reserve its right to terminate the contract with immediate effect.
- 1.1.2** Should one JV partner pull out of the JV Agreement and the replacement JV partner does not meet the BBBEE threshold stipulated in clause 5.4 of the Special Conditions of the Principal Contract, the IDT shall be entitled to cancel the contract with immediate effect.
- 1.1.3** Should the BBBEE status of the Joint Venture be changed to a lower rate than the bidding rate, based on legislation applicable at the time of tender closing, the IDT shall be entitled to cancel the contract.

### **b) SUBCONTRACTING**

- 1.1** A service provider awarded the contract may not sub-contract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher BBBEE status level than the person (service provider) concerned, unless the contract is subcontracted to an exempted micro enterprise that has the capability and ability to execute the sub-contract.
- 1.2** Service provider awarded the project shall subcontract not less than 15% of the contract value to Black-owned local firms with preferably women, youth and people with disability

### **c) LOCAL ENTERPRISE**

Service provider awarded the project shall purchase at least 5% of the materials locally where available.

#### **d) TRAINING**

Service provider awarded the project may train local labour on life skills, on the job and accredited certification in e.g. plumbing etc.

#### **e) INSURANCES**

The **contractor** shall be responsible for effecting and maintaining the contract **works** insurances for the full duration of the contract period. The insured amount for the full scope of **works** shall be 100% of the contract amount. The insured amount shall include for alterations and renovations to existing buildings and shall not reduce in any way despite sectional; completion being taken.

#### **f) SITE AND ACCESS AND WORKING HOURS**

Clauses 16.0, 16.1 and 16.6 amended to read as follows:

“the site of the **works** is regarded as a National Key Point within which the **contractor** shall have restricted access to the site on being given possession to fulfill his obligations. The **contractor** shall be briefed on the restrictions of movement, servitudes, access control, buildings in use, security requirements and security clearances, working hours due to the site being occupied and under the **employer’s** control at all times. The **contractor** shall not extend his operations into any restricted or undefined areas.

The **contractor** shall ensure that all personnel and **subcontractors** engaged on the contract and those visiting the site have the necessary security clearances prior to such persons being brought on to site. Any persons found to be non-compliant shall not be allowed entry to the site. All costs associated with the verification of personnel to meet this requirement shall be borne by the **Contractor**.

The **employer** shall have unrestricted and continuous access to the **works** due to the statutory classification of the site and its operations. This arrangement shall be coordinated and agreed upon by all parties prior to the handover of the **site** to the **contractor**. A steering committee comprising representatives of the **employer**, the **principal agent**, the **contractor** and any other nominated or required party shall be set up to ensure that the contractor’s operations are unhindered.

Work shall be carried out during normal working hours. Any extended times or approval or overtime work shall be considered and approved by the steering committee.

The **contractor** shall comply with the employer’s rules for the control of delivery of materials and goods into the **site** and for the removal of such items from the **site**.”

#### **g) PAYMENT OF PRELIMINARY & GENERAL COSTS**

In the event that the **contractor**, due to causes of his own making, fails to achieve the targets set out in his construction programme and his performance is not in accordance with the contract, payment of the Time related Preliminaries and General costs will be paid in proportion to the value of the monthly progress payment and not in accordance with the projected cash flow for this item. The **principal agent** shall review the status quo and revert to paying the **contractor** in



accordance with the contract once the **contractor** has demonstrated improvement of their performance and the **principal agent** is satisfied that the **contractor** is performing diligently.

Similarly the full amount of the Fixed portion of the Preliminaries and General costs will be paid only once the successful **contractor** has fully complied with deliverables under this section.

#### **h) FINAL PAYMENT**

The **employer** shall pay to the **contractor** the amount certified in **final payment certificate** within thirty (30) **calendar days** of the date of issue of the **payment certificate** or the contractor's tax invoice whichever is the later date.

#### **i) AMBIGUITY OR DISCREPANCY**

If any ambiguity or discrepancy in any of the documents forming part of the contract is found, then the **Contract Data** and or amendments herein shall prevail in cases of conflict between any of the documents.

#### **SIGNATURE OF THE PARTIES**

Signed at .....on this the ..... day of .....**2023**

#### **AS WITNESSES:**

1. \_\_\_\_\_  
\_\_\_\_\_

For and on behalf of the **Employer:**

.....  
in his/her capacity as Regional  
General Manager

2. \_\_\_\_\_  
\_\_\_\_\_

For and on behalf of the **Employer:**

.....  
in his/her capacity as the Programme  
Manager.

Signed at Pretoria on this the ..... day of .....**2023**

#### **AS WITNESSES:**

1. \_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_  
For and on behalf of the **Service  
provider:**

.....  
in his/her capacity as Director, who  
hereby confirm that he/she is duly  
authorised hereto.

## **C1.3 FORM OF GUARANTEE**

### C1.3 FORM OF GUARANTEE

#### BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE.

Contract No.: .....

WHEREAS **INDEPENDENT DEVELOPMENT TRUST** (hereinafter referred to as "the **Employer**")

entered into, a Contract with \_\_\_\_\_

(hereinafter called "the **Contractor**") on the \_\_\_\_\_ day of \_\_\_\_\_

20\_\_\_\_ for the construction

of \_\_\_\_\_ at

AND WHEREAS it is provided by such Contract that the **Contractor** shall provide the **Employer** with security by way of a guarantee for the due and faithful fulfilment of such Contract by the **Contractor**.

AND WHEREAS

has/have at the request of the **Contractor**, agreed to give such guarantee.

NOW THEREFORE WE,

do hereby guarantee and bind ourselves jointly and severally as Guarantor and Co-principal Debtors to the **Employer** under renunciation of the benefits of division and excussion for the due and faithful performance by the **Contractor** of all the terms and conditions of the said Contract, subject to the following conditions:

1. The **Employer** shall, without reference and/or notice to us, have complete liberty of action to act in any manner authorized and/or contemplated by the terms of the said Contract, and/or to agree to any modifications, variations, alterations, directions or extensions of the Completion Date of the **Works** under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by reason of any steps which the **Employer** may take under such Contract, or of any modification, variation, alterations of the Completion Date which the **Employer** may make, give, concede or agree to under the said Contract.
2. This guarantee shall be limited to the payment of a sum of money.
3. The **Employer** shall be entitled, without reference to us, to release any guarantee held by it, and to give time to or compound or make any other arrangement with the **Contractor**.
4. This guarantee shall remain in full force and effect until the issue of the **Certificate of Completion** in terms of the Contract, unless we are advised in writing by the **Employer** before the issue of the said

Certificate of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated.

5. Our total liability hereunder shall not exceed the sum of (not exceeding 10% of the Contract Sum) in

\_\_\_\_\_ (R\_\_\_\_\_)

The Guarantor reserves the right to withdraw from this guarantee by depositing the Guaranteed Sum with the beneficiary, whereupon the Guarantor's liability hereunder shall cease.

We hereby choose our address for the serving of all notices for all purposes arising here from as

\_\_\_\_\_

IN WITNESS WHEREOF this guarantee has been executed by us at

\_\_\_\_\_

on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_

As witnesses:

1. \_\_\_\_\_ Signature \_\_\_\_\_

2. \_\_\_\_\_ Signature \_\_\_\_\_

Duly authorized to sign on behalf of

\_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

## **C1.5: AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT No 85 OF 1993**

**C.1.5 AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND  
SAFETY ACT No 85 OF 1993**

THIS **AGREEMENT** is made between Independent Development trust represented by the Supply Chain Management.

(Hereinafter called the **EMPLOYER**) of the one part, herein represented by:

.....  
in his capacity as: .....  
;

AND: .....

(hereinafter called the **CONTRACTOR**) of the other part, herein represented by .....

.....  
in his capacity as: .....

duly authorised to sign on behalf of the **Contractor**.

**WHEREAS** the **CONTRACTOR** is the Mandatary of the **EMPLOYER** in consequence of an **Agreement** between the **CONTRACTOR** and the **EMPLOYER** in respect of:

**TENDER: APPOINTMENT**

**BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE. BID NO. DOT01NWER015**

AND WHEREAS the **EMPLOYER** and the **CONTRACTOR** have agreed to enter into an **Agreement** in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act No 85 of 1993, as amended by OHS Act No 181/1993 (hereinafter referred to as the **ACT**).

**NOW THEREFORE** the parties agree as follows:

1. The **CONTRACTOR** undertakes to acquaint the appropriate officials and employees of the **CONTRACTOR** with all relevant provisions of the **ACT** and the regulations promulgated in terms thereof.
2. The **CONTRACTOR** undertakes to fully comply with all relevant duties, obligations and prohibitions imposed in terms of the **ACT** and Regulations: Provided that should the **EMPLOYER** have prescribed certain arrangements and procedures that same shall be observed and adhered to by the **CONTRACTOR**, his officials and employees. The **CONTRACTOR** shall bear the onus of acquainting himself/herself/itself with such arrangements and procedures.
3. The **CONTRACTOR** hereby accepts sole liability for such due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures, if any, imposed by the **ACT** and Regulations, and the **CONTRACTOR** expressly absolves the **EMPLOYER** and the **Employer's CONSULTING ENGINEERS** from being obliged to comply with any of the aforesaid duties, obligations, prohibitions, arrangements and procedures in respect of the work included in the contract.
4. The **CONTRACTOR** agrees that any duly authorised officials of the **EMPLOYER** shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the **CONTRACTOR** has complied with his undertakings as more fully set out in paragraphs 1 and 2

above, which steps may include, but shall not be limited to, the right to inspect any appropriate site or premises occupied by the **CONTRACTOR**, or to take such steps the **EMPLOYER** may deem necessary to remedy the default of the **CONTRACTOR** at the cost of the **CONTRACTOR**.

5. The **CONTRACTOR** shall be obliged to report forthwith to the **EMPLOYER** any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the ACT and Regulations, pursuant to work performed in terms of this **Agreement**, and shall, on writtendemand, provide full details in writing of such investigation, complaint or criminal charge.

Thus signed at ..... for and on behalf of the **CONTRACTOR**

on this the ..... day of ..... 20.....

SIGNATURE: .....

NAME AND SURNAME: .....

CAPACITY: .....

WITNESSES: 1. ....

2. ....

Thus signed at ..... for and on behalf of the **EMPLOYER** on this

the ..... day of ..... 20.....

SIGNATURE: .....

NAME AND SURNAME: .....

CAPACITY: .....

WITNESSES: 1. ....

2. ....



## **C1.6 Waiver of Lien**



## Waiver of the Contractor's Lien

for use with the:

Principal Building Agreement

Edition used:

Minor Works Agreement

Edition used:

Small & Simple Works Contract

Edition used:

|            |                      |
|------------|----------------------|
| Contractor | <input type="text"/> |
| Employer   | <input type="text"/> |
| Works      | <input type="text"/> |
| Site       | <input type="text"/> |

### AGREEMENT

The **contractor** waives in favour of the **employer** any lien or right of retention that is or may be held in respect of the **works** to be executed on the **site**

This waiver shall only come into effect on provision by the **employer** of a **security for payment** in fulfilment of obligations in terms of the identified **agreement**

|                         |                      |          |                      |
|-------------------------|----------------------|----------|----------------------|
| This done and signed at | <input type="text"/> | Date     | <input type="text"/> |
| Name of Signatory       | <input type="text"/> | Capacity | <input type="text"/> |

For and on behalf of the **contractor** who by signature  
hereto warrants such authorisation

Signature of Witness

|                |                      |           |                      |
|----------------|----------------------|-----------|----------------------|
| Contractor     | <input type="text"/> |           |                      |
| Street Address | <input type="text"/> | Code      | <input type="text"/> |
| Postal Address | <input type="text"/> | Code      | <input type="text"/> |
| E-mail         | <input type="text"/> | Mobile    | <input type="text"/> |
| Fax            | <input type="text"/> | Telephone | <input type="text"/> |

## C2: PRICING DATA

## **C2.1 PRICING INSTRUCTIONS**

## **C2: PRICING DATA**

### **C2.1 Pricing Instructions**

- 1 The Bills of Quantities have been drawn up in accordance with the Standard System of Measuring Building Work (as amended) published and issued by the Association of South African Quantity Surveyors (Sixth Edition (Revised)), 1999. Where applicable the:
  - a) Civil engineering work has been drawn up in accordance with the provisions of the latest edition of SABS 1200 Standardized Specifications for Civil Engineering **Works**.
  - b) Mechanical work has been drawn up in accordance with the provisions of the Model Bills of Quantities for Refrigeration, Air-Conditioning and Ventilation Installations, published by the South African Association of Quantity Surveyors, July 1990).
  - c) electrical work has been drawn up in accordance with the provisions of the Model Bills of Quantities for Electrical Work, published by the South African Association of Quantity Surveyors, (July 2005).
- 2 The **Agreement** is based on the JBCC Series 2000 Principal Building Agreement, prepared by the Joint Building Contracts Committee, Edition 6.2, of May 2018. The additions, deletions and alterations to the JBCC Principal Building Agreement as well as the contract specific variables areas stated in the Contract Data. Only the headings and clause numbers for which allowance must be made in the Bills of Quantities are recited.
- 3 Preliminary and general requirements are based on the various parts of the JBCC Series 2000 Preliminaries as prepared by the Joint Building Contracts Committee, Edition 6.2 of May 2018. The additions, deletions and alterations to the various parts of the JBCC Series 2000 Preliminaries as well as the contract specific variables are as stated in the Specification Data in the Scope of Work. Only the headings and clause numbers for which allowance must be made in the Bills of Quantities are recited.
- 4 It will be assumed that prices included in the Bills of Quantities are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders. (Refer to [www.stanza.org.za](http://www.stanza.org.za) or [www.iso.org](http://www.iso.org) for information on standards).
- 5 The prices and rates in these Bills of Quantities are fully inclusive prices for the work described under the items. Such prices and rates cover all costs and expenses that may be required in and for the execution of the work described in accordance with the provisions of the Scope of Work, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. These prices will be used as a basis for assessment of payment for additional work that may have to be carried out.
- 6 The drawings listed in the Scope of **Works** used for the setting up of these Bills of Quantities are kept by the quantity surveyor and can be viewed at any time during office hours up until the completion of the **works**.
- 7 Reference to any particular trademark, name, patent, design, type, specific origin or producer is purely to establish a standard for requirements. Products or articles of an equivalent standard may be substituted.
- 8 The rates contained in the Bills of Quantities will apply irrespective of the final quantities of the different classes and kinds of work actually executed.

- 9 Rates for work of similar description occurring in different sections of the Bills of Quantities shall be identical.
- 10 An item against which no price is entered will be considered to be covered by the other prices or rates in the Bills of Quantities. A single lump sum will apply should a number of items be grouped together for pricing purposes.
- 11 Where any item is not relevant to this specific contract, such item is marked N/A (signifying “not applicable”)
- 12 The Contract Data and the standard form of contract referenced therein must be studied for the full extent and meaning of each and every clause set out in Section 1 (Preliminary and General) of the Bills of Quantities
- 13 The Bills of Quantities is not intended for the ordering of materials. Any ordering of materials, based on the Bills of Quantities, is at the Contractor’s risk.
- 14 The amount of the Preliminary and General Section to be included in each monthly payment certificate shall be assessed as an amount prorated to the value of the work duly executed in the same ratio as the preliminaries bears to the total of prices excluding any contingency sum, the amount for the Preliminary and General Section and any amount in respect of contract price adjustment provided for in the contract.
- 15 Where the initial contract period is extended, the monthly charge shall be calculated on the basis as set out in 14 but taking into account the revised period for completing the **works**.
- 16 The amount or items of the Preliminary and General Section shall be adjusted to take account of the theoretical financial effect which changes in time or value (or both) have on this section. Such adjustments shall be based on adjustments in the following categories as recorded in the Bills of Quantities:
- a) an amount which is not to be varied, namely Fixed (F)
  - b) an amount which is to be varied in proportion to the contract value, namely Value Related (V); and
  - c) an amount which is to be varied in proportion to the contract period as compared to the initial **construction period** excluding revisions to the **construction period** for which no adjustment to the **contractor** is not entitled to in terms of the contract, namely Time Related (T).
- 17 Where no provision is made in the Bills of Quantities to indicate which of the three categories in 12 apply or where no selection is made, the adjustments shall be based on the following breakdown:
- a) 10 percent is Fixed.
  - b) 15 percent if Value Related
  - c) 75 percent is Time Related.
- 18 The adjustment of the Preliminary and General Section shall apply notwithstanding the actual employment of resources in the execution of the **works**. The contract value used for the adjustment of the Preliminary and General Section shall exclude any contingency sum, the amount for the Preliminary and General Section and any amount in respect of contract price adjustment provided for in the contract. Adjustments in respect of any staged or sectional completion shall be prorated to the value of each section.
- 19 Payment for items which are designated to be constructed under labour-intensively, will not be made unless they are constructed using labor-intensive methods. Any unauthorized use of plant to carry out

work which was to be done labour-intensively will not be condoned and any **works** so constructed will not be certified for payment.

- 20 The tenderer is to acquaint himself to the specific requirements of this tender as contained in additional clauses A1 to A6 to the JBCC Principal Agreement as incorporated in the **Contract Data**. These clauses may be priced under the relevant Preliminaries items in SECTION C: SPECIFIC PRELIMINARIES of the Preliminaries Bill. No claim will be entertained due to the failure of the tenderer to allow for these requirements.
- 21 Provisional sums are provided for some items in the Schedule of Quantities. Work done under these items will be at the written direction of the **employer**. The **employer** reserves the right, during the execution of the **works**, to adjust the stated amounts upwards or downwards according to the work actually done under the item, or the item may be omitted altogether, without affecting the validity of the Contract.
- 22 The Tenderer shall not under any circumstances whatsoever delete or amend any of the sums inserted in the "Amount" column of the Bill of Quantities and in the Summary of the Bill of Quantities unless ordered or authorized in writing by the **employer** before closure of tenders. Any authorized changes made by the Tenderer to provisional items in the schedule, or to the provisional percentages and sums in the Summary of the Bill of Quantities, will be treated as arithmetical errors.
- 23 **Payment to the Contractor to accommodate Part/Full Occupational qualification and Trade qualifications.**  
The **employer** shall include the following statement in the pricing assumptions:  
The **contractor** shall apportion the learners in the different construction activities based on the scope of work.  
The cost of accommodating learners will be determined by using Table 3 in the Standard and this cost will be used to determine the value in Rand and will be added to the provision for training as provided for in the Preliminary and General section in the Bill of Quantities/Pricing schedules/Activity schedule.
- 24 **Payment to the Contractor for supervision and mentoring Part/Full Occupational qualification and Trade qualifications learners**  
The **employer** shall make no provision for an additional payment item for the payment of the supervisor and/or mentors for the provision of training as provided for in the Preliminary and General section in the Bill of Quantities/Pricing schedules/Activity schedule for the training of part/full time occupational learners and/or trade qualification learners.

## **C2.2 BILL OF QUANTITIES**



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| Item No   | Quantity | Rate | Amount |
|---|----------|------|--------|
| <b><u>PREAMBLES FOR TRADES</u></b>  |          |      |        |
| <p>The General Preambles for Trades 2017 published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these <b>bills of quantities</b> and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained</p> <p>Supplementary preambles and/or specifications are incorporated in these <b>bills of quantities</b> to satisfy the requirements of this project. Such supplementary preambles and/or specifications shall take precedence over the provisions of the General Preambles</p> <p>The <b>contractor's</b> prices for all items throughout these <b>bills of quantities</b> shall take account of and include where applicable for all of the obligations, requirements and specifications given in the General Preambles and in any supplementary preambles and/or specifications</p> |          |      |        |
| <b><u>STRUCTURE OF THIS PRELIMINARIES BILL</u></b>  |          |      |        |
| <p>Section A : A recital of the headings of the individual clauses in the aforementioned <b>JBCC</b> Principal Building Agreement</p> <p>Section B : A recital of the headings of the individual clauses in the aforementioned <b>JBCC</b> General Preliminaries</p> <p>Section C : Any special clauses to meet the particular circumstances of the project</p>   |          |      |        |
| <b><u>PRICING OF PRELIMINARIES</u></b>  |          |      |        |
| <p>Should the <b>contractor</b> select Option A in the <b>contract data</b> for the adjustment of <b>preliminaries</b>, the amounts entered against the relevant items in these <b>preliminaries</b> are to be divided into one or more of the three categories provided namely fixed (F), value related (V) and time related (T)</p>   |          |      |        |
| Carried to Collection   |          |      | R      |
| <b>Section No. 1</b><br><b>Bill No. 1</b><br><b>PRELIMINERIES</b><br><b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |



| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | The items in these <b>bills of quantities</b> utilise abbreviated descriptions. It is the intention that the abbreviated descriptions be fully described when read with the applicable measuring system and the relevant preambles and/or specifications. However, should the full intent and meaning of any description not be clear, the <b>contractor</b> shall, before submission of his tender, call for a written directive from the <b>principal agent</b> , failing which it shall be assumed that the <b>contractor</b> has allowed in his pricing for materials and workmanship in terms of international best practice |          |      |        |
|         | <b>Legal status of contractor</b>   |          |      |        |
|         | If the <b>contractor</b> constitutes a joint venture, consortium or other unincorporated grouping of two or more persons then:  |          |      |        |
|         | 1. These persons are deemed to be jointly and severally liable to the <b>employer</b> for the performance of this <b>agreement</b>  |          |      |        |
|         | 2. These persons shall notify the <b>employer</b> of their leader who has assigned authority to bind the <b>contractor</b> and each of these persons  |          |      |        |
|         | 3. The <b>contractor</b> shall not alter its composition or legal status without the prior written consent of the <b>employer</b>   |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
| 2       | Clause 2.0 - <b>Law, regulations and notices</b>  |          |      |        |
| 3       | Clause 3.0 - <b>Offer and acceptance</b>  |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
| 4       | Clause 4.0 - <b>Cession and assignment</b>  |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
| 5       | Clause 5.0 - <b>Documents</b>   |          |      |        |
|         | <b>Value Added Tax</b>  |          |      |        |
|         |   |          |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 1</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>PRELIMINERIES</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | Provision is made in the summary page of these <b>bills of quantities</b> for the inclusion of Value Added Tax (VAT)  |          |      |        |
|         | <b>Electronic issue of drawings and specifications</b>  |          |      |        |
|         | All drawings and specification for this project will be issued electronically and the <b>contractor</b> shall be deemed to have received such drawings on the date that such drawings have been dispatched electronically [5.6]   |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
| 6       | Clause 6.0 - <b>Employer's agents</b>   |          |      |        |
|         | <b>Delegated authority</b>  |          |      |        |
|         | The authority of the <b>principal agent</b> to issue <b>contract instructions</b> [17.1] and perform duties for specific aspects of the <b>works</b> is delegated to <b>agents</b> as follows [6.2]. This does not preclude the <b>principal agent</b> from issuing such <b>contract instructions</b> : |          |      |        |
|         | <b>1. Architect</b>   |          |      |        |
|         | 1.1 Duties [6.2] :  |          |      |        |
|         | The architect is responsible for the architectural design, functional design and quality inspection of the <b>works</b>   |          |      |        |
|         | 1.2 <b>Contract instructions</b> [6.2; 17.1] :  |          |      |        |
|         | 1.2.1 Rectification of discrepancies, errors in description or quantity or omission of items in the <b>agreement</b> other than in the <b>JBCC</b> Principal Building Agreement   |          |      |        |
|         | 1.2.2 Alteration to design, standards or quantity of the <b>works</b> provided that such <b>contract instructions</b> shall not substantially change the scope of the <b>works</b>  |          |      |        |
|         | 1.2.3 The <b>site</b> [13.0]  |          |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 1</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>PRELIMINERIES</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
| 1.2.4                      | Compliance with the <b>law</b> , regulations and by laws [2.1]   |          |      |        |
| 1.2.5                      | Provision and testing of samples of <b>materials and goods</b> and/or of finishes and assemblies of elements of the <b>works</b>   |          |      |        |
| 1.2.6                      | Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]  |          |      |        |
| 1.2.7                      | Removal or re-execution of work  |          |      |        |
| 1.2.8                      | Removal or substitution of any <b>materials and goods</b>  |          |      |        |
| 1.2.9                      | Protection of the <b>works</b>   |          |      |        |
| 1.2.10                     | Making good physical loss and repairing damage to the <b>works</b> [23.2.2]  |          |      |        |
| 1.2.11                     | Rectification of <b>defects</b> [21.2]   |          |      |        |
| 1.2.12                     | A <b>list for practical completion</b> specifying outstanding or defective work to be rectified to achieve <b>practical completion</b> , a <b>list for completion</b> and a <b>list for final completion</b> specifying outstanding or defective work to be rectified to achieve <b>final completion</b> |          |      |        |
| 1.2.13                     | Expenditure of <b>budgetary allowances, prime cost amounts</b> and <b>provisional sums where no Quantity Surveyor is appointed</b>   |          |      |        |
| 1.2.14                     | Appointment of a <b>subcontractor</b> [14.0; 15.0]   |          |      |        |
| 1.2.15                     | Work by <b>direct contractors</b> [16.0]   |          |      |        |
| 1.2.16                     | On suspension or termination, protection of the <b>works</b> , removal of <b>construction equipment</b> and surplus <b>materials and goods</b> [29.0]  |          |      |        |
| Carried to Collection      |  |          | R    |        |
| Section No. 1              |  |          |      |        |
| Bill No. 1                 |  |          |      |        |
| PRELIMINERIES              |  |          |      |        |
| REFURBISHMENT AND UPGRADES |  |          |      |        |



| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
| 2.      | <b>Quantity Surveyor</b>   |          |      |        |
| 2.1     | Duties [6.2] :   |          |      |        |
|         | The quantity surveyor is responsible for all measurements, valuations, financial assessments and all other quantity surveying and cost monitoring, management and cost control functions of the <b>works</b> |          |      |        |
| 2.2     | <b>Contract instructions</b> [6.2; 17.1] :   |          |      |        |
| 2.2.1   | No contract instructions delegated to the quantity surveyor  |          |      |        |
| 3.      | <b>Civil and Structural Engineer</b>   |          |      |        |
| 3.1     | Duties [6.2] :   |          |      |        |
|         | The civil and structural engineer is responsible for all aspects of civil and structural engineering design and quality inspection of the <b>works</b>   |          |      |        |
| 3.2     | <b>Contract instructions</b> [6.2; 17.1] :   |          |      |        |
| 3.2.1   | Rectification of discrepancies, errors in description or quantity or omission of items in the <b>agreement</b> other than in the <b>JBCC</b> Principal Building Agreement                                    |          |      |        |
| 3.2.2   | Alteration to design, standards or quantity of the <b>works</b> provided that such <b>contract instructions</b> shall not substantially change the scope of the <b>works</b>                                 |          |      |        |
| 3.2.3   | The <b>site</b> [13.0]   |          |      |        |
| 3.2.4   | Compliance with the <b>law</b> , regulations and by laws [2.1]   |          |      |        |
| 3.2.5   | Provision and testing of samples of <b>materials and goods</b> and/or of finishes and assemblies of elements of the <b>works</b>   |          |      |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <b>Section No. 1</b>   |          |      |        |
|         | <b>Bill No. 1</b>  |          |      |        |
|         | <b>PRELIMINERIES</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |

| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
| 3.2.6                      | Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]  |          |      |        |
| 3.2.7                      | Removal or re-execution of work  |          |      |        |
| 3.2.8                      | Removal or substitution of any <b>materials and goods</b>  |          |      |        |
| 3.2.9                      | Protection of the <b>works</b>   |          |      |        |
| 3.2.10                     | Making good physical loss and repairing damage to the <b>works</b> [23.2.2]  |          |      |        |
| 3.2.11                     | Rectification of <b>defects</b> [21.2]   |          |      |        |
| 3.2.12                     | A <b>list for practical completion</b> specifying outstanding or defective work to be rectified to achieve <b>practical completion</b> , a <b>list for completion</b> and a <b>list for final completion</b> specifying outstanding or defective work to be rectified to achieve <b>final completion</b> |          |      |        |
| 3.2.13                     | Expenditure of <b>budgetary allowances, prime cost amounts</b> and <b>provisional sums where no Quantity Surveyor is appointed</b>   |          |      |        |
| 4.                         | <b>Mechanical Engineer</b>   |          |      |        |
| 4.1                        | Duties [6.2] :   |          |      |        |
|                            | The mechanical engineer is responsible for all aspects of mechanical engineering design and quality inspection of the <b>works</b>   |          |      |        |
| 4.2                        | <b>Contract instructions</b> [6.2; 17.1] :   |          |      |        |
| 4.2.1                      | Rectification of discrepancies, errors in description or quantity or omission of items in the <b>agreement</b> other than in the <b>JBCC</b> Principal Building Agreement  |          |      |        |
| 4.2.2                      | Alteration to design, standards or quantity of the <b>works</b> provided that such <b>contract instructions</b> shall not substantially change the scope of the <b>works</b>   |          |      |        |
| Carried to Collection      |  |          |      | R      |
| Section No. 1              |  |          |      |        |
| Bill No. 1                 |  |          |      |        |
| PRELIMINERIES              |  |          |      |        |
| REFURBISHMENT AND UPGRADES |  |          |      |        |

| Item No  |  | Quantity | Rate | Amount |
|--|--|----------|------|--------|
| 4.2.3  | Compliance with the <b>law</b> , regulations and by laws [2.1]   |          |      |        |
| 4.2.4  | Provision and testing of samples of <b>materials and goods</b> and/or of finishes and assemblies of elements of the <b>works</b>   |          |      |        |
| 4.2.5  | Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]  |          |      |        |
| 4.2.6  | Removal or re-execution of work  |          |      |        |
| 4.2.7  | Removal or substitution of any <b>materials and goods</b>  |          |      |        |
| 4.2.8  | Protection of the <b>works</b>   |          |      |        |
| 4.2.9  | Making good physical loss and repairing damage to the <b>works</b> [23.2.2]  |          |      |        |
| 4.2.10   | Rectification of <b>defects</b> [21.2]   |          |      |        |
| 4.2.11   | A <b>list for practical completion</b> specifying outstanding or defective work to be rectified to achieve <b>practical completion</b> , a <b>list for completion</b> and a <b>list for final completion</b> specifying outstanding or defective work to be rectified to achieve <b>final completion</b> |          |      |        |
| 4.2.12   | Expenditure of <b>budgetary allowances, prime cost amounts</b> and <b>provisional sums where no Quantity Surveyor is appointed</b>   |          |      |        |
| <b>5. Electrical Engineer</b>  |  |          |      |        |
| 5.1 Duties [6.2] :   |  |          |      |        |
| The electrical engineer is responsible for all aspects of electrical engineering design and quality inspection of the <b>works</b> |  |          |      |        |
| 5.2 <b>Contract instructions</b> [6.2; 17.1] :   |  |          |      |        |
| Carried to Collection  |  |          |      | R      |
| Section No. 1  |  |          |      |        |
| Bill No. 1   |  |          |      |        |
| PRELIMINERIES  |  |          |      |        |
| REFURBISHMENT AND UPGRADES   |  |          |      |        |

| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
| 5.2.1                      | Rectification of discrepancies, errors in description or quantity or omission of items in the <b>agreement</b> other than in the <b>JBCC</b> Principal Building Agreement  |          |      |        |
| 5.2.2                      | Alteration to design, standards or quantity of the <b>works</b> provided that such <b>contract instructions</b> shall not substantially change the scope of the <b>works</b>   |          |      |        |
| 5.2.3                      | Compliance with the <b>law</b> , regulations and by laws [2.1]   |          |      |        |
| 5.2.4                      | Provision and testing of samples of <b>materials and goods</b> and/or of finishes and assemblies of elements of the <b>works</b>   |          |      |        |
| 5.2.5                      | Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]  |          |      |        |
| 5.2.6                      | Removal or re-execution of work  |          |      |        |
| 5.2.7                      | Removal or substitution of any <b>materials and goods</b>  |          |      |        |
| 5.2.8                      | Protection of the <b>works</b>   |          |      |        |
| 5.2.9                      | Making good physical loss and repairing damage to the <b>works</b> [23.2.2]  |          |      |        |
| 5.2.10                     | Rectification of <b>defects</b> [21.2]   |          |      |        |
| 5.2.11                     | A <b>list for practical completion</b> specifying outstanding or defective work to be rectified to achieve <b>practical completion</b> , a <b>list for completion</b> and a <b>list for final completion</b> specifying outstanding or defective work to be rectified to achieve <b>final completion</b> |          |      |        |
| 5.2.12                     | Expenditure of <b>budgetary allowances</b> , <b>prime cost amounts</b> and <b>provisional sums</b> where <b>no Quantity Surveyor</b> is appointed  |          |      |        |
| 6. Wet Services Engineer   |  |          |      |        |
| Carried to Collection      |  |          | R    |        |
| Section No. 1              |  |          |      |        |
| Bill No. 1                 |  |          |      |        |
| PRELIMINERIES              |  |          |      |        |
| REFURBISHMENT AND UPGRADES |  |          |      |        |

| Item No                                 |  | Quantity | Rate | Amount |
|---|--|----------|------|--------|
| 6.1 Duties [6.2] :                      | The wet services engineer is responsible for all aspects of wet services engineering design and quality inspection of the <b>works</b>                                       |          |      |        |
| 6.2 Contract instructions [6.2; 17.1] : |  |          |      |        |
| 6.2.1                                   | Rectification of discrepancies, errors in description or quantity or omission of items in the <b>agreement</b> other than in the <b>JBCC</b> Principal Building Agreement    |          |      |        |
| 6.2.2                                   | Alteration to design, standards or quantity of the <b>works</b> provided that such <b>contract instructions</b> shall not substantially change the scope of the <b>works</b> |          |      |        |
| 6.2.3                                   | Compliance with the <b>law</b> , regulations and by laws [2.1]   |          |      |        |
| 6.2.4                                   | Provision and testing of samples of <b>materials and goods</b> and/or of finishes and assemblies of elements of the <b>works</b>   |          |      |        |
| 6.2.5                                   | Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]  |          |      |        |
| 6.2.6                                   | Removal or re-execution of work  |          |      |        |
| 6.2.7                                   | Removal or substitution of any <b>materials and goods</b>  |          |      |        |
| 6.2.8                                   | Protection of the <b>works</b>   |          |      |        |
| 6.2.9                                   | Making good physical loss and repairing damage to the <b>works</b> [23.2.2]  |          |      |        |
| 6.2.10                                  | Rectification of <b>defects</b> [21.2]   |          |      |        |
|   |  |          | R    |        |
| <b>Carried to Collection</b>            |  |          |      |        |
| <b>Section No. 1</b>                    |  |          |      |        |
| <b>Bill No. 1</b>                       |  |          |      |        |
| <b>PRELIMINERIES</b>                    |  |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>       |  |          |      |        |

| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
| 6.2.11                     | A <b>list for practical completion</b> specifying outstanding or defective work to be rectified to achieve <b>practical completion</b> , a <b>list for completion</b> and a <b>list for final completion</b> specifying outstanding or defective work to be rectified to achieve <b>final completion</b> |          |      |        |
| 6.2.12                     | Expenditure of <b>budgetary allowances, prime cost amounts</b> and <b>provisional sums where no Quantity Surveyor is appointed</b>   |          |      |        |
| 7.                         | <b>Fire Consultant</b>   |          |      |        |
| 7.1                        | Duties [6.2] :   |          |      |        |
|                            | The fire consultant is responsible for all aspects of rational fire design and quality inspection of the <b>works</b>  |          |      |        |
| 7.2                        | <b>Contract instructions</b> [6.2; 17.1] :   |          |      |        |
| 7.2.1                      | Rectification of discrepancies, errors in description or quantity or omission of items in the <b>agreement</b> other than in the <b>JBCC</b> Principal Building Agreement  |          |      |        |
| 7.2.2                      | Alteration to design, standards or quantity of the <b>works</b> provided that such <b>contract instructions</b> shall not substantially change the scope of the <b>works</b>   |          |      |        |
| 7.2.3                      | Compliance with the <b>law</b> , regulations and by laws [2.1]   |          |      |        |
| 7.2.4                      | Provision and testing of samples of <b>materials and goods</b> and/or of finishes and assemblies of elements of the <b>works</b>   |          |      |        |
| 7.2.5                      | Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]  |          |      |        |
| 7.2.6                      | Removal or re-execution of work  |          |      |        |
| 7.2.7                      | Removal or substitution of any <b>materials and goods</b>  |          |      |        |
| Carried to Collection      |  |          |      | R      |
| Section No. 1              |  |          |      |        |
| Bill No. 1                 |  |          |      |        |
| PRELIMINERIES              |  |          |      |        |
| REFURBISHMENT AND UPGRADES |  |          |      |        |

| Item No                                |  | Quantity | Rate | Amount |
|--|--|----------|------|--------|
| 7.2.8                                  | Protection of the <b>works</b>   |          |      |        |
| 7.2.9                                  | Making good physical loss and repairing damage to the <b>works</b> [23.2.2]  |          |      |        |
| 7.2.10                                 | Rectification of <b>defects</b> [21.2]   |          |      |        |
| 7.2.11                                 | A <b>list for practical completion</b> specifying outstanding or defective work to be rectified to achieve <b>practical completion</b> , a <b>list for completion</b> and a <b>list for final completion</b> specifying outstanding or defective work to be rectified to achieve <b>final completion</b>                         |          |      |        |
| 7.2.12                                 | Expenditure of <b>budgetary allowances</b> , <b>prime cost amounts</b> and <b>provisional sums where no Quantity Surveyor is appointed</b>   |          |      |        |
| <b>8. Health and Safety Consultant</b> |  |          |      |        |
| 8.1                                    | Duties [6.2] :   |          |      |        |
|  | The health and safety consultant is responsible for all aspects of health and safety of the <b>works</b> . Without derogating from the generality thereof, the health and safety consultant will perform the following specific functions and duties in respect of the health and safety aspects of the <b>works</b> . He shall: |          |      |        |
| 8.1.1                                  | Act as the <b>employer's agent</b> in terms of the Construction Regulations 2014 issued in terms of the Occupational Health and Safety Act, 1993 as amended  |          |      |        |
| 8.1.2                                  | Prepare and update the health and safety specification for the <b>works</b>  |          |      |        |
| 8.1.3                                  | Agree with the <b>contractor</b> the health and safety plan for the <b>works</b>   |          |      |        |
| 8.1.4                                  | Carry out regular audits to ensure adherence to the safety plan and compliance with the act and regulations  |          |      |        |
| Carried to Collection                  |  |          | R    |        |
| Section No. 1                          |  |          |      |        |
| Bill No. 1                             |  |          |      |        |
| PRELIMINERIES                          |  |          |      |        |
| REFURBISHMENT AND UPGRADES             |  |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
| 8.1.5   | Stop the execution of the <b>works</b> where the agreed specification or plan is not adhered to   |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
| 7       | Clause 7.0 - <b>Design responsibility</b>   |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
|         | <b><u>Insurances and securities (A8-A11)</u></b>  |          |      |        |
| 8       | Clause 8.0 - <b>Works risk</b>  |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
| 9       | Clause 9.0 - <b>Indemnities</b>   |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
| 10      | Clause 10.0 - <b>Insurances</b>   |          |      |        |
|         | F:..... V:..... T:.....   | Item     |      |        |
| 11      | Clause 11.0 - <b>Securities</b>   |          |      |        |
|         | <b>Guarantee for payment</b>  |          |      |        |
| 12      | The <b>employer</b> shall provide to the <b>contractor</b> a <b>guarantee for payment</b> in the amount of .....Rand (R.....) [11.5.1]. The <b>contractor</b> shall consequently waive his lien or right of continuing possession of the <b>works</b> [11.10] | N/A      |      |        |
|         | <b>Extension of waiver of lien</b>  |          |      |        |
|         | The <b>contractor</b> shall ensure that a waiver of lien is included in all subcontracts and that the <b>works</b> executed on the <b>site</b> are kept free of all liens and other encumbrances at all times [11.10]   |          |      |        |
| 13      | F:..... V:..... T:.....   | N/A      |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 1</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>PRELIMINERIES</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |



| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <b>Execution (A12 - A17)</b>   |          |      |        |
| 14      | <p>Clause 12.0 - <b>Obligations of the parties</b></p> <p><b>Office accommodation</b></p> <p>The <b>contractor</b> shall provide, maintain and remove on <b>practical completion</b> air conditioned office accommodation with suitable tables and chairs for meetings to be held on the <b>site</b>. Such offices shall be kept clean and fit for use at all times [12.2.18]</p> <ul style="list-style-type: none"> <li>· Minimum 12 people office</li> <li>· Engineers office</li> <li>· Health &amp; Safety Consultant office</li> <li>· Site Agent, etc.</li> </ul> <p><b>Notice board</b></p> <p>The <b>contractor</b> shall erect in a position approved by the <b>principal agent</b>, maintain and remove on <b>practical completion</b> a notice board recommended by the South African Institute of Architects or Consulting Engineers of South Africa and as approved by the <b>principal agent</b> listing the names and logos of the <b>employer</b>, the <b>contractor</b> and the professional consultants. No subcontractor or supplier notice boards may be erected unless permission is granted by the <b>principal agent</b> for such notice boards to be erected [12.2.18]</p> <p><b>Statutory and other notices</b></p> <p>The <b>contractor</b> shall submit and/or comply with all statutory and other notices that may be required by any local or other authority in order not to cause any delay to the commencement of the <b>works</b> by the <b>contractor</b>. The <b>contractor</b> shall pay all deposits or fees in this regard</p> <p>It is, however, specifically recorded that the <b>employer</b> shall be responsible for the timeous approval of building plans by any local or other authorities and the payment of any fees or charges related thereto</p> <p>F:..... V:..... T:.....</p> |          |      |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <p><b>Section No. 1</b></p> <p><b>Bill No. 1</b></p> <p><b>PRELIMINERIES</b></p> <p><b>REFURBISHMENT AND UPGRADES</b></p>  |          |      |        |

| Item No   |  | Quantity | Rate | Amount |
|---|--|----------|------|--------|
| 15  | <p>Clause 13.0 - <b>Setting out</b></p> <p>F:..... V:..... T:.....</p>   | Item     |      |        |
| 16  | <p>Clause 14.0 - <b>Nominated subcontractors</b></p> <p>F:..... V:..... T:.....</p>  | Item     |      |        |
| 17  | <p>Clause 15.0 - <b>Selected subcontractors</b></p> <p>F:..... V:..... T:.....</p>   | Item     |      |        |
| 18  | <p>Clause 16.0 - <b>Direct contractors</b></p> <p><b>Attendance on direct contractors</b></p> <p>In respect of <b>direct contractors</b> the <b>contractor</b> shall:</p> <ol style="list-style-type: none"> <li>1. Designate an area for the <b>direct contractor</b> to establish a temporary office and workshop and storage of equipment and materials</li> <li>2. Allow the use of personnel welfare facilities, where provided</li> <li>3. Provide water, lighting and single phase electric power to a position within 50m of the place where the direct contract work is to be carried out, other than fuel or power for commissioning of any installation</li> <li>4. Permit the <b>direct contractor</b> to use erected scaffolding, hoisting facilities, etc provided by the <b>contractor</b>, in common with others having the like right, while it remains erected on the <b>site</b> [16.1]</li> </ol> <p>F:..... V:..... T:.....</p> | Item     |      |        |
| 19  | <p>Clause 17.0 - <b>Contract instructions</b></p> <p><b>Site instructions</b></p> <p>Instructions issued on <b>site</b> are to be recorded in a site instruction book which is to be supplied and maintained on <b>site</b> by the <b>contractor</b></p>   |          |      |        |
| Carried to Collection   |  |          | R    |        |
| <p><b>Section No. 1</b><br/> <b>Bill No. 1</b><br/> <b>PRELIMINERIES</b><br/> <b>REFURBISHMENT AND UPGRADES</b></p> |  |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | F:..... V:..... T:.....<br><b>Completion (A18 - A24)</b>  | Item     |      |        |
| 20      | Clause 18.0 - Interim completion  | N/A      |      |        |
| 21      | Clause 19.0 - Practical completion<br>F:..... V:..... T:.....   | Item     |      |        |
| 22      | Clause 20.0 - Completion in sections<br>F:..... V:..... T:.....   | Item     |      |        |
| 23      | Clause 21.0 - Defects liability period and final completion<br>F:..... V:..... T:.....  | Item     |      |        |
| 24      | Clause 22.0 - Latent defects liability period<br>F:..... V:..... T:.....  | Item     |      |        |
| 25      | Clause 23.0 - Revision of the date for practical completion<br><b>Substitution of materials and goods</b><br>The removal or substitution of any <b>materials and goods</b> which do not conform to the specification or the <b>contract drawings</b> shall not constitute grounds for the extension of the <b>construction period</b> nor for the adjustment of the <b>contract value</b> [17.1.8; 23.1 & 2]<br>F:..... V:..... T:..... | Item     |      |        |
| 26      | Clause 24.0 - Penalty for late or non-completion<br>F:..... V:..... T:.....   | Item     |      |        |
|         | <b>Payment (A25 - A27)</b>  |          |      |        |
| 27      | Clause 25.0 - Payment   |          |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 1</b><br><b>Bill No. 1</b><br><b>PRELIMINERIES</b><br><b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <p><b>Prices submitted</b></p> <p>Where prices are submitted by the <b>contractor</b> or <b>subcontractor</b> during the progress of the <b>works</b> in respect of <b>contract instructions</b> or in regard to a claim under the terms of this <b>agreement</b> and notwithstanding the fact that such prices may be used in an interim <b>payment certificate</b>, there is to be no presumption of acceptance. Should the <b>principal agent</b> wish to accept any such prices prior to the issue of the <b>certificate of final completion</b>, it shall be in writing</p> <p>F:..... V:.....T:.....</p>   |          |      |        |
| 28      | <p>Clause 26.0 - <b>Adjustment of the contract value and final account</b></p> <p><b>Fluctuations in costs</b></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 <b>contractor</b> [26.9.5]</p> <p><b>Tenant installation/user requirements delayed</b></p> <p>There is a possibility that certain works related to tenant installation/user requirements may have to be delayed and may consequently not be executed prior to <b>practical completion</b></p> <p>Should the <b>contractor</b> be instructed to do so he shall execute this work under the conditions pertaining to this <b>agreement</b> on the basis that a separate amount for <b>preliminaries</b> appurtenant to this work (if applicable) is agreed to between the <b>contractor</b> and the <b>principal agent</b> and on condition that instruction to proceed with such work is given to him within a period of three (3) calendar months after the date of <b>practical completion</b> of the <b>works</b></p> <p>The <b>employer</b> reserves the right to omit such work without compensation to the <b>contractor</b> for loss of profit or any other loss which the <b>contractor</b> may suffer as a result of such omission</p> | Item     |      |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <p><b>Section No. 1</b><br/> <b>Bill No. 1</b><br/> <b>PRELIMINERIES</b><br/> <b>REFURBISHMENT AND UPGRADES</b></p>  |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <p><b>Cost of claims</b></p> <p>All costs incurred by the <b>contractor</b> in the preparation of claims shall be borne by the <b>contractor</b>. This provision shall not preclude an adjudicator or an arbitrator appointed in terms of this <b>agreement</b> [30.6 &amp; 7] from making a determination on costs</p> <p><b>Claims from subcontractors</b></p> <p>The <b>contractor</b> shall review, assess and adjudicate any claims received by him from any <b>subcontractor</b> and thereafter submit same to the <b>principal agent</b> with a recommendation in order to assist the <b>principal agent</b> in adjudicating the claim [26.6]</p> <p>F:..... V:..... T:.....</p> |          |      |        |
| 29      | <p>Clause 27.0 - <b>Recovery of expense and/or loss</b></p> <p>F:..... V:..... T:.....</p> <p><b><u>Suspension and termination (A28 - A29)</u></b></p> <p>Clause 28.0 - <b>Suspension by the contractor</b></p> <p>F:..... V:..... T:.....</p>  | Item     |      |        |
| 30      | <p>Clause 29.0 - <b>Termination</b></p> <p>F:..... V:..... T:.....</p> <p><b><u>Dispute resolution (A30)</u></b></p> <p>Clause 30.0 - <b>Dispute resolution</b></p> <p>F:..... V:..... T:.....</p>  | Item     |      |        |
| 31      |   | Item     |      |        |
| 32      |   | Item     |      |        |
| 33      | <p><b>Agreement</b></p>   |          |      |        |
|         | <p style="text-align: right;"><b>Carried to Collection</b></p> <p><b>Section No. 1</b><br/> <b>Bill No. 1</b><br/> <b>PRELIMINERIES</b><br/> <b>REFURBISHMENT AND UPGRADES</b></p>  |          | R    |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | The required information of the <b>parties</b> and the amount of the <b>contract sum</b> shall be inserted in the <b>agreement</b> for signature of the <b>agreement</b> by the <b>parties</b>  |          |      |        |
|         | F:..... V:.....T:.....  | Item     |      |        |
| 34      | <b>Contract data</b>  |          |      |        |
|         | <b>Tenderer's selections</b>  |          |      |        |
|         | Before submission of his tender the <b>contractor</b> is to complete the tenderer's selections in the <b>contract data</b>  |          |      |        |
|         | F:..... V:.....T:.....  | Item     |      |        |
|         | <b><u>SECTION B: GENERAL PRELIMINARIES</u></b>  |          |      |        |
|         | <b><u>Definitions and interpretation (B1)</u></b>   |          |      |        |
| 35      | Clause 1.1 - <b>Definitions</b>   |          |      |        |
|         | F:..... V:.....T:.....  | Item     |      |        |
| 36      | Clause 1.2 - <b>Interpretation</b>  |          |      |        |
|         | F:..... V:.....T:.....  | Item     |      |        |
|         | <b><u>Documents (B2)</u></b>  |          |      |        |
| 37      | Clause 2.1 - <b>Checking of documents</b>   |          |      |        |
|         | F:..... V:.....T:.....  | Item     |      |        |
| 38      | Clause 2.2 - <b>Provisional bills of quantities</b>   |          |      |        |
|         | <b>Multiple procurement</b>   |          |      |        |
|         | These <b>bills of quantities</b> are in multiple procurement format ie the "wet trades" - earthworks, concrete, formwork and reinforcement, precast concrete, masonry, waterproofing and sub-surface drainage - are provisionally measured and the subsequent trades are <b>budgetary allowances</b> and/or <b>provisional sums</b> |          |      |        |
|         | F:..... V:.....T:.....  | Item     |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 1</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>PRELIMINARIES</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
| 39      | Clause 2.3 - <b>Availability of construction information</b><br>F:..... V:..... T:..... | Item     |      |        |
| 40      | Clause 2.4 - <b>Ordering of materials and goods</b><br>F:..... V:..... T:.....          | Item     |      |        |
|         | <b><u>Previous work and adjoining properties (B3)</u></b>                               |          |      |        |
| 41      | Clause 3.1 - <b>Previous work - dimensional accuracy</b><br>F:..... V:..... T:.....     | Item     |      |        |
| 42      | Clause 3.2 - <b>Previous work - defects</b><br>F:..... V:..... T:.....                  | Item     |      |        |
| 43      | Clause 3.3 - <b>Inspection of adjoining properties</b><br>F:..... V:..... T:.....       | Item     |      |        |
|         | <b><u>The site (B4)</u></b>   |          |      |        |
| 44      | Clause 4.1 - <b>Handover of site in stages</b><br>F:..... V:..... T:.....               | Item     |      |        |
| 45      | Clause 4.2 - <b>Enclosure of the works</b><br>F:..... V:..... T:.....                   | Item     |      |        |
| 46      | Clause 4.3 - <b>Geotechnical and other investigations</b><br>F:..... V:..... T:.....    | Item     |      |        |
| 47      | Clause 4.4 - <b>Encroachments</b><br>F:..... V:..... T:.....                            | Item     |      |        |
| 48      | Clause 4.5 - <b>Existing premises occupied</b><br>F:..... V:..... T:.....               | Item     |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 1</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>PRELIMINERIES</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
| 49      | Clause 4.6 - <b>Services - known</b><br>F:..... V:..... T:.....                            | Item     |      |        |
|         | <b><u>Management of contract (B5)</u></b>  |          |      |        |
| 50      | Clause 5.1 - <b>Management of the works</b><br>F:..... V:..... T:.....                     | Item     |      |        |
| 51      | Clause 5.2 - <b>Progress meetings</b><br>F:..... V:..... T:.....                           | Item     |      |        |
| 52      | Clause 5.3 - <b>Technical meetings</b><br>F:..... V:..... T:.....                          | Item     |      |        |
|         | <b><u>Samples, shop drawings and manufacturer's instructions (B6)</u></b>                  |          |      |        |
| 53      | Clause 6.1 - <b>Samples of materials</b><br>F:..... V:..... T:.....                        | Item     |      |        |
| 54      | Clause 6.2 - <b>Workmanship samples</b><br>F:..... V:..... T:.....                         | Item     |      |        |
| 55      | Clause 6.3 - <b>Shop drawings and As Built drawings</b><br>F:..... V:..... T:.....         | Item     |      |        |
| 56      | Clause 6.4 - <b>Compliance with manufacturer's instructions</b><br>F:..... V:..... T:..... | Item     |      |        |
|         | <b><u>Deposits and fees (B7)</u></b>   |          |      |        |
| 57      | Clause 7.1 - <b>Deposits and fees</b><br>F:..... V:..... T:.....                           | Item     |      |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <b>Section No. 1</b>   |          |      |        |
|         | <b>Bill No. 1</b>  |          |      |        |
|         | <b>PRELIMINERIES</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |



| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b><u>Temporary services (B8)</u></b>   |          |      |        |
| 58      | Clause 8.1 - <b>Water</b><br>F:..... V:..... T:.....  | Item     |      |        |
| 59      | Clause 8.2 - <b>Electricity</b><br>F:..... V:..... T:.....  | Item     |      |        |
| 60      | Clause 8.3 - <b>Ablution and welfare facilities</b><br>F:..... V:..... T:.....  | Item     |      |        |
| 61      | Clause 8.4 - <b>Communication facilities</b><br>F:..... V:..... T:.....   | Item     |      |        |
|         | <b><u>Prime cost amounts (B9)</u></b>   |          |      |        |
| 62      | Clause 9.1 - <b>Responsibility for prime cost amounts</b>   |          |      |        |
|         | <b><u>Attendance on subcontractors (B10)</u></b>  |          |      |        |
| 63      | Clause 10.1 - <b>General attendance</b><br>F:..... V:..... T:.....  | Item     |      |        |
| 64      | Clause 10.2 - <b>Special attendance</b>   |          |      |        |
|         | <b><u>General (B11)</u></b>   |          |      |        |
| 65      | Clause 11.1 - <b>Protection of the works</b><br>F:..... V:..... T:.....   | Item     |      |        |
| 66      | Clause 11.2 - <b>Protection/isolation of existing works and works occupied in sections</b><br>F:..... V:..... T:..... | Item     |      |        |
| 67      | Clause 11.3 - <b>Security of the works</b><br>F:..... V:..... T:.....   | Item     |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 1</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>PRELIMINERIES</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No  |   | Quantity | Rate | Amount |
|--|---|----------|------|--------|
| 68   | <p>Clause 11.4 - <b>Notice before covering work</b></p> <p>F:..... V:..... T:.....</p>  | Item     |      |        |
| 69   | <p>Clause 11.5 - <b>Disturbance</b></p> <p><b>Disturbance</b></p> <p>All work is to be carried out in such a manner as to cause no unacceptable or unreasonable dust, noise, vibrations, nuisance, inconvenience, annoyance and the like to the public, others, other properties and traffic in so far as they exceed the permissible limitations set by government legislation or by the local authority. Any delays, stoppages and the like arising from or in order to comply with the above will not constitute grounds for an adjustment to the <b>construction period</b> or <b>contract value</b> whatsoever</p> <p>F:..... V:..... T:.....</p>  | Item     |      |        |
| 70   | <p>Clause 11.6 - <b>Environmental disturbance</b></p> <p><b>Controlling all forms of pollution</b></p> <p><b>The contractor shall be responsible for and take all precautions in controlling by whatever means necessary all forms of pollution emanating from the site during the construction period due to noise, artificial light, wind-blown sand, dust, deposits of mud, etc</b></p> <p>The <b>contractor</b> is to ensure that all roads which border the <b>site</b> and are used by the <b>contractor</b> during the execution of the <b>works</b> are kept clean and free of any dirt or debris caused by the execution of the <b>works</b></p> <p><b>Environmental management plan</b></p> <p>The <b>employer</b> has prepared an environmental management plan (EMP).The <b>contractor</b> shall price opposite this item for compliance with all the requirements of such EMP</p> <p>F:..... V:..... T:.....</p> | Item     |      |        |
| Carried to Collection  |   |          |      | R      |
| <b>Section No. 1</b><br><b>Bill No. 1</b><br><b>PRELIMINERIES</b><br><b>REFURBISHMENT AND UPGRADES</b> |   |          |      |        |

| Item No  |  | Quantity | Rate | Amount |
|--|--|----------|------|--------|
| 71   | Clause 11.7 - <b>Works cleaning and clearing</b><br>F:..... V:..... T:.....  | Item     |      |        |
| 72   | Clause 11.8 - <b>Vermin</b><br>F:..... V:..... T:.....   | Item     |      |        |
| 73   | Clause 11.9 - <b>Overhand work</b><br>F:..... V:..... T:.....  | Item     |      |        |
| 74   | Clause 11.10 - <b>Tenant installations</b><br>F:..... V:..... T:.....  | Item     |      |        |
| 75   | Clause 11.11 - <b>Advertising</b><br>F:..... V:..... T:.....   | Item     |      |        |
| <b><u>SECTION C: SPECIFIC PRELIMINARIES</u></b>  |  |          |      |        |
| 76   | Preparation of O&M manuals and re-commissioning reports existing equipment. Three sets of both hard copies and electronic copies on disc or USB<br>F:..... V:..... T:..... | Item     |      |        |
| 77   | Balancing, testing, commissioning and handing over of the new equipment<br>F:..... V:..... T:.....   | Item     |      |        |
| 78   | Maintenance of complete installation for 12 months<br>F:..... V:..... T:.....  | Item     |      |        |
| 79   | Detection of services on existing buildings<br>F:..... V:..... T:.....   | Item     |      |        |
| <b>Carried to Collection</b>   |  |          | R    |        |
| <b>Section No. 1</b><br><b>Bill No. 1</b><br><b>PRELIMINARIES</b><br><b>REFURBISHMENT AND UPGRADES</b> |  |          |      |        |

| Item No                    |   | Quantity | Rate | Amount |
|----------------------------|---|----------|------|--------|
| 80                         | <p><b>Warranties for materials and workmanship</b></p> <p>Where warranties for materials and/or workmanship are called for, the <b>contractor</b> shall obtain a written warranty, addressed to the <b>employer</b>, from the entity supplying the materials and/or executing the work and shall deliver same to the <b>principal agent</b> on <b>final completion</b> of the contract</p> <p>The warranty shall state that workmanship, materials and installation are warranted for a specific period from the date of <b>practical completion</b> and that any <b>defects</b> that may arise during the specified period shall be made good at the expense of the entity supplying the materials and/or doing the work, upon written <b>notice</b> to do so</p> <p>The warranty will not be enforced if the work is damaged by <b>defects</b> in the execution of the <b>works</b>, in which case the responsibility for replacement shall rest entirely with the <b>contractor</b></p> <p>F:..... V:..... T:.....</p> |          |      |        |
|                            |   | Item     |      |        |
| 81                         | <p><b>Overtime</b></p> <p>Should overtime be required to be worked for any reason whatsoever, the cost of such overtime is to be borne by the <b>contractor</b> unless the <b>principal agent</b> has specifically authorised, prior to execution thereof, that costs for such overtime are to be borne by the <b>employer</b></p> <p>F:..... V:..... T:.....</p>   |          |      |        |
|                            |   | Item     |      |        |
| 82                         | <p><b>Cooperation of the contractor for cost management</b></p> <p>It is specifically agreed that the <b>contractor</b> accepts the obligation of assisting the <b>principal agent</b> in implementing proper cost management. The <b>contractor</b> will be advised by the <b>principal agent</b> of all cost management procedures which will be implemented to ensure that the <b>contract value</b> does not exceed the budget</p> <p>F:..... V:..... T:.....</p>   |          |      |        |
|                            |   | Item     |      |        |
| Carried to Collection      |   |          | R    |        |
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| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
| 83      | <p><b>Overloading</b></p> <p>The <b>contractor</b> shall take all necessary steps to ensure that no damage occurs due to overloading of any portion of the <b>works</b> or temporary works eg scaffolding, etc. The <b>contractor</b> shall submit details of his proposed loading, storage, plant erection, etc to the <b>principal agent</b> for approval prior to proceeding with such loading, storing or erecting and shall comply with and pay for the <b>principal agent's</b> requirements in connection with the provision of temporary support work, etc. Any damage caused to the <b>works</b> by overloading shall be made good by the <b>contractor</b> at his sole expense</p> <p>F:..... V:..... T:.....</p> |          |      |        |
|         |   | Item     |      |        |
| 84      | <p><b>Propping of floors below</b></p> <p>The <b>contractor</b> is advised that propping of floors below may be required if he wishes to use any areas of completed suspended reinforced concrete slabs for vehicle access, storage of <b>materials and goods</b> and location of plant, scaffolding, etc. The location of these areas and any necessary propping shall be approved by the <b>principal agent</b> and the cost thereof shall be borne by the <b>contractor</b></p> <p>F:..... V:..... T:.....</p>   |          |      |        |
|         |   | Item     |      |        |
| 85      | <p><b>Testing of flat roof waterproofing for water tightness</b></p> <p>Flat roof waterproof areas shall be flooded and kept "ponded" for at least forty eight (48) hours as a test to ensure the water tightness of the waterproofing and before any further construction work is carried out above the waterproofing</p> <p>F:..... V:..... T:.....</p>   |          |      |        |
|         |   | Item     |      |        |
| 86      | <p><b>Health and Safety</b></p>   |          |      |        |
|         |   |          |      |        |
|         |   |          |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | Section No. 1<br>Bill No. 1<br><b>PRELIMINERIES</b><br><b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |



| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
| 88                         | <p><b>Broad based black economic empowerment (BBBEE)</b></p> <p>Tenders submitted will be evaluated taking into account their empowerment rating</p> <p>The <b>employer</b> will be monitoring the broad based black economic empowerment (BBBEE) status of the <b>contractor</b> throughout the execution of the <b>works</b></p> <p>The <b>contractor</b> is to submit to the <b>principal agent</b> on an annual basis a schedule of spend, split into vendors engaged as <b>subcontractors</b> and suppliers indicating their BBBEE rating including proof of the said rating</p> <p>F:..... V:..... T:.....</p> | Item     |      |        |
| 89                         | <p><b>Advertising rights</b></p> <p>The <b>employer</b> may elect to contract with advertising agencies for the erection of advertising hoardings, banners, wraps or the like for the duration of the contract. The <b>contractor</b> shall not prevent such an arrangement and will assist in the facilitation of same. The position and type of advertising structure to be agreed with the <b>principal agent</b> so as not to hinder the <b>contractor</b> in meeting his obligations under this <b>agreement</b></p> <p>F:..... V:..... T:.....</p>   | Item     |      |        |
| 90                         | <p><b>Confidentiality</b></p> <p>The <b>contractor</b> undertakes to maintain in confidence any and all information regarding this project and shall obtain appropriate similar undertakings from all <b>subcontractors</b> and suppliers. Such information shall not be used in any way except in connection with the execution of the <b>works</b></p> <p>No information regarding this project shall be published or disclosed without the prior written consent of the <b>employer</b></p> <p>F:..... V:..... T:.....</p>  | Item     |      |        |
| Carried to Collection      |  |          | R    |        |
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Bill No. 1

PRELIMINERIES

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Section No. 1

Bill No. 1

PRELIMINERIES

REFURBISHMENT AND UPGRADES

| Item No   | Quantity | Rate | Amount |
|---|----------|------|--------|
| <b><u>SECTION NO. 2 BUILDING WORKS</u></b>  |          |      |        |
| <b><u>BILL NO. 1</u></b>  |          |      |        |
| <b><u>ALTERATIONS (PROVISIONAL)</u></b>   |          |      |        |
| <b><u>NOTE:</u></b>   |          |      |        |
| Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.  |          |      |        |
| NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 102 for Haylett Formula purposes.  |          |      |        |
| <b><u>SUPPLEMENTARY PREAMBLES</u></b>   |          |      |        |
| <u>View site</u>  |          |      |        |
| Before submitting his tender the tenderer 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 salvageable from the alterations. 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 alteration 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 tenants in the building and 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 |          |      |        |
| <b>Carried to Collection</b>  |          |      | R      |
| <b>Section No. 2</b>  |          |      |        |
| <b>Bill No. 1</b>   |          |      |        |
| <b>ALTERATIONS (PROVISIONAL)</b>  |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | Doors, fanlights, windows, fittings, frames, linings, etc which are to remain the property of the employer shall be carefully taken out, temporarily stored, transported over a distance of approximately 10km to store and handed over to the employer  |          |      |        |
|         | Doors, fanlights, windows, fittings, frames, linings, etc which are to be re-used shall be thoroughly overhauled before refixing including taking off, easing and rehanging, cramping up, re-wedging as required and making good cramps, dowels, etc, and 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 |          |      |        |
|         | Prices for taking out of doors, windows, etc shall include for removal of all beads, architraves, ironmongery, etc   |          |      |        |
|         | Prices for taking out and removing doors and frames shall include for removing door stops, cabin hooks, etc  |          |      |        |
|         | 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   |          |      |        |
|         | Making good of finishes shall include making good of the brick and concrete surfaces onto which the new finishes are applied, where necessary  |          |      |        |
|         | 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)  |          |      |        |
|         | <b><u>TEMPORARY BARRICADES, SCREENS, ETC</u></b>   |          |      |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <b>Section No. 2<br/>Bill No. 1<br/>ALTERATIONS (PROVISIONAL)<br/>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <u>Temporary barricades, screens, roofs, etc including removal</u>  |          |      |        |
| 1       | Dust screen 2.8m high between concrete floor and ceiling, of suitable timber framing with 375 micron polyethylene sheeting stapled on on one side, including corners, ends, etc   | m        | 30   |        |
| 2       | Drywall barricade 2.8m high of galvanised steel channel section rails and studs covered on one side with 12,7mm gypsum plasterboard and finished with two coats interior quality PVA emulsion paint, including corners, ends, etc | m        | 20   |        |
| 3       | Extra over preceding item for hollow core single door 813 x 2032mm high, including steel frame, two-lever mortice lock, primer and two coats paint  | No       | 1    |        |
|         | <b><u>REMOVAL OF EXISTING WORK</u></b>  |          |      |        |
|         | <u>Breaking up and removing unreinforced concrete</u>   |          |      |        |
| 4       | Steps   | m3       | 1    |        |
| 5       | 150mm Thick surface beds  | m2       | 10   |        |
|         | <u>Breaking up and removing reinforced concrete, including cutting off and removing reinforcement</u>   |          |      |        |
| 6       | Columns   | m3       | 1    |        |
| 7       | 150mm Thick surface beds  | m2       | 10   |        |
| 8       | 255mm Thick slabs   | m2       | 1    |        |
| 9       | 2 x 1m Portion of 255mm thick slab  | No       | 4    |        |
| 10      | 1 x 1m Opening through 255mm thick slab   | No       | 10   |        |
|         | <u>Breaking down and removing brickwork etc</u>   |          |      |        |
| 11      | 115mm brick walls   | m2       | 235  |        |
| 12      | 230mm brick walls   | m2       | 150  |        |
|         | <b>Carried to Collection</b>  |          |      |        |
|         | <b>Section No. 2</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>ALTERATIONS (PROVISIONAL)</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
| 13      | 345mm brick walls  | m2       | 5    |        |
|         | <u>Taking out and removing doors, windows, etc from brickwork to be demolished</u>   |          |      |        |
| 14      | Timber single door and steel frame not exceeding 2,5m²   | No       | 21   |        |
| 15      | Glazed aluminium window exceeding 2,5m² and not exceeding 5m²  | No       | 1    |        |
|         | <u>Taking out and removing doors, windows, etc, including thresholds, sills, etc (building up openings and making good finishes elsewhere)</u>   |          |      |        |
| 16      | Timber single door and steel frame not exceeding 2,5m²   | No       | 38   |        |
| 17      | Timber double door and steel frame exceeding 2,5m² and not exceeding 5m²   | No       | 23   |        |
| 18      | Glazed aluminium window not exceeding 2,5m²  | No       | 2    |        |
| 19      | Glazed aluminium window exceeding 2,5m² and not exceeding 5m²  | No       | 1    |        |
| 20      | Roller shutter door 1.2 x 2m high  | No       | 2    |        |
| 21      | Strongroom door and frame  | No       | 1    |        |
|         | <u>Taking out and removing doors, windows, etc, including thresholds, sills, etc and building up openings in brick walls, including making good cement plaster on both sides (making good paintwork elsewhere)</u> |          |      |        |
| 22      | Timber single door and frame 830 x 2100mm high overall from 230mm brick wall   | No       | 50   |        |
| 23      | Timber double door and frame 1650 x 2100m high overall from 230mm brick wall   | No       | 1    |        |
| 24      | Timber single door and steel frame 830 x 2100mm high overall from 115mm brick wall   | No       | 2    |        |
| 25      | Timber single door and steel frame 830 x 2100mm high overall from 230mm brick wall   | No       | 7    |        |
|         | <b>Carried to Collection</b>   |          |      |        |
|         | <b>Section No. 2</b>   |          |      |        |
|         | <b>Bill No. 1</b>  |          |      |        |
|         | <b>ALTERATIONS (PROVISIONAL)</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |

| Item No                    |   |    | Quantity | Rate | Amount |
|----------------------------|---|----|----------|------|--------|
| 26                         | Timber double door and steel frame 1650 x 2100mm high overall from 230mm brick wall   | No | 1        |      |        |
| 27                         | Aluminium double door and frame exceeding 2,5m <sup>2</sup>   | No | 8        |      |        |
| 28                         | 2000mm Sliding door   | No | 1        |      |        |
| 29                         | Glazed aluminium window 1000 x 2100mm high from 230mm brick wall  | No | 1        |      |        |
| 30                         | Glazed aluminium window 600 x 1200mm high from 230mm brick wall   | No | 2        |      |        |
|                            | <u>Taking out doors, windows, etc, including thresholds, sills, etc, setting aside for re-use and later refixing in similar new position</u>  |    |          |      |        |
| 31                         | Timber single door and frame 830 x 2100mm high overall, including setting up and building in frame in new brickwork, rehanging door on new brass hinges and replacing lock with 3-lever mortice lockset       | No | 1        |      |        |
|                            | <u>Taking down and removing roofs, floors, panelling, ceilings, partitions, etc</u>   |    |          |      |        |
| 32                         | Roof trusses, timber purlins, wall plates, etc  | m2 | 167      |      |        |
| 33                         | Corrugated sheet steel roof covering  | m2 | 90       |      |        |
| 34                         | Concrete roof tile covering   | m2 | 272      |      |        |
| 35                         | Mono-pitched roof 7 x 7.8 x 3m high overall, of timber trusses and purlins, corrugated sheet steel covering, ceilings and cornices, eaves soffit covering, fascias, barge boards, gutters and rainwater pipes | m2 | 55       |      |        |
| 36                         | Fascias and barge boards.   | m  | 546      |      |        |
| 37                         | Carefully take out and remove gutters and down pipes.   | m  | 543      |      |        |
| 38                         | Take down and remove roofing insulation   | m2 | 300      |      |        |
| 39                         | Take out and remove 4 x 4m skylight   | No | 1        |      |        |
| Carried to Collection      |   |    |          |      | R      |
| Section No. 2              |   |    |          |      |        |
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TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
| 40                         | Take out and remove 2 x 1m skylight  | No 1     |      |        |
| 41                         | Take out and remove 5 x 1m skylight  | No 1     |      |        |
| 42                         | Timber bulkheads   | m2 18    |      |        |
| 43                         | Slatted timber panelling, including timber grounds, beads, etc   | m2 120   |      |        |
| 44                         | Slatted timber ceilings  | m2 25    |      |        |
| 45                         | Tongued and grooved timber panelling, including timber grounds, beads, etc   | m2 25    |      |        |
| 46                         | Gypsum plasterboard ceilings, including timber bandering, cornices, etc  | m2 800   |      |        |
| 47                         | Flush plastered gypsum plasterboard suspended ceilings, including suspension grid, hangers, cornices, etc              | m2 520   |      |        |
| 48                         | Bulkheads  | m2 160   |      |        |
| 49                         | Composite (gypsum/metal) decorative plasterboard suspended ceilings, including suspension grid, hangers, cornices, etc | m2 150   |      |        |
| 50                         | Acoustic tile suspended ceilings, including suspension grid, hangers, cornices, etc                                    | m2 400   |      |        |
| 51                         | Drywall partitions 2.8m high, including doors, glazed borrowed lights, etc   | m 30     |      |        |
| 52                         | Glazed timber partition 2.8m high, including doors, glazed borrowed lights, etc  | m 11     |      |        |
| 53                         | Glazed aluminium partition 2.8m high   | m 22     |      |        |
| 54                         | Wall panelling 2.8m high   | m 8      |      |        |
| Carried to Collection      |  |          |      | R      |
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## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |   | Quantity | Rate  | Amount |
|---------|---|----------|-------|--------|
|         | <u>Taking out and removing sundry joinery work, fittings, etc</u>   |          |       |        |
| 55      | Timber cornices   | m        | 18    |        |
| 56      | Timber skirtings  | m        | 95    |        |
| 57      | Notice board  | m2       | 20    |        |
| 58      | Timber Shelving   | m2       | 30    |        |
| 59      | Timber wall cupboard 1500 x 560 x 2400mm high   | No       | 1     |        |
| 60      | Timber wall cupboard 2103 x 560 x 2400mm high   | No       | 38    |        |
| 61      | Timber wall cupboard 3720 x 560 x 2400mm high   | No       | 1     |        |
| 62      | Timber sink cupboard 7400 x 560 x 2400mm high, including sink and disconnecting waste pipe  | No       | 1     |        |
| 63      | Timber counter 2200 x 560 x 730mm high  | No       | 21    |        |
| 64      | Timber counter 3056 x 560 x 730mm high  | No       | 18    |        |
| 65      | Granite vanity slab 900mm girth including all fitting accessories   | m        | 83    |        |
|         | <u>Taking up and removing wood block floor coverings, vinyl floor coverings, carpets, etc and preparing screeds for new floor coverings</u> |          |       |        |
| 66      | Vinyl tile floor covering   | m2       | 20    |        |
| 67      | Vinyl sheet floor covering with welded joints   | m2       | 10    |        |
| 68      | Carpet tile floor covering  | m2       | 1,557 |        |
| 69      | Carpet tile to treads and risers of stairs  | m2       | 51    |        |
|         | <u>Taking out and removing ironmongery</u>  |          |       |        |
| 70      | Mortice lockset from timber door  | No       | 1     |        |
| 71      | Door closer from timber door and frame  | No       | 1     |        |
|         | <b>Carried to Collection</b>  |          |       |        |
|         | <b>Section No. 2</b>  |          |       |        |
|         | <b>Bill No. 1</b>   |          |       |        |
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## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
| 72      | Towel rail not exceeding 600mm long from wall   | No       | 44   |        |
| 73      | Toilet paper holder from wall   | No       | 51   |        |
| 74      | Hat and coat hook from wall   | No       | 68   |        |
|         | <u>Taking out/off and removing sundry metalwork</u>   |          |      |        |
| 75      | Steel pipe handrails from walls, including brackets, and making good plaster finish   | m        | 20   |        |
| 76      | Steel balustrades 200mm high from concrete stairs, including making good granolithic finish   | m        | 180  |        |
| 77      | Telephone booth size 1000 x 1800mm  | No       | 1    |        |
| 78      | Mentis grating clad partitions  | m2       | 20   |        |
| 79      | Steel safe bolted to wall   | No       | 1    |        |
| 80      | Gun safe bolted to wall   | No       | 10   |        |
| 81      | Steel locker size 450 x 1800mm  | No       | 20   |        |
| 82      | Floor grating 300mm wide  | m        | 10   |        |
| 83      | Steel security gate with frame 1 x 2m high bolted to brickwork, including making good face brickwork  | No       | 1    |        |
| 84      | Steel shelving bolted to wall and floor   | m2       | 15   |        |
|         | <u>Hacking up/off and removing granolithic, screeds, plaster, etc from concrete or brickwork and preparing surfaces for new screed, plaster, tile finishes, etc</u> |          |      |        |
| 85      | 30mm Granolithic from floors  | m2       | 55   |        |
| 86      | 25mm Granolithic from treads and risers of stairs   | m2       | 18   |        |
| 87      | Granolithic skirtings 120mm high  | m        | 12   |        |
| 88      | 25mm Screed from floors   | m2       | 60   |        |
|         | <b>Carried to Collection</b>  |          |      |        |
|         | <b>Section No. 2</b>  |          |      |        |
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TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                    |  |    | Quantity | Rate | Amount |
|----------------------------|--|----|----------|------|--------|
| 89                         | 30mm Screed from floors, including vinyl floor covering  | m2 | 60       |      |        |
| 90                         | Wall paper from walls  | m2 | 40       |      |        |
| 91                         | Internal plaster from walls and columns  | m2 | 60       |      |        |
| 92                         | Internal plaster from ceilings and beams   | m2 | 120      |      |        |
| 93                         | External plaster from walls, columns and beams   | m2 | 3,165    |      |        |
|                            | <u>Hacking up/off and removing porcelain tiles including removing mortar bed or adhesive from concrete or brickwork and preparing surfaces for new screed, plaster, tile finish, etc</u> |    |          |      |        |
| 94                         | Tiles to floors  | m2 | 2,995    |      |        |
| 95                         | Tiles to treads and risers of stairs   | m2 | 30       |      |        |
| 96                         | Tiles to walls   | m2 | 1,529    |      |        |
| 97                         | Tile skirtings 70mm high   | m  | 20       |      |        |
|                            | <u>Taking out and removing piping, including cutting off as necessary, holderbats and making good floor and wall finishes (making good tiling and paintwork elsewhere)</u>               |    |          |      |        |
| 98                         | PVC piping not exceeding 50mm external diameter  | m  | 30       |      |        |
| 99                         | Copper piping not exceeding 50mm external diameter   | m  | 30       |      |        |
| 100                        | Steel piping not exceeding 50mm external diameter  | m  | 30       |      |        |
| 101                        | PVC piping exceeding 50mm and not exceeding 100mm external diameter  | m  | 20       |      |        |
| 102                        | Steel piping exceeding 50mm and not exceeding 100mm external diameter  | m  | 20       |      |        |
| Carried to Collection      |  |    |          |      | R      |
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| Item No                           |  |    | Quantity | Rate | Amount |
|-----------------------------------|--|----|----------|------|--------|
|                                   | <u>Taking out and removing sanitary fittings, tanks, geysers, etc, including disconnecting from pipes, traps, etc and making good floor and wall finishes (making good tiling and paintwork elsewhere)</u>                             |    |          |      |        |
| 103                               | Stainless steel wash hand basin  | No | 4        |      |        |
| 104                               | Stainless steel sink and drainer including timber cupboard 3200 x 600 x 1200mm high  | No | 3        |      |        |
| 105                               | Vitreous china wash hand basin   | No | 61       |      |        |
| 106                               | Vitreous china WC pan with cistern and flush pipe  | No | 60       |      |        |
| 107                               | Vitreous china WC pan with flush valve and flush pipe  | No | 2        |      |        |
| 108                               | Vitreous china wall hung urinal with flush valve and flush pipe  | No | 9        |      |        |
| 109                               | Vitreous china bath tub  | No | 39       |      |        |
| 110                               | Stainless steel slab urinal 3000 x 1200mm high, including breaking up and removing 300mm wide concrete urinal step   | No | 2        |      |        |
| 111                               | 200 Litre geyser from wall or ceiling  | No | 2        |      |        |
|                                   | <u>Take out and remove the following Kitchen Equipment</u>   |    |          |      |        |
| 112                               | Tilting Pans, Scales, Stoves, Combination Steamers, Pan Fryers, Warming Cabinets, Dough Mixers, Crockery Racks, Dishwasher, Sinks, Platform Scales, Peelers, Shelving, Canopies, Ice Machines, Ovens and Gas Equipment <b>(Credit)</b> |    | Item     |      |        |
|                                   | <u>Take out and removing HVAC from Roof</u>  |    |          |      |        |
| 113                               | Take out and remove all obsolete HVAC equipment from concrete rooftop at a height of approximately 4m above ground including carting same from site.   |    | Item     |      |        |
|                                   | <u>Taking out/off and removing glass and mirrors</u>   |    |          |      |        |
| 114                               | Glass from aluminium windows with beads, including cleaning out rebates and preparing for new glass  | m2 | 10       |      |        |
| <b>Carried to Collection</b>      |  |    |          | R    |        |
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| Item No   |  | Quantity | Rate | Amount |
|---|--|----------|------|--------|
| 115   | Glass from steel windows, including cleaning out rebates and preparing for new glass   | m2       | 2    |        |
| 116   | Mirror 1200 x 1200mm high from wall  | No       | 39   |        |
| 117   | Mirror 600 x 600mm high from wall  | No       | 15   |        |
| <b><u>CUTTING THROUGH FLOORS AND CEILINGS</u></b>                         |  |          |      |        |
| <u>Cutting through:</u>   |  |          |      |        |
| 118   | 100mm Thick unreinforced concrete surface bed for 200mm surface bed and making good concrete all round (making good floor finishes elsewhere)  | m2       | 60   |        |
| 119   | 100mm Thick unreinforced concrete surface bed for 600mm wide concrete wall footings and making good concrete on both sides of 115mm brick walls (making good floor finishes elsewhere) | m        | 20   |        |
| 120   | 100mm Thick unreinforced concrete surface bed for 800mm wide concrete wall footings and making good concrete on both sides of 230mm brick walls (making good floor finishes elsewhere) | m        | 10   |        |
| 121   | 100mm Thick unreinforced concrete surface bed for 50mm external diameter pipe and making good concrete (making good floor finishes elsewhere)  | m        | 30   |        |
| 122   | 255mm Thick unreinforced concrete surface bed for 1000 x 1000mm concrete column base and making good concrete all round (making good floor finishes elsewhere)                         | No       | 6    |        |
| 123   | Gypsum plasterboard ceilings and timber banding for 230mm brick walls, including making good on both sides of walls, necessary additional banding etc (new cornices elsewhere)         | m        | 4    |        |
| <b><u>BUILDING UP OPENINGS</u></b>  |  |          |      |        |
| <u>Brickwork in NFP bricks in class II mortar in building up openings</u> |  |          |      |        |
| 124   | 115mm brick walls  | m2       | 3    |        |
| <b>Carried to Collection</b>  |  |          |      | R      |
| <b>Section No. 2</b>  |  |          |      |        |
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| Item No |   | Quantity | Rate  | Amount |
|---------|---|----------|-------|--------|
| 125     | 230mm brick walls   | m2       | 6     |        |
|         | <u>Brickwork in NFP bricks in class II mortar in building up openings, including bonding new to existing and making good cement plaster on both sides (making good paintwork elsewhere)</u> |          |       |        |
| 126     | Opening 1 x 1m high overall in 230mm brick wall   | No       | 2     |        |
|         | <u>Sundries</u>   |          |       |        |
| 127     | Cutting toothings and bonding new brickwork to existing   | m2       | 5     |        |
| 128     | 200mm Wide brick-on-edge header course sills set sloping and slightly projecting  | m        | 3     |        |
|         | <b><u>PREPARATORY WORK TO EXISTING SURFACES</u></b>   |          |       |        |
| 129     | Hacking faces of existing concrete columns, beams, etc to receive plaster   | m2       | 12    |        |
| 130     | Making good defects in existing screeded floors with 25mm screed  | m2       | 8     |        |
|         | <b><u>MAKING GOOD OF FINISHES ETC</u></b>   |          |       |        |
| 131     | Clean and unblock manhole of all debris and rubble  | No       | 1     |        |
| 132     | Clean and unblock fulbore outlet including downpipe   | No       | 8     |        |
| 133     | Wash and cleaning of existing concrete flat roof, all surfaces to be clean dry, sound and free of oils and laitance   | m2       | 1,660 |        |
|         | <u>Making good gypsum plasterboard ceilings and timber bandering</u>  |          |       |        |
| 134     | Ceilings in patches   | m2       | 20    |        |
|         | <u>Making good untinted granolithic</u>   |          |       |        |
|         | <u>Making good cement screeds</u>   |          |       |        |
| 135     | 30mm Thick on floors in patches   | m2       | 120   |        |
|         | <b>Carried to Collection</b>  |          |       | R      |
|         | <b>Section No. 2</b>  |          |       |        |
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| Item No |   |    | Quantity | Rate | Amount |
|---------|---|----|----------|------|--------|
| 136     | Floors where 115mm brick walls removed  | m  | 146      |      |        |
|         | <u>Making good internal cement plaster</u>  |    |          |      |        |
| 137     | Walls in patches  | m2 | 10       |      |        |
| 138     | Concrete ceilings in patches  | m2 | 5        |      |        |
| 139     | Walls where 115mm brick walls removed   | m2 | 1        |      |        |
| 140     | Walls where 230mm brick walls removed   | m2 | 2        |      |        |
| 141     | Concrete ceilings where 115mm brick walls removed   | m  | 1        |      |        |
| 142     | Concrete ceilings where 230mm brick walls removed   | m  | 3        |      |        |
|         | <b><u>OPENINGS THROUGH EXISTING WALLS ETC</u></b>   |    |          |      |        |
|         | <u>Breaking out for and forming plain openings through brick walls, including prestressed concrete lintels, making good cement plaster on both sides and into reveals and with 20 MPa concrete thresholds with steel trowelled finish (making good paintwork elsewhere)</u>   |    |          |      |        |
| 143     | Opening 2700 x 2800mm high through 230mm brick wall   | No | 2        |      |        |
| 144     | Opening 2000 x 2800mm high through 230mm brick wall   | No | 1        |      |        |
|         | <u>Breaking out for and forming openings through brick walls for new doors and frames, including prestressed concrete lintels, making good cement plaster on both sides and into reveals and with 20 MPa concrete thresholds with steel trowelled finish (new doors and frames and making good paintwork elsewhere)</u> |    |          |      |        |
| 145     | Opening for door with steel frame 2000 x 2100m high overall through 230mm brick wall  | No | 1        |      |        |
| 146     | Opening for door with steel frame 3800 x 2100m high overall through 230mm brick wall  | No | 1        |      |        |
| 147     | Opening for door with steel frame 6400 x 2100m high overall through 230mm brick wall  | No | 1        |      |        |
|         | <b>Carried to Collection</b>  |    |          | R    |        |
|         | <b>Section No. 2</b>  |    |          |      |        |
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| Item No                    |  |    | Quantity | Rate | Amount |
|----------------------------|--|----|----------|------|--------|
|                            | <u>Breaking out for and forming openings through brick walls for new windows, including prestressed concrete lintels, making good cement plaster on both sides and into reveals and with sloping fibre-cement sills on outside and flat fibre-cement sills on inside (new windows and making good paintwork elsewhere)</u> |    |          |      |        |
| 148                        | Opening for window 1200 x 1200mm high through one brick wall   | No | 1        |      |        |
| 149                        | Opening for window 700 x 3000mm high through one brick wall  | No | 14       |      |        |
| Carried to Collection      |  |    |          |      | R      |
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ALTERATIONS (PROVISIONAL)

REFURBISHMENT AND UPGRADES



| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
|                            | <b><u>Excavation in earth exceeding 2m not exceeding 4m deep</u></b>   |          |      |        |
| 5                          | Lift shaft footings in confined space  | m3       | 5    |        |
|                            | <b><u>Back excavation of vertical sides of excavation in earth for working space including backfilling compacted to 93% Mod AASHTO density</u></b>             |          |      |        |
| 6                          | Exceeding 2m and not exceeding 4m deep for placing and removing formwork to walls etc 350mm away from excavated face   | m2       | 1    |        |
|                            | <b><u>Extra over excavation in earth for excavation in</u></b>   |          |      |        |
| 7                          | Soft rock  | m3       | 3    |        |
| 8                          | Hard rock  | m3       | 1    |        |
| 9                          | Mass concrete  | m3       | 1    |        |
|                            | <b><u>Risk of collapse of excavations</u></b>  |          |      |        |
| 10                         | Risk of collapse of sides of excavations for trenches and holes from natural, elevated or reduced ground level to not exceeding 1 500mm deep                   | m2       | 464  |        |
| 11                         | Sides of excavations exceeding 1 500mm deep  | m2       | 15   |        |
|                            | <b><u>Extra over all excavations for carting away</u></b>  |          |      |        |
| 12                         | Extra over all excavations for carting away surplus material from excavations and/or from stockpiles on site to a dumping site to be located by the Contractor | m3       | 280  |        |
|                            | <b><u>Keeping excavations free of water</u></b>  |          |      |        |
| 13                         | Allow for keeping excavations free of all water other than subterranean water  | Item     |      |        |
| Carried to Collection      |  |          |      | R      |
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| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
|                            | <b><u>Earth filling compacted to 93% Mod AASHTO density</u></b>  |          |      |        |
| 14                         | Backfilling from the excavations to trenches, to underside of footings and holes compacted in 150mm layers to 95% modified AASHTO density                  | m3       | 35   |        |
| 15                         | Imported earth filling supplied by the Contractor and brought onto site, under solid floors, steps, pavings, etc. compacted to 93% modified AASHTO density | m3       | 285  |        |
| 16                         | Prepare ground surface by scarifying top 150mm layer of ground and re-compact to 93% modified AASHTO density   | m2       | 629  |        |
|                            | <b><u>Coarse river sand filling supplied by the contractor</u></b>   |          |      |        |
| 17                         | 50mm Thick dry, clean, washed riversand layer evenly spread over filling (elsewhere), levelled, watered under solid floors                                 | m2       | 640  |        |
|                            | <b><u>Prescribed density tests on filling</u></b>  |          |      |        |
| 18                         | "Modified AASHTO Density" test   | No       | 35   |        |
|                            | <b><u>SOIL POISONING</u></b>   |          |      |        |
|                            | <b><u>Soil insecticide</u></b>   |          |      |        |
| 19                         | Under floors etc including forming and poisoning shallow furrows against foundation walls etc, filling in furrows and ramming                              | m2       | 717  |        |
| 20                         | Poisoning to surface of ground in bottoms and sides of trenches, bases, etc.   | m2       | 541  |        |
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EARTHWORKS (PROVISIONAL)

REFURBISHMENT AND UPGRADES



| Item No   |  | Quantity | Rate | Amount |
|---|--|----------|------|--------|
| <b><u>REINFORCED CONCRETE</u></b>   |  |          |      |        |
| <b><u>25MPa/19mm concrete</u></b>   |  |          |      |        |
| 2   | Footings   | m3       | 53   |        |
| 3   | Bases  | m3       | 42   |        |
| 4   | Lift base  | m3       | 3    |        |
| 5   | Surface beds   | m3       | 92   |        |
| 6   | Landings   | m3       | 4    |        |
| 7   | Slabs  | m3       | 87   |        |
| 8   | Slabs including beams and isolated beams   | m3       | 5    |        |
| 9   | Columns  | m3       | 24   |        |
| 10  | Beams  | m3       | 39   |        |
| 11  | Isolated beams   | m3       | 8    |        |
| 12  | Lift shaft walls   | m3       | 13   |        |
| 13  | Vanity slabs, cupboard slabs, cover slabs, etc   | m3       | 3    |        |
| <b><u>30MPa/19mm concrete</u></b>   |  |          |      |        |
| 14  | Stairs including landings, beams and inverted beams  | m3       | 5    |        |
| <b><u>TEST BLOCKS</u></b>   |  |          |      |        |
| 15  | Prepare set of three 150 x 150 x 150mm concrete strength test cubes, label and send to an approved laboratory for testing, pay all charges and submit report to the Representative/Agent | No       | 35   |        |
| <b><u>CONCRETE SUNDRIES</u></b>   |  |          |      |        |
| Carried to Collection   |  |          |      | R      |
| Section No. 2<br>Bill No. 3<br>CONCRETE, FORMWORK & REINFORCEMENT<br>REFURBISHMENT AND UPGRADES |  |          |      |        |

| Item No                            |   | Quantity | Rate  | Amount |
|------------------------------------|---|----------|-------|--------|
|                                    | <b><u>Finishing top surfaces of concrete smooth with a power float</u></b>  |          |       |        |
| 16                                 | Surface beds, slabs, etc to falls   | m2       | 1,198 |        |
|                                    | <b><u>Grooves, channels, mortices, sinkings, etc in concrete</u></b>  |          |       |        |
| 17                                 | 75 x 75 x 75mm Sinking in top including grouting in of end of steel baluster in "Epidermix 396"                             | No       | 2     |        |
|                                    | <b><u>25MPa non-shrink grout</u></b>  |          |       |        |
| 18                                 | Bedding approximately 25mm thick under 115mm brick wall including chamfered edges all round                                 | m        | 75    |        |
|                                    | <b><u>ROUGH FORMWORK (DEGREE OF ACCURACY II)</u></b>  |          |       |        |
|                                    | <b><u>Rough formwork to sides</u></b>   |          |       |        |
| 19                                 | Edges of plinths exceeding 300mm high   | m2       | 4     |        |
| 20                                 | Beams above concrete  | m2       | 242   |        |
| 21                                 | Edges, risers, ends and reveals not exceeding 300mm high or wide  | m        | 329   |        |
|                                    | <b><u>Rough formwork to soffits</u></b>   |          |       |        |
| 22                                 | Slabs exceeding 250mm and not exceeding 500mm thick propped up exceeding 1.5m and not exceeding 3.5m high in confined space | m2       | 452   |        |
| 23                                 | Slabs exceeding 250mm and not exceeding 500mm thick propped up exceeding 3.5m and not exceeding 5m high in confined space   | m2       | 15    |        |
| 24                                 | Slabs exceeding 250mm and not exceeding 500mm thick propped up exceeding 5m and not exceeding 6.5m high in confined space   | m2       | 13    |        |
| Carried to Collection              |   |          |       | R      |
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| REFURBISHMENT AND UPGRADES         |   |          |       |        |



| Item No                            |   | Quantity | Rate | Amount |
|------------------------------------|---|----------|------|--------|
| 25                                 | Slabs exceeding 250mm and not exceeding 500mm thick over shafts propped up exceeding 6.5m and not exceeding 8m high in confined space | m2       | 5    |        |
|                                    | <b><u>Rough formwork to form</u></b>  |          |      |        |
| 26                                 | Shaped opening 580 x 460mm overall through 75mm vanity slab for drop in wash hand basin (wash hand basin elsewhere)                   | No       | 54   |        |
|                                    | <b><u>SMOOTH FORMWORK (DEGREE OF ACCURACY II)</u></b>   |          |      |        |
|                                    | <b><u>Smooth formwork to sides</u></b>  |          |      |        |
| 27                                 | Lift shaft walls not exceeding 3.5m above bearing level   | m2       | 26   |        |
| 28                                 | Lift shaft walls exceeding 3.5m and not exceeding 5m above bearing level  | m2       | 12   |        |
| 29                                 | Lift shaft walls exceeding 5m and not exceeding 6.5m above bearing level  | m2       | 7    |        |
| 30                                 | Lift shaft walls exceeding 6.5m and not exceeding 8m above bearing level  | m2       | 7    |        |
| 31                                 | Lift shaft walls exceeding 8m and not exceeding 9.5m above bearing level  | m2       | 9    |        |
| 32                                 | Inner face of lift shaft  | m2       | 61   |        |
| 33                                 | Rectangular columns not exceeding 3.5m above bearing level  | m2       | 56   |        |
| 34                                 | Rectangular columns exceeding 3.5m not exceeding 5m above bearing level   | m2       | 24   |        |
| 35                                 | Sloping edges exceeding 300mm wide  | m2       | 6    |        |
| 36                                 | Inverted beams  | m2       | 320  |        |
| 37                                 | Edges, risers, ends and reveals not exceeding 300mm high or wide  | m        | 8    |        |
| Carried to Collection              |   |          |      | R      |
| Section No. 2                      |   |          |      |        |
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| Item No                            |   |    | Quantity | Rate | Amount |
|------------------------------------|---|----|----------|------|--------|
|                                    | <b><u>Smooth formwork to circular and partly circular columns</u></b>   |    |          |      |        |
| 38                                 | 345mm Diameter column 5m high   | No | 10       |      |        |
| 39                                 | 345mm Diameter column 3m high   | No | 17       |      |        |
|                                    | <b><u>Smooth formwork to form</u></b>   |    |          |      |        |
| 40                                 | Shaped opening 1400 x 2400mm overall through 230mm concrete wall for lift doors   | No | 2        |      |        |
|                                    | <b><u>PERMANENT FORMWORK</u></b>  |    |          |      |        |
|                                    | <b><u>1,2mm Thick "Bond-lok" or other approved permanent sheet metal formwork to soffits of</u></b>   |    |          |      |        |
| 41                                 | Slabs propped up not exceeding 1,5m high  | m2 | 20       |      |        |
|                                    | <b><u>MOVEMENT JOINTS ETC</u></b>   |    |          |      |        |
|                                    | <b><u>Expansion joints with 10mm bitumen impregnated softboard between vertical concrete and brick surfaces</u></b>                           |    |          |      |        |
| 42                                 | Not exceeding 300mm high to edges of surface beds   | m  | 111      |      |        |
|                                    | <b><u>Expansion joints with 10mm "Jointex" or similar approved polyethylene joint filler between vertical concrete and brick surfaces</u></b> |    |          |      |        |
| 43                                 | Not exceeding 300mm high to edges of surface beds   | m  | 25       |      |        |
|                                    | <b><u>Expansion joints with 10mm bitumen impregnated softboard between vertical concrete surfaces, including necessary formwork</u></b>       |    |          |      |        |
| 44                                 | Not exceeding 300mm wide through slabs and beams  | m  | 7        |      |        |
| 45                                 | Not exceeding 300mm wide through columns  | m  | 141      |      |        |
| 46                                 | Exceeding 300mm wide through columns  | m2 | 5        |      |        |
| Carried to Collection              |   |    |          | R    |        |
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| REFURBISHMENT AND UPGRADES         |   |    |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b><u>Saw cut joints</u></b>  |          |      |        |
| 47      | 6 x 20mm Saw cut joints in top of concrete filled with polysulphide or similar approved   | m        | 946  |        |
|         | <b><u>REINFORCEMENT</u></b>   |          |      |        |
|         | <b><u>Mild steel reinforcement to structural concrete work</u></b>  |          |      |        |
| 48      | 32mm Diameter bars  | t        | 1.00 |        |
| 49      | 16mm Diameter bars  | t        | 1.00 |        |
| 50      | 12mm Diameter bars  | t        | 1.00 |        |
| 51      | 10mm Diameter bars  | t        | 1.00 |        |
| 52      | 8mm Diameter bars   | t        | 1.00 |        |
|         | <b><u>High tensile steel reinforcement to structural concrete work</u></b>  |          |      |        |
| 53      | 32mm Diameter bars  | t        | 1.00 |        |
| 54      | 16mm Diameter bars  | t        | 1.00 |        |
| 55      | 12mm Diameter bars  | t        | 1.00 |        |
| 56      | 10mm Diameter bars  | t        | 1.00 |        |
| 57      | 8mm Diameter bars   | t        | 1.00 |        |
|         | <b><u>High tensile steel dowel bars</u></b>   |          |      |        |
| 58      | 20mm Diameter dowel bar 900mm long with one end embedded 300mm deep in side of concrete and other with and including "Epidermix 396" or other approved epoxy grout in side of existing concrete, including drilling, etc. and hole through formwork | No       | 5    |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 2</b>  |          |      |        |
|         | <b>Bill No. 3</b>   |          |      |        |
|         | <b>CONCRETE, FORMWORK &amp; REINFORCEMENT</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No                            |   | Quantity | Rate | Amount |
|------------------------------------|---|----------|------|--------|
| 59                                 | 20mm Diameter dowel bar 900mm long with one end embedded 300mm deep in side of concrete and other with and including "Epidermix 395" or other approved epoxy grout in side of existing concrete, including drilling, etc. and hole through formwork | No 5     |      |        |
|                                    | <b><u>Fabric reinforcement</u></b>  |          |      |        |
| 60                                 | Ref 193 fabric reinforcement in concrete cover slabs, etc. in small quantities  | m2 1     |      |        |
| 61                                 | Ref 245 fabric reinforcement in concrete surface beds, slabs, etc   | m2 733   |      |        |
| 62                                 | Ref 395 fabric reinforcement in concrete surface beds, slabs, etc   | m2 475   |      |        |
| Carried to Collection              |   |          |      | R      |
| Section No. 2                      |   |          |      |        |
| Bill No. 3                         |   |          |      |        |
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Bill No. 3

CONCRETE, FORMWORK & REINFORCEMENT

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Bill No. 3

CONCRETE, FORMWORK & REINFORCEMENT  
REFURBISHMENT AND UPGRADES



| Item No |  | Quantity | Rate  | Amount |
|---------|--|----------|-------|--------|
|         | <b><u>Joint forming material in movement joints</u></b>  |          |       |        |
| 7       | 10mm Fibre board built in vertically between brick skins   | m2       | 54    |        |
| 8       | 10mm Fibre board built in vertically through brick walls   | m2       | 253   |        |
| 9       | 20mm Fibre board built in vertically through brick walls   | m2       | 126   |        |
| 10      | One layer of chicken wire nailed to brickwork before plastering  | m2       | 10    |        |
| 11      | Forming toothings and bonding new brickwork to existing  | m2       | 30    |        |
|         | <b><u>Brickwork reinforcement</u></b>  |          |       |        |
| 12      | 75mm Wide reinforcement built in horizontally  | m        | 1,236 |        |
| 13      | 150mm Wide reinforcement built in horizontally   | m        | 2,794 |        |
|         | <b><u>Galvanised hoop iron cramps, ties, etc.</u></b>  |          |       |        |
| 14      | 40 x 1,6mm Galvanised mild steel hoop iron cramp shot pinned to concrete and bent out and built into brickwork   | No       | 170   |        |
|         | <b><u>Bagging of 1:3 cement and sand mixture</u></b>   |          |       |        |
| 15      | On brick walls   | m2       | 180   |        |
|         | <b><u>FACE BRICKWORK</u></b>   |          |       |        |
|         | <b><u>Brick-on-edge header course copings, sills, etc of face bricks (PC R3 500-00/1000 delivered to site excluding VAT) pointed with recessed joints on all exposed faces</u></b> |          |       |        |
| 16      | Brick-on-edge header course sill set sloping and slightly projecting pointed on all exposed faces  | m        | 15    |        |
|         | <b><u>PRECAST CONCRETE</u></b>   |          |       |        |
|         | <b><u>Precast Lintels</u></b>  |          |       |        |
| 17      | 110 x 75mm Lintels in lengths not exceeding 3m   | m        | 37    |        |
|         | <b>Carried to Collection</b>   |          |       |        |
|         | <b>Section No. 2</b>   |          |       |        |
|         | <b>Bill No. 4</b>  |          |       |        |
|         | <b>MASONRY</b>   |          |       |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |       |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

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Bill No. 4

MASONRY

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Section No. 2

Bill No. 4

MASONRY

REFURBISHMENT AND UPGRADES



| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | Bedding and jointing Slate, marble, granite and other floor paving and wall linings are to be bedded solidly on the mortar thicknesses described and are to have tightly fitting butt joints unless otherwise stated Where stonework is to be fixed with adhesive, the adhesive is to be "Ardurit X76" or other approved. The contractor will be liable for any defects to the slate, marble and granite arising from the use of the adhesive |          |      |        |
|         | Where soffit linings are suspended the suspension system must be concealed and must be submitted to the architect for approval before work commences Where tolerance screws are required these are to be stainless steel expanding bolt type with matching stainless steel bracket and PVC clad dowel with nuts and washers etc   |          |      |        |
|         | Damaged work All stonework damaged must be discarded and replaced at the contractor's expense. No touching up will be permitted except in exceptional cases with the architect's consent  |          |      |        |
|         | Descriptions Descriptions of stonework shall be deemed to include preparatory work, labours to backs, beds and joints, templets, mortices for bolts etc and for hoisting and setting in position, bedding, jointing and pointing, casing and protecting from injury and cleaning down at completion Descriptions of recessed pointing to stonework shall be deemed to include square recessed, hollow recessed, weathered pointing, etc       |          |      |        |
|         | <b><u>VANITY TOPS</u></b>   |          |      |        |
|         | <b><u>"Union Tiles - Silestone - colour Yukon" or similar approved 20mm thick natural quartz stone slab.</u></b>  |          |      |        |
| 1       | To vanity tops  | m2       | 66   |        |
| 2       | 20mm thick x 20mm high fascia along exposed edges   | m        | 144  |        |
|         | <b><u>"Union Tiles - Venice - colour Jet Black" or similar approved 20mm thick natural quartz stone slab.</u></b>   |          |      |        |
| 3       | To vanity tops  | m2       | 31   |        |
| 4       | 20mm thick x 20mm high fascia along exposed edges   | m        | 52   |        |
|         |   |          |      |        |
|         |   |          |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 2</b>  |          |      |        |
|         | <b>Bill No. 5</b>   |          |      |        |
|         | <b>STONE WORKS</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

Section No. 2

Bill No. 5

STONE WORKS

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Section No. 2

Bill No. 5

STONE WORKS

REFURBISHMENT AND UPGRADES

R



| Item No                    |   | Quantity | Rate  | Amount |
|----------------------------|---|----------|-------|--------|
|                            | <b><u>"4mm Derbigum SP4 APP"" or other approved waterproofing with dual reinforced polyester cloth of 120gm/m2 and 50gm/m2 glass fibre, including priming with bitumen primer and with and including approved protection dimple sheet</u></b> |          |       |        |
| 3                          | On foundation lift shaft walls  | m2       | 10    |        |
|                            | <b><u>"4mm Abe Unigum"" or other approved waterproofing with dual reinforced polyester cloth of 120gm/m2 and 50gm/m2 glass fibre, including priming with bitumen primer</u></b>   |          |       |        |
| 4                          | On flat roofs   | m2       | 2,105 |        |
| 5                          | On tops and sides of inverted beams   | m2       | 382   |        |
| 6                          | On bottoms and sides of gutter beams  | m2       | 60    |        |
| 7                          | Sealing edges to brickwork or concrete  | m        | 575   |        |
| 8                          | Collar around pipe not exceeding 100mm internal diameter  | No       | 5     |        |
|                            | <b><u>PROTECTIVE ROOFING PAINT</u></b>  |          |       |        |
|                            | <b><u>Two coats "Derbigum" or other approved bituminous paint</u></b>   |          |       |        |
| 9                          | On flat roofs   | m2       | 2,105 |        |
| 10                         | On waterproofing to floors around existing equipment in confined spaces   | m2       | 188   |        |
|                            | <b><u>JOINT SEALANTS ETC</u></b>  |          |       |        |
|                            | <b><u>Approved two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc</u></b>  |          |       |        |
| 11                         | 10 x 20mm In vertical expansion joints  | m        | 160   |        |
|                            | <b><u>Approved silicone sealant</u></b>   |          |       |        |
| 12                         | In joints between granite vanity tops and tiled walls   | m        | 77    |        |
| Carried to Collection      |   |          |       | R      |
| Section No. 2              |   |          |       |        |
| Bill No. 6                 |   |          |       |        |
| WATERPROOFING              |   |          |       |        |
| REFURBISHMENT AND UPGRADES |   |          |       |        |

Section No. 2

Bill No. 6

WATERPROOFING

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Section No. 2

Bill No. 6

WATERPROOFING

REFURBISHMENT AND UPGRADES

R





| Item No  |   | Quantity | Rate | Amount |
|--|---|----------|------|--------|
| 7  | Stepped cover flashings to roof pitches exceeding 25 degrees  | m2       | 5    |        |
| 8  | Soakers   | m2       | 5    |        |
| <b><u>CONCRETE ROOF TILES</u></b>  |   |          |      |        |
| <b><u>420 x 332mm "BMI Coverland" (or similar approved) Double Roman Through Colour Slate Grey concrete roof tile (Code: 901031) laid in straight bond with a minimum head lap of 75mm and nailed with non-corrosive nails and including 38 x 38mm sawn softwood battens at maximum 345mm centres, on 400 micron 2-ply spunbound "Coverland" (or similar approved) undertile membrane with joints lapped 150mm, fixed over rafters (elsewhere measured) at 760mm centres and finished with 280mm wide "Coverland Easyflash Dormer" (or similar approved) and abutment sealer to all abutments complete with thirty (30) year Functional Concrete Guarantee</u></b> |   |          |      |        |
| 9  | Roof covering with a 26 degree pitch  | m2       | 250  |        |
| 10   | Roof covering and side cladding to dormers, turrets, etc  | m2       | 4    |        |
| 11   | Close cut and mitred ridge including soakers of bituminous roofing felt in accordance with SANS 92 Type 60 and necessary additional battens | m        | 11   |        |
| 12   | Close cut and mitred hip including soakers of bituminous roofing felt in accordance with SANS 92 Type 60 and necessary additional battens   | m        | 74   |        |
| 13   | Extra on roof covering for double course at eaves including fixing clips and 38 x 38mm sawn softwood tilting fillet                         | m        | 109  |        |
| 14   | Open valleys including raking cutting on both sides and necessary additional battens (valley gutters elsewhere)                             | m        | 9    |        |
| 15   | Close cut and fitted valleys including raking cutting on both sides and necessary additional battens (valley gutters elsewhere)             | m        | 6    |        |
| Carried to Collection  |   |          |      | R      |
| Section No. 2  |   |          |      |        |
| Bill No. 7   |   |          |      |        |
| ROOF COVERINGS   |   |          |      |        |
| REFURBISHMENT AND UPGRADES   |   |          |      |        |

TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                    |   |    | Quantity | Rate | Amount |
|----------------------------|---|----|----------|------|--------|
| 16                         | Extra on roof covering for 25 x 25mm sawn softwood tilting fillets          | m  | 109      |      |        |
| 17                         | Extra over for purpose made tile to end of ridge                            | No | 2        |      |        |
| 18                         | Extra over for purpose made tile at intersection between ridge and two hips | No | 2        |      |        |
| Carried to Collection      |   |    |          |      | R      |
| Section No. 2              |   |    |          |      |        |
| Bill No. 7                 |   |    |          |      |        |
| ROOF COVERINGS             |   |    |          |      |        |
| REFURBISHMENT AND UPGRADES |   |    |          |      |        |

Section No. 2

Bill No. 7

ROOF COVERINGS

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Section No. 2

Bill No. 7

ROOF COVERINGS

REFURBISHMENT AND UPGRADES



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| Item No |   | Quantity | Rate  | Amount |
|---------|---|----------|-------|--------|
|         | <b><u>Tempered Fibre cement</u></b>   |          |       |        |
| 10      | 15 x 225mm Fascias and barge boards including screwed to rafter ends with 32mm long x 4mm diameter brass screws counter sunk including half round aluminium cover strips to all joints  | m        | 334   |        |
|         | <b><u>SKIRTINGS</u></b>   |          |       |        |
| 11      | 22 x 120mm Skirting fixed to walls with approved adhesives  | m        | 1,376 |        |
| 12      | 21 x 44mm Dado rail fixed to walls with approved adhesives  | m        | 380   |        |
|         | <b><u>DOORS, ETC.</u></b>   |          |       |        |
|         | <b><u>Wrought meranti doors hung to steel frames</u></b>  |          |       |        |
| 13      | 44mm Framed ledged and braced batten door 813 x 2032mm high of 44 x 144mm top rail and stiles, 19 x 144mm middle ledge and 19 x 105mm braces and 22 x 228mm bottom rail filled in with 105 x 22mm V-jointed one side boarding and covered on other side with 3mm plywood with veneer to match door let into and including rebates all round with and including 25 x 75mm once splayed and grooved weather board | No       | 2     |        |
|         | <b><u>Hollow core flush doors with 3,2mm standard hardboard covering on both sides hung to steel frames</u></b>   |          |       |        |
| 14      | 40mm Door 813 x 2 032mm high including hardwood edge strip  | No       | 1     |        |
|         | <b><u>Semi-solid flush single doors with light oak veneer on both sides hung to steel frames</u></b>  |          |       |        |
| 15      | 40mm Sliding Door 813 x 2032mm high (Type 38)   | No       | 2     |        |
| 16      | 40mm Door 813 x 2 032mm high (Type 3 & 4)   | No       | 13    |        |
| 17      | 40mm Door 866 x 2 032mm high (Type 5 & 6)   | No       | 3     |        |
|         | <b>Carried to Collection</b>  |          |       | R      |
|         | <b>Section No. 2</b>  |          |       |        |
|         | <b>Bill No. 8</b>   |          |       |        |
|         | <b>CARPENTRY &amp; JOINERY</b>  |          |       |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |       |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
| 18      | 40mm Door 813 x 2 032mm high with 25mm undercut to allow for ventilation (Type 7 & 8)           | No       | 28   |        |
| 19      | 40mm Door 686 x 2 032mm high (Type 9 & 10)  | No       | 6    |        |
| 20      | 40mm Door 813 x 2 032mm high (Type 11 & 12)   | No       | 30   |        |
| 21      | 40mm Door 813 x 2 032mm high (Type 18 & 19)   | No       | 17   |        |
| 22      | 40mm Door 813 x 2 032mm high (Type 27 & 28)   | No       | 45   |        |
| 23      | Extra over for 614 x 300mm framed opening for metal louvre unit (louvre unit elsewhere)         | No       | 3    |        |
| 24      | Extra over for 637 x 300mm framed opening for metal louvre unit (louvre unit elsewhere)         | No       | 13   |        |
|         | <b><u>Solid flush single doors with light oak veneer on both sides hung to steel frames</u></b> |          |      |        |
| 25      | 40mm Door 866 x 2 028mm high (Type 14 & 15)   | No       | 5    |        |
| 26      | 40mm Panel Door 963 x 2 032mm high (Type 25 & 26)   | No       | 47   |        |
| 27      | Extra over for 400mm diameter framed opening for glass panel (glass measured elsewhere)         | No       | 5    |        |
|         | <b><u>Solid flush double doors with light oak veneer on both sides hung to steel frames</u></b> |          |      |        |
| 28      | 40mm Panel Door 1936 x 2 032mm high (Type 2)  | No       | 4    |        |
| 29      | 40mm Door 1736 x 2 028mm high (Type 13)   | No       | 7    |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 2<br/>Bill No. 8<br/>CARPENTRY &amp; JOINERY<br/>REFURBISHMENT AND UPGRADES</b>  |          |      |        |

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| Item No  |  |    | Quantity | Rate | Amount |
|--|--|----|----------|------|--------|
|  | <p><b><u>General</u></b></p> <p>The following cupboard fittings have been measured as complete units i.e. the components of the units have not been separately measured. The descriptions, therefore, of such units shall be deemed to include all components, assembling, housing, notching, glueing, blocking, planting on and screwing with countersunk screws, edge strips, decorative plastic finish, glass, ironmongery, metalwork, paint or varnish finishes, etc</p> <p>All work tops to be sealed with approved silicone sealant against walls, sinks, etc.</p> <p><b><u>RECEPTION DESK</u></b></p> |    |          |      |        |
| 36   | Semi-Circular Reception Desks comprising of 16mm thick formica top, 32mm thick formica intermediate top complete with drawers, shelves, sides and 150mm aluminium kick-plate all as per details on "Reception Desks"drawing attached to the Tender Document  | No | 2        |      |        |
|  | <b><u>Sawn softwood</u></b>  |    |          |      |        |
| 37   | 38 x 70mm Bearers plugged  | m  | 10       |      |        |
| <b>Carried to Collection</b>   |  |    |          |      | R      |
| <b>Section No. 2<br/>Bill No. 8<br/>CARPENTRY &amp; JOINERY<br/>REFURBISHMENT AND UPGRADES</b> |  |    |          |      |        |

Section No. 2

Bill No. 8

CARPENTRY & JOINERY

COLLECTION

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Section No. 2

Bill No. 8

CARPENTRY & JOINERY

REFURBISHMENT AND UPGRADES



| Item No |   | Quantity | Rate  | Amount |
|---------|---|----------|-------|--------|
|         | <b><u>Openings</u></b>  |          |       |        |
|         | Prices for openings for light fittings, ventilation grilles, air conditioning diffusers, etc are to include for any necessary additional support, trimming around, etc                                  |          |       |        |
|         | <b><u>4mm "Everite Nutec" fibre-cement boards with H-Profile white PVC jointing strips:</u></b>   |          |       |        |
| 2       | Ceilings including 38 x 38mm sawn softwood bandering at 400mm centres, against walls and at side joints   | m2       | 75    |        |
|         | <b><u>6mm "Everite Nutec" fibre-cement boards with H-Profile white PVC jointing strips:</u></b>   |          |       |        |
| 3       | Ceilings including 38 x 38mm sawn softwood bandering at 400mm centres, against walls and at side joints   | m2       | 1,714 |        |
|         | <b><u>6,4mm "Gyproc" Rhinoboard plasterboard with pre-primed M-type pressed steel jointing strips all fixed in accordance with the manufacturer's instructions:</u></b>                                 |          |       |        |
| 4       | Ceilings including 38 x 38mm sawn softwood bandering at 300mm centres in one direction.   | m2       | 900   |        |
|         | <b><u>6,4mm "Gyproc" Rhinoboard plasterboard with pre-primed M-type pressed steel jointing strips all fixed in accordance with the manufacturer's instructions:</u></b>                                 |          |       |        |
| 5       | Ceilings including Donn steel bandering at 400mm centres in one direction.  | m2       | 850   |        |
| 6       | Extra over ceiling for hinged pressed metal trap door size 600 x 600mm including all necessary ironmongery.   | No       | 7     |        |
|         | <b><u>9,5mm Taper-edge gypsum plasterboard with taped joints and the whole finished with gypsum plaster trowelled to a smooth polished surface to the thickness recommended by the manufacturer</u></b> |          |       |        |
| 7       | Ceilings including 38 x 38mm sawn softwood bandering at 450mm centres and cross bandering at 300mm centres  | m2       | 47    |        |
|         | <b>Carried to Collection</b>  |          | R     |        |
|         | <b>Section No. 2</b>  |          |       |        |
|         | <b>Bill No. 9</b>   |          |       |        |
|         | <b>CEILINGS, PARTITIONS &amp; ACCESS FLOORING (PRO REFURBISHMENT AND UPGRADES</b>   |          |       |        |

| Item No |  | Quantity | Rate  | Amount |
|---------|--|----------|-------|--------|
| 8       | Sloping ceilings including 38 x 38mm sawn softwood branderling at 350mm centres and cross branderling at 350mm centres   | m2       | 42    |        |
| 9       | Vertical ceilings including 38 x 38mm sawn softwood branderling at 300mm centres and cross branderling at 300mm centres  | m2       | 30    |        |
|         | <b><u>Wrought Softwood:</u></b>  |          |       |        |
| 10      | 16 x 44mm Cornice fixed on flat to branderling.  | m        | 1,001 |        |
|         | <b><u>SUSPENDED CEILINGS</u></b>   |          |       |        |
|         | <b><u>Proprietary suspended ceilings</u></b>   |          |       |        |
|         | <b><u>Note:</u></b>  |          |       |        |
|         | Electrical light fittings, diffusers, panels, etc generally are "lay in" units of the same dimensions as the suspension grid described and allowance must 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 is to take cognisance thereof)   |          |       |        |
|         | <b><u>1200 x 600 x 15mm Thick "OWA Acoustic Constellation 3" (or similar approve) biologically absorbable mineral wool ceiling tiles with square edge and white painted finish, laid on fire rated "OWA Construct S3" (or similar approved) exposed demountable T24 suspension system including galvanised main tees, cross tees, hold down clips and wedges, all suspended with galvanised hangers at centres not exceeding 1200mm.</u></b> |          |       |        |
| 11      | Ceilings suspended not exceeding 1m below concrete soffits   | m2       | 1,100 |        |
| 12      | Ceilings suspended not exceeding 1m below timber/steel trusses soffits   | m2       | 40    |        |
| 13      | Extra over ceiling for opening for 190mm diameter downlighter  | No       | 51    |        |
|         | <b>Carried to Collection</b>   |          |       |        |
|         | <b>Section No. 2</b>   |          |       |        |
|         | <b>Bill No. 9</b>  |          |       |        |
|         | <b>CEILINGS, PARTITIONS &amp; ACCESS FLOORING (PRO REFURBISHMENT AND UPGRADES</b>  |          |       |        |

| Item No  |  | Quantity | Rate | Amount |
|--|--|----------|------|--------|
| 14   | Extra over ceiling for opening for 600 x 600mm light fitting   | No 5     |      |        |
|  | <b><u>BULKHEADS</u></b>  |          |      |        |
| 15   | 800mm Wide horizontal bulkheads not exceeding 1m below concrete soffits  | m2 8     |      |        |
| 16   | 900mm Wide horizontal bulkheads not exceeding 1m below concrete soffits  | m2 36    |      |        |
| 17   | 500mm Wide horizontal bulkheads not exceeding 1m below timber/steel trusses soffits  | m2 18    |      |        |
| 18   | 300mm High vertical bulkheads not exceeding 1m below concrete soffits  | m2 141   |      |        |
| 19   | 500mm High vertical bulkheads not exceeding 1m below concrete soffits  | m2 135   |      |        |
| 20   | 300mm High vertical bulkheads not exceeding 1m below timber/steel trusses soffits  | m2 86    |      |        |
| 21   | 500mm High vertical bulkheads not exceeding 1m below timber/steel trusses soffits  | m2 125   |      |        |
|  | <b><u>SPECIAL BULKHEADS</u></b>  |          |      |        |
|  | <b><u>6mm "Rhino" or other approved gypsum plasterboard flush plastered ceiling with taped joints and the whole finished with "Rhinolite" or other approved gypsum plaster, trowelled to a smooth polished thickness as recommended by the manufacturer, with the ceiling suspended galvanised steel flush plastered ceiling suspension system including main tees and cross tees, 25 x 25 x 3mm galvanised angles fixed to concrete soffits or timber/still trusses</u></b> |          |      |        |
| 22   | Rectangular bulkheads with protruding nib size 100x200mm, overall girth 1250mm, suspended 1100mm below concrete soffit as per Section E-E  | m2 314   |      |        |
| Carried to Collection  |  |          |      | R      |
| Section No. 2  |  |          |      |        |
| Bill No. 9   |  |          |      |        |
| CEILINGS, PARTITIONS & ACCESS FLOORING (PRO REFURBISHMENT AND UPGRADES |  |          |      |        |

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| Item No                                     |  |    | Quantity | Rate | Amount |
|---|--|----|----------|------|--------|
|   | <u>"Gyproc High Performance Wall System with Habito UltraSTEEL" or similar approved "Stud Drywall" consisting of stud and track system with 63.5 x 35mm "Gypframe Drywall UltraSTEEL" or similar approved studs at recommended centres, friction fitted into head track and floor track with 51mm "Isover Cavitybatt/Cavitylite (14kg/m3)" or similar approved insulation inserted into cavity of partition and clad on both sides with all external angles to have "Gypframe Corner Beads" or similar approved corner beads attached and all joints to be covered with " Gyproc RhinoTape" and finished with two layers of "Gyproc RhinoGlide" applied and lightly sanded down, leaving wall surface prepared for painting. all in accordance with the manufacturer's recommendations</u> |    |          |      |        |
| 30  | Partitions 4m high with bottom and top tracks plugged  | m  | 72       |      |        |
| 31  | Partitioning 4m high with bottom track plugged and top track fixed to suspended ceiling tees.  | m  | 10       |      |        |
| 32  | Extra over partition 4m high for vertical abutment   | No | 23       |      |        |
| 33  | Extra over partition 4m high for corner  | No | 6        |      |        |
| 34  | Extra over partition 4m high for irregular corner  | No | 1        |      |        |
| 35  | Extra over partition 4m high for T-intersection  | No | 5        |      |        |
| 36  | Extra over partition 4m high for fair end  | No | 15       |      |        |
| 37  | Extra over partition 4m high for opening for single door and frame size 813 x 2032mm high (door and frame elsewhere)   | No | 11       |      |        |
|   | <u>Extra over "Gyproc" or similar approved partitions for 40mm semi-solid flush doors with oak veneer on both sides and hardwood edge strips to vertical edges, hung to and including standard natural anodised aluminium door frame with one pair of 100mm nylon washered aluminium hinges to each hanging stile, including additional studding, trimming, etc to partitions</u>  |    |          |      |        |
| 38  | Door 836 x 2032mm high   | No | 11       |      |        |
|   |  |    |          | R    |        |
| Carried to Collection                       |  |    |          |      |        |
| Section No. 2                               |  |    |          |      |        |
| Bill No. 9                                  |  |    |          |      |        |
| CEILINGS, PARTITIONS & ACCESS FLOORING (PRO |  |    |          |      |        |
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## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

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| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <b><u>SECTION NO. 2 BUILDING WORKS</u></b>   |          |      |        |
|         | <b><u>BILL NO. 10</u></b>  |          |      |        |
|         | <b><u>FLOOR COVERINGS, PLASTIC LININGS, ETC.</u></b>   |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.   |          |      |        |
|         | NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 130 for Haylett Formula purposes.   |          |      |        |
|         | <b><u>FLOOR COVERINGS</u></b>  |          |      |        |
|         | <b><u>8mm "FloorworX" (Code IMI855) or similar approved laminate flooring in 190 x 1380mm planks laid on and including an underlay of 3mm foam cushioning layer adhered to plastic sheeting inclusive of 40mm turn-up at walls, complete with and including expansion joints, all as per manufacturer's instructions. Colour: Soft Oak Natural</u></b> |          |      |        |
| 1       | On floors (Provisional)  | m2       | 345  |        |
|         | <b><u>9mm "Fap Ceramiche - Roots Gold" or similar approved hospitality wood design 200 x 1200mm planks laid on and including an underlay of 3mm foam cushioning layer adhered to plastic sheeting inclusive of 40mm turn-up at walls, complete with and including expansion joints, all as per manufacturer's instructions.</u></b>                    |          |      |        |
| 2       | On floors (Provisional)  | m2       | 190  |        |
|         | <b><u>9.5mm Thick "Belgotex Serengeti Broadloom Mamba" or similar approved carpeting with and including "Belgotex Green Underlay" or similar approved underlay, laid with strict instructions from the manufacturer's</u></b>  |          |      |        |
| 3       | On floors  | m2       | 835  |        |
|         | Carried to Collection  |          |      | R      |
|         | Section No. 2  |          |      |        |
|         | Bill No. 10  |          |      |        |
|         | FLOOR COVERINGS, WALL LININGS, ETC.  |          |      |        |
|         | REFURBISHMENT AND UPGRADES   |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
| 4       | On treads and risers of stepped floors  | m2       | 6    |        |
| 5       | On treads and risers of stairs  | m2       | 11   |        |
| 6       | Circular cutting  | m        | 31   |        |
| 7       | Turn-ups over coves and up against walls not exceeding 500mm girth  | m        | 405  |        |
| 8       | 1200mm Wide x 500mm high combined tread and riser covering  | m        | 21   |        |
|         | <u>9.5mm Thick "Belgotex Serengeti Broadloom Wild Cheetah" or similar approved carpeting with and including "Belgotex Green Underlay" or similar approved underlay, laid with strict instructions from the manufacturer's</u> |          |      |        |
| 9       | On floors   | m2       | 815  |        |
| 10      | On treads and risers of stairs  | m2       | 15   |        |
| 11      | Turn-ups over coves and up against walls not exceeding 500mm girth  | m        | 888  |        |
| 12      | 1200mm Wide x 500mm high combined tread and riser covering  | m        | 10   |        |
|         | <u>6mm Thick "Flow-Fresh" or similar approved polyurethane flooring applied in strict accordance to the manufacturer's instructions</u>   |          |      |        |
| 13      | On floors   | m2       | 480  |        |
| 14      | On treads and risers of stepped floors  | m2       | 12   |        |
|         | <u>2.25mm "Belgotex Hardford Cushion Vinyl Sheeting" or similar approved vinyl tiles, colour "Natural Oak 226M" applied in strict accordance to the manufacturer's instructions</u>   |          |      |        |
| 15      | On floors   | m2       | 165  |        |
|         | Carried to Collection   |          | R    |        |
|         | Section No. 2   |          |      |        |
|         | Bill No. 10   |          |      |        |
|         | FLOOR COVERINGS, WALL LININGS, ETC.   |          |      |        |
|         | REFURBISHMENT AND UPGRADES  |          |      |        |

| Item No                             |  |    | Quantity | Rate | Amount |
|-------------------------------------|--|----|----------|------|--------|
| 16                                  | Turn-ups over coves and up against walls not exceeding 500mm girth   | m  | 164      |      |        |
| 17                                  | 1200mm Wide x 500mm high combined tread and riser covering   | m  | 9        |      |        |
|                                     | <u>9mm Thick "FloorworX Coral Duo Colour Sicilian Sand, Code: 9714" or similar approved polyamide fibre-based entrance matting. With sheet cuts and joined as per manufacturer's instruction to fit the required space, mat to be countersunk in a purpose-designed mat-well, adhered using "FloorworX No. 71" or similar approved contact adhesive.</u> |    |          |      |        |
| 18                                  | On floors  | m2 | 4        |      |        |
|                                     | <u>SKIRTINGS, NOSINGS, ETC.</u>  |    |          |      |        |
|                                     | <u>Natural anodised aluminium</u>  |    |          |      |        |
| 19                                  | 50 x 30mm Approved type angle stair nosing plugged   | m  | 140      |      |        |
| 20                                  | Skirting 100mm high  | m  | 53       |      |        |
|                                     | <u>Supawood suitable for paint</u>   |    |          |      |        |
| 21                                  | 20mm Skirting 100mm high   | m  | 1,702    |      |        |
|                                     | <u>POLISH, SEALERS, ETC.</u>   |    |          |      |        |
| 22                                  | Strip and apply two coats wax polish on vinyl flooring   | m2 | 270      |      |        |
| Carried to Collection               |  |    |          |      | R      |
| Section No. 2                       |  |    |          |      |        |
| Bill No. 10                         |  |    |          |      |        |
| FLOOR COVERINGS, WALL LININGS, ETC. |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES          |  |    |          |      |        |

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Bill No. 10

FLOOR COVERINGS, WALL LININGS, ETC.

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Bill No. 10

FLOOR COVERINGS, WALL LININGS, ETC.

REFURBISHMENT AND UPGRADES



| Item No                    |   |    | Quantity | Rate | Amount |
|----------------------------|---|----|----------|------|--------|
|                            | <b><u>Welded columns and beams in single lengths with flat section base, top, bearer and connection plates bolted to concrete</u></b> |    |          |      |        |
| 1                          | 203 x 203mm x 60kg/m H-section columns  | t  | 0.50     |      |        |
| 2                          | 356 x 171mm x 57kg/m I-section beams  | t  | 0.50     |      |        |
| 3                          | 150 x 150 x 12mm Angle section bearers bolted to concrete at 400mm centres (bolts measured elsewhere)                                 | t  | 0.10     |      |        |
|                            | <b><u>Bolts to columns, beams, etc</u></b>  |    |          |      |        |
| 4                          | 20mm Diameter L-shaped anchor bolt 1000mm girth embedded in top of concrete.  | No | 20       |      |        |
| 5                          | M10 "Hilti" or other approved chemical anchor with nut and washer and including mortice in brickwork or concrete                      | No | 12       |      |        |
| 6                          | M20 "Hilti" or other approved chemical anchor with nut and washer and including mortice in brickwork or concrete                      | No | 4        |      |        |
|                            | <b><u>Plates, base plates, etc</u></b>  |    |          |      |        |
| 7                          | 1,6mm Flat section bearing plates 500mm wide including treating with graphite grease  | t  | 0.10     |      |        |
| 8                          | Plates  | t  | 0.10     |      |        |
|                            | <b><u>PURLINS, GIRTS, BRACING, ETC</u></b>  |    |          |      |        |
|                            | <b><u>Purlins and girts bolted to concrete</u></b>  |    |          |      |        |
| 9                          | 150x150x12mm Equal angle  | t  | 0.20     |      |        |
| Carried to Collection      |   |    |          |      | R      |
| Section No. 2              |   |    |          |      |        |
| Bill No. 11                |   |    |          |      |        |
| STRUCTURAL STEELWORK       |   |    |          |      |        |
| REFURBISHMENT AND UPGRADES |   |    |          |      |        |



Section No. 2

Bill No. 11

STRUCTURAL STEELWORK

COLLECTION

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Section No. 2

Bill No. 11

STRUCTURAL STEELWORK

REFURBISHMENT AND UPGRADES

R



| Item No  |   | Quantity | Rate | Amount |
|--|---|----------|------|--------|
| 6  | Extra over diameter rail for wall end bracket   | No       | 2    |        |
| 7  | 43mm Diameter type MT90 stanchion 1 000mm long  | No       | 39   |        |
| 8  | 10mm Diameter expansion bolt 100mm long including drilling hole in concrete   | No       | 156  |        |
| <b><u>STAINLESS STEEL HANDRAILS, BALUSTRADES, ETC.</u></b>                                 |   |          |      |        |
| <b><u>Grade 304 satin finished stainless steel handrail</u></b>                            |   |          |      |        |
| 9  | 50mm Diameter handrail  | m        | 78   |        |
| 10   | Extra over 50mm diameter handrail for flat closed end   | No       | 6    |        |
| 11   | 50mm Diameter bracket 350mm long with one end welded to handrail and other end bolted to brick piers  | No       | 65   |        |
| 12   | 12mm Diameter expansion bolt 100mm long, including drilling hole in brickwork or concrete   | No       | 144  |        |
| <b><u>Grade 304 satin finished stainless steel handrail bolted to steel balustrade</u></b> |   |          |      |        |
| 13   | 60mm Diameter handrail  | m        | 150  |        |
| 14   | Extra over 60mm diameter handrail for flat closed end   | No       | 12   |        |
| 15   | Extra over 60mm diameter handrail for mitred L-intersection   | No       | 6    |        |
| 16   | 30 x 10mm Thick flat section fixing plate on one end welded to handrail and other end twice holed for bolts (bolts measured elsewhere)  | No       | 15   |        |
| 17   | 6mm Diameter bracket 150mm girth once bent and welded to handrail and other end with and including 75mm diameter x 6mm baseplate twice holed for bolts (bolts measured elsewhere) | No       | 20   |        |
| 18   | 8mm Diameter expansion bolt 100mm long including drilling hole in concrete  | No       | 50   |        |
| <b>Carried to Collection</b>   |   |          |      |        |
| <b>Section No. 2</b>   |   |          |      |        |
| <b>Bill No. 12</b>   |   |          |      |        |
| <b>METALWORK</b>   |   |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>  |   |          |      |        |

| Item No |  |    | Quantity | Rate | Amount |
|---------|--|----|----------|------|--------|
|         | <b><u>WELDED SCREENS, GATES, ETC</u></b>   |    |          |      |        |
| 19      | 1800 x 3000mm high steel gate with mentis grating  | kg | 60       |      |        |
| 20      | Double gate size 5100 x 2060mm comprising 75 x 75 x 3mm mild steel square tubing neatly welded to 76 x 76mm gate posts in surround comprising 75 x 75 x 2mm tubing at top, bottom and one side and the other height 75 x 75 x 2mm tubing, with 100 x 50mm infill panels or similar approved steel gate (Type 31) | No | 1        |      |        |
|         | <b><u>STAIRCASE</u></b>  |    |          |      |        |
| 21      | Steel staircase complete with a 1100 x 2100mm high swing gate  | t  | 1.00     |      |        |
|         | <b><u>SUNDRY STEELWORK</u></b>   |    |          |      |        |
|         | <b><u>Welded supports</u></b>  |    |          |      |        |
| 22      | 50 x 50 x 5mm Angle section brackets   | kg | 5        |      |        |
| 23      | Extra over for mitred L-intersection   | No | 3        |      |        |
| 24      | 20mm Diameter rods in tank bracing including nuts, etc.  | kg | 2        |      |        |
| 25      | 10mm Expansion bolt 75mm long including drilling hole in brickwork or concrete   | No | 2        |      |        |
|         | <b><u>Welded floor grids</u></b>   |    |          |      |        |
| 26      | 70 x 70 x 8mm Angle section bearers bolted to edge of slab   | kg | 30       |      |        |
| 27      | Extra over for welded and mitred L-intersection  | No | 4        |      |        |
| 28      | "Veam" type VEZ or other approved grille flooring of 600 x 1200mm banded plain panels with 60 x 6mm bearers bars and galvanized finish, spot welded to frame   | No | 1        |      |        |
| 29      | Hole through 8mm steel   | No | 5        |      |        |
| 30      | 12mm Expansion bolt 100mm long including drilling hole in brickwork or concrete  | No | 4        |      |        |
|         | <b>Carried to Collection</b>   |    |          |      |        |
|         |  |    |          |      | R      |
|         | <b>Section No. 2</b>   |    |          |      |        |
|         | <b>Bill No. 12</b>   |    |          |      |        |
|         | <b>METALWORK</b>   |    |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |    |          |      |        |

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| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b>"Wispeco" or other approved doors</b>  |          |      |        |
| 43      | Single panel door 813 x 2 032mm high with rebated frame suitable for one brick wall including padbolt   | No       | 1    |        |
|         | <b><u>ALUMINIUM SHOPFRONTS, SCREENS, DOORS, WINDOWS, ETC.</u></b>   |          |      |        |
|         | All aluminium work must be in accordance with AAAMSA Performance Criteria and glazing in accordance with the National Building Regulations Part N |          |      |        |
|         | The Contractor shall provide the relevant AAAMSA Performance Certificate prior to commencement of work  |          |      |        |
|         | All anodising shall be executed in strict adherence to SABS 999 and will be 25 microns.   |          |      |        |
|         | All safety glazing materials (individual panes) shall be permanently marked which will be visible after glazing                                   |          |      |        |
|         | <b><u>A2 factory glazed aluminium shopfronts with Charcoal Grey powder coated finish plugged to concrete or brickwork</u></b>                     |          |      |        |
|         | Note  |          |      |        |
|         | Grey silicone sealant to be provided between all aluminium frames and building structure  |          |      |        |
|         | <b><u>Glazed Door, Window with 6.38mm laminated safety glass tinted Smart Colour Vue Cool Grey Bronze</u></b>                                     |          |      |        |
| 44      | Sliding aluminium door and frame size 900 x 2100mm high   | No       | 3    |        |
| 45      | Sliding aluminium door and frame size 2000 x 2100mm high  | No       | 21   |        |
| 46      | Window size 600 x 600mm   | No       | 8    |        |
| 47      | Window size 600 x 1000mm  | No       | 2    |        |
| 48      | Window size 600 x 1200mm  | No       | 40   |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 2<br/>Bill No. 12<br/>METALWORK<br/>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No                    |   |    | Quantity | Rate | Amount |
|----------------------------|---|----|----------|------|--------|
| 49                         | Window size 1000 x 1200mm   | No | 2        |      |        |
| 50                         | Window size 700 x 3000mm (Type W03, W04, W05, W06, W07, W08, W09, W10, W11, W12, W13, W14, W15 & W16)   | No | 14       |      |        |
| 51                         | Window size 1800 x 1200mm   | No | 1        |      |        |
| 52                         | Window size 2000 x 2100mm   | No | 20       |      |        |
| 53                         | Window size 2000 x 3150mm (Type W01 & W02)  | No | 2        |      |        |
| 54                         | Shopfront size 6270 x 2320mm high (Type 29)   | No | 1        |      |        |
| 55                         | Shopfront size 3705 x 2320mm high (Type 30)   | No | 1        |      |        |
|                            | <u>Glazed Door, Window with 6.38mm laminated safety glass tinted Smart Colour Vue Cool Grey Clear</u>   |    |          |      |        |
| 56                         | Single aluminium door and frame size 900 x 2064mm high (Type 16 & 17)   | No | 5        |      |        |
| 57                         | Double aluminium door and frame size 2000 x 2060mm high (Type 1)  | No | 9        |      |        |
| 58                         | Purpose made single aluminium door and frame size 900 x 2064mm high with a fixed panel 423 x 2064mm high (Type 36)  | No | 2        |      |        |
| 59                         | Purpose made double aluminium door and frame size 1580 x 2320mm high with 1200 x 2320mm high fixed panel on one side and 1160 x 2320mm high fixed panel on the other side. Overall door and frame size 3900 x 2320mm high (Type 37) | No | 1        |      |        |
| 60                         | Purpose made double aluminium door and frame size 2000 x 2060mm high with 503 x 2320mm high fixed panel on both sides. Overall door and frame size 3006 x 2060mm high (Type 35)   | No | 1        |      |        |
| Carried to Collection      |   |    |          |      | R      |
| Section No. 2              |   |    |          |      |        |
| Bill No. 12                |   |    |          |      |        |
| METALWORK                  |   |    |          |      |        |
| REFURBISHMENT AND UPGRADES |   |    |          |      |        |

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| Item No   |  |    | Quantity | Rate | Amount |
|---|--|----|----------|------|--------|
| 74  | Airtight single ridge pyramid skylight to suit 4000 x 2000mm opening formed of 4mm thick U-95 tinted acrylic polycarbonate with aluminium kerb | No | 1        |      |        |
| 75  | Airtight pyramid skylight to suit 5000 x 1000mm opening formed of 4mm thick U-95 tinted acrylic polycarbonate with aluminium kerb              | No | 1        |      |        |
| <b><u>FIRE CONTROL GRILLES, DAMPERS, ETC.</u></b>   |  |    |          |      |        |
| <b><u>"Blendair" or other approved suitable for one brick walls including building in</u></b> |  |    |          |      |        |
| 76  | 1,6mm Sheet metal flap type non return damper size 150 x 150mm with prepainted flanges   | No | 1        |      |        |
| Carried to Collection   |  |    |          |      | R      |
| Section No. 2   |  |    |          |      |        |
| Bill No. 12   |  |    |          |      |        |
| METALWORK   |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES  |  |    |          |      |        |

Section No. 2

Bill No. 12

METALWORK

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Section No. 2

Bill No. 12

METALWORK

REFURBISHMENT AND UPGRADES

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| Item No  |   | Quantity | Rate | Amount |
|--|---|----------|------|--------|
| <b><u>SECTION NO. 2 BUILDING WORKS</u></b>   |   |          |      |        |
| <b><u>BILL NO. 13</u></b>  |   |          |      |        |
| <b><u>PLASTERING</u></b>   |   |          |      |        |
| Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill. |   |          |      |        |
| NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 142 for Haylett Formula purposes.                                   |   |          |      |        |
| <b><u>SCREEDS</u></b>  |   |          |      |        |
| <b><u>Screeds wood floated on concrete</u></b>   |   |          |      |        |
| 1  | Average 80mm thick on floors to falls and currents to receive waterproofing | m2       | 120  |        |
| <b><u>Screeds on concrete</u></b>  |   |          |      |        |
| 2  | 15mm Thick self levelling screed  | m2       | 165  |        |
| 3  | 25mm Thick on floors and landings   | m2       | 661  |        |
| 4  | 25mm Thick on treads and risers of stairs                                   | m2       | 10   |        |
| <b><u>GRANOLITHIC</u></b>  |   |          |      |        |
| <b><u>Untinted granolithic on concrete</u></b>   |   |          |      |        |
| 5  | 30mm Thick on floors and landings   | m2       | 261  |        |
| 6  | 30mm Thick on treads and risers of stairs                                   | m2       | 1    |        |
| 7  | Skirting 100mm high   | m        | 95   |        |
| <b><u>INTERNAL PLASTER</u></b>   |   |          |      |        |
| Carried to Collection  |   |          |      | R      |
| Section No. 2  |   |          |      |        |
| Bill No. 13  |   |          |      |        |
| PLASTERING   |   |          |      |        |
| REFURBISHMENT AND UPGRADES   |   |          |      |        |

| Item No                    |   | Quantity | Rate  | Amount |
|----------------------------|---|----------|-------|--------|
|                            | <b><u>Cement plaster on brickwork</u></b>   |          |       |        |
| 8                          | On walls  | m2       | 1,856 |        |
| 9                          | On walls in service ducts in confined space   | m2       | 80    |        |
| 10                         | On walls in patches   | m2       | 5     |        |
| 11                         | On narrow widths  | m2       | 144   |        |
|                            | <b><u>Cement plaster on concrete</u></b>  |          |       |        |
|                            | <b><u>Properly clean exposed surfaces of the concrete, chip the concrete surface to create a bond slush with 1:2 riversand cement mixture, cure and apply 1:5 cement plaster finish with a woodfloat.</u></b> |          |       |        |
| 12                         | On ceilings   | m2       | 40    |        |
| 13                         | On ceilings in patches  | m2       | 10    |        |
| 14                         | On raking soffits of stairs   | m2       | 5     |        |
| 15                         | On narrow widths  | m2       | 2     |        |
|                            | <b><u>Two coat plaster with gypsum finish on brickwork</u></b>  |          |       |        |
| 16                         | On walls  | m2       | 50    |        |
| 17                         | On narrow widths  | m2       | 10    |        |
|                            | <b><u>Two coat plaster with gypsum finish on concrete</u></b>   |          |       |        |
| 18                         | On walls  | m2       | 22    |        |
| 19                         | On walls in patches   | m2       | 8     |        |
| 20                         | On narrow widths  | m2       | 5     |        |
|                            | <b><u>EXTERNAL PLASTER</u></b>  |          |       |        |
|                            | <b><u>Cement plaster on brickwork</u></b>   |          |       |        |
| 21                         | On walls (Provisional)  | m2       | 1,411 |        |
| Carried to Collection      |   |          |       | R      |
| Section No. 2              |   |          |       |        |
| Bill No. 13                |   |          |       |        |
| PLASTERING                 |   |          |       |        |
| REFURBISHMENT AND UPGRADES |   |          |       |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No  |   | Quantity | Rate | Amount |
|--|---|----------|------|--------|
| 22   | On walls in decorative bands protruding 12mm from plastered wall surfaces (Provisional) | m2       | 240  |        |
| 23   | On narrow widths  | m2       | 8    |        |
|  | <b>Cement plaster on concrete</b>   |          |      |        |
| 24   | On walls  | m2       | 34   |        |
| 25   | On narrow widths  | m2       | 5    |        |
|  | <b>CORNER PROTECTORS, DIVIDING STRIPS, ETC</b>  |          |      |        |
|  | <b>Edge strips, etc</b>   |          |      |        |
| 26   | 38 x 38mm galvanised steel edge strips fixed to brickwork or concrete                   | m        | 10   |        |
| 27   | 40 x 40mm galvanised steel corner protectors fixed to brickwork or concrete             | m        | 10   |        |
| 28   | 23 x 10mm Flat section brass dividing strips between differing floor finishes           | m        | 84   |        |
| 29   | 25 x 12 x 2mm L-section brass dividing strips between differing floor finishes          | m        | 10   |        |
|  | <b>"Kirk Marketing" or other approved</b>   |          |      |        |
| 30   | APC502 - 50 x 50 x 2mm corner protector   | m        | 100  |        |
| 31   | ACS230 - 23 x 10mm dividing strip   | m        | 50   |        |
| 32   | ARN460 - 46 x 27mm stairnosing  | m        | 50   |        |
| <b>Carried to Collection</b>   |   |          |      | R      |
| <b>Section No. 2</b><br><b>Bill No. 13</b><br><b>PLASTERING</b><br><b>REFURBISHMENT AND UPGRADES</b> |   |          |      |        |

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Bill No. 13

PLASTERING

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Bill No. 13

PLASTERING

REFURBISHMENT AND UPGRADES

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| Item No |   | Quantity | Rate  | Amount |
|---------|---|----------|-------|--------|
|         | <b><u>SECTION NO. 2 BUILDING WORKS</u></b>  |          |       |        |
|         | <b><u>BILL NO. 14</u></b>   |          |       |        |
|         | <b><u>TILING</u></b>  |          |       |        |
|         | Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.  |          |       |        |
|         | NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 144 for Haylett Formula purposes.  |          |       |        |
|         | <b><u>SUPPLEMENTARY PREAMBLES</u></b>   |          |       |        |
|         | 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   |          |       |        |
|         | Ceramic, porcelain, marble and granite tiles are to be fixed and grouted with suitable adhesives and grouts as recommended by the manufacturer of the tiles   |          |       |        |
|         | <b><u>WALL TILING</u></b>   |          |       |        |
|         | <b><u>300 x 600mm (Code: 1ARTEDA6709330X60) "Union Tiles" or similar approved porcelain tiles fixed with TAL or other equal and approved tile adhesive mixed with bonding liquid lieu of water to plastered wall</u></b>  |          |       |        |
| 1       | On walls  | m2       | 2,235 |        |
| 2       | On walls in isolated panels, splashbacks, etc   | m2       | 48    |        |
| 3       | On narrow widths  | m2       | 110   |        |
|         | Carried to Collection   |          |       | R      |
|         | Section No. 2   |          |       |        |
|         | Bill No. 14   |          |       |        |
|         | TILING  |          |       |        |
|         | REFURBISHMENT AND UPGRADES  |          |       |        |



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Section No. 2

Bill No. 14

TILING

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Section No. 2

Bill No. 14

TILING

REFURBISHMENT AND UPGRADES



| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <p><u>Sealing of edges</u></p> <p>Outer edges of sinks, basins, baths, urinals, etc are to be sealed against adjacent surfaces with approved silicone</p> <p><u>PVC-U pipes and fittings</u></p> <p>Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings</p> <p>Soil, waste and vent pipes and fittings shall be solvent weld jointed or sealed with butyl rubber rings</p> <p><u>PVC-U pressure pipes and fittings</u></p> <p>Pipes of 50mm diameter and smaller shall be plain ended with solvent welded PVC-U loose sockets and fittings</p> <p>Pipes of 63mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be PVC-U and all other fittings shall be cast iron, all with similar push-in type joints</p> <p><u>High density polyethylene (HDPE) pipes and fittings</u></p> <p>Pipes shall be type IV and of the class specified with compression fittings</p> <p><u>Polypropylene pipes</u></p> <p>Polypropylene pipes 54mm diameter and smaller shall be seamless copper coloured Class 16 pipes jointed with heat welded thermoplastic or where so described compression fittings</p> <p>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</p> |          |      |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <b>Section No. 2</b><br><b>Bill No. 15</b><br><b>PLUMBING &amp; DRAINAGE (PROVISIONAL)</b><br><b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |





| Item No                           |  | Quantity | Rate | Amount |
|-----------------------------------|--|----------|------|--------|
|                                   | Descriptions of WC pans, slop hoppers, etc shall be deemed to include for joints to soil pipes (pan connectors are separately measured)  |          |      |        |
|                                   | <u>As-built drawings</u>   |          |      |        |
|                                   | Where required, the contractor shall prepare an updated set of as-built drawings. At completion of the contract the contractor shall hand these drawings to the principal agent for reproducing onto the originals for handing over to the employer (provision for allowance of as-built drawings elsewhere) |          |      |        |
|                                   | <b><u>RAINWATER DISPOSAL</u></b>   |          |      |        |
|                                   | <b><u>0,8mm Galvanised sheet steel gutters and rainwater pipes with powder coated finish on outside</u></b>  |          |      |        |
| 1                                 | 100 x 150mm VHV roof gutters   | m        | 201  |        |
| 2                                 | 100mm Diameter rainwater pipes   | m        | 143  |        |
| 3                                 | Extra over gutter for stopped end  | No       | 29   |        |
| 4                                 | Extra over gutter for angle  | No       | 1    |        |
| 5                                 | Extra over gutter for outlet for 100mm pipe  | No       | 43   |        |
| 6                                 | Extra over rainwater pipe for bend   | No       | 27   |        |
| 7                                 | Extra over rainwater pipe for plinth bend  | No       | 40   |        |
| 8                                 | Extra over rainwater pipe for shoe   | No       | 41   |        |
| 9                                 | Extra over rainwater pipe for eaves or plinth offset   | No       | 15   |        |
| 10                                | Extra over rainwater pipe for swan-neck  | No       | 5    |        |
| 11                                | Spreader for 100mm pipe 700mm long   | No       | 5    |        |
|                                   | <b><u>"Fulbore" cast iron outlets</u></b>  |          |      |        |
| 12                                | 150mm Vertical outlet  | No       | 17   |        |
| Carried to Collection             |  |          |      | R      |
| Section No. 2                     |  |          |      |        |
| Bill No. 15                       |  |          |      |        |
| PLUMBING & DRAINAGE (PROVISIONAL) |  |          |      |        |
| REFURBISHMENT AND UPGRADES        |  |          |      |        |



| Item No  |  | Quantity | Rate | Amount |
|--|--|----------|------|--------|
| 13   | 150mm 90 Degree side outlet  | No       | 4    |        |
| <b>SUBSOIL DRAINAGE</b>  |  |          |      |        |
| 14   | Excavation in earth not exceeding 1m deep for pipe trenches  | m3       | 16   |        |
| 15   | Backfilling to pipe trenches   | m3       | 8    |        |
| 16   | 19mm Crushed stone encasing to pipes   | m3       | 1    |        |
| 17   | "Bidim" geofabric filter blanket wrapped around 300 x 300mm stone encasing with 100mm side and 150mm end laps, including stitching | m2       | 4    |        |
| <b>Slotted PVC-U flexible drainage pipes</b>   |  |          |      |        |
| 18   | 110mm Pipes laid in stone encasing (encasing elsewhere)  | m        | 3    |        |
| <b>Extra over slotted PVC-U flexible drainage pipes for fittings</b>   |  |          |      |        |
| 19   | 110mm End cap  | No       | 2    |        |
| 20   | 110mm Bend   | No       | 1    |        |
| <b>Sumps, catchpits, inspection chambers, etc including concrete kerbs or precast concrete cover slabs (gratings and covers elsewhere)</b> |  |          |      |        |
| 21   | 400 x 400mm Junction box 400mm deep internally   | No       | 1    |        |
| <b>Class 6 PVC-U pipes</b>   |  |          |      |        |
| 22   | 40mm Pipes laid in trenches (trenches elsewhere)   | m        | 20   |        |
| 23   | 110mm Pipes laid in trenches (trenches elsewhere)  | m        | 20   |        |
| <b>Extra over Class 6 PVC-U pipes for fittings</b>   |  |          |      |        |
| 24   | 40mm Fittings  | No       | 10   |        |
| 25   | 40mm Bend  | No       | 23   |        |
|  |  |          |      |        |
| <b>Carried to Collection</b>   |  |          |      | R      |
| <b>Section No. 2</b>   |  |          |      |        |
| <b>Bill No. 15</b>   |  |          |      |        |
| <b>PLUMBING &amp; DRAINAGE (PROVISIONAL)</b>   |  |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>  |  |          |      |        |

| Item No                           |  |    | Quantity | Rate | Amount |
|-----------------------------------|--|----|----------|------|--------|
| 26                                | 110mm Bend   | No | 23       |      |        |
| 27                                | 110mm Long radius bend   | No | 3        |      |        |
|                                   | <b><u>Draw wires</u></b>   |    |          |      |        |
| 28                                | 1,6mm Galvanised steel draw wires in pipes   | m  | 5        |      |        |
|                                   | <b><u>SOIL DRAINAGE</u></b>  |    |          |      |        |
| 29                                | Excavation in earth not exceeding 1m deep for pipe trenches  | m3 | 18       |      |        |
| 30                                | Backfilling to pipe trenches   | m3 | 6        |      |        |
| 31                                | Backfilling to pipe trenches compacted to 95% Mod AASHTO density   | m3 | 10       |      |        |
| 32                                | Selected granular filling in bedding under and filling around pipes  | m3 | 10       |      |        |
|                                   | <b><u>Testing</u></b>  |    |          |      |        |
| 33                                | Testing soil drainage system   |    | Item     |      |        |
|                                   | <b><u>SANITARY FITTINGS</u></b>  |    |          |      |        |
| 34                                | 750 x 390 x 900mm Pearl Paraplegic semi closed couple bosed suite with purpose made c.p. side flush lever and purpose made urea seat includes F14 c cranked rail and f16c cistern rail | No | 3        |      |        |
| 35                                | 560x 405 x 210mm White ceramic semi-rectangular wall hung basin with three semi-punched tap holes, integrated overflow, and chain stay hole through the centre, semi punched tap hole  | No | 4        |      |        |
| 36                                | 1200 x 500mm Double concrete wash troughs  | No | 2        |      |        |
|                                   | <b><u>"Franke" or similar approved stainless steel</u></b>   |    |          |      |        |
| 37                                | "Franke" Model Grade 304 18/10 polished stainless steel with two end bowls fitted onto cupboard (Code: 312081)   | No | 7        |      |        |
| Carried to Collection             |  |    |          |      | R      |
| Section No. 2                     |  |    |          |      |        |
| Bill No. 15                       |  |    |          |      |        |
| PLUMBING & DRAINAGE (PROVISIONAL) |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES        |  |    |          |      |        |

| Item No                           |  | Quantity | Rate | Amount |
|-----------------------------------|--|----------|------|--------|
| 38                                | "Franke" Grade 304 18/10 polished stainless steel hand drier (Code: 359961)  | No       | 54   |        |
|                                   | <b><u>Manufactured by "Cobra" or similar approved</u></b>  |          |      |        |
| 39                                | "Cobra Pause" close-coupled WC suite comprising pan with double flap heavy duty plastic seat and matching cistern (Code: SKU:CPSCCST1-6DT01)   | No       | 40   |        |
| 40                                | "Cobra Shelter" ceramic wall hung toilet pan with double flap heavy duty seat (Code: SKU:CSHPAWH1-6DT01)   | No       | 30   |        |
| 41                                | "Cobra Pause" ceramic wall urinal fixed to wall (Code: SKU:CPSURWH1-6DT01)   | No       | 13   |        |
|                                   | <b><u>Manufactured by "Duravit" or similar approved</u></b>  |          |      |        |
| 42                                | "Duravit DuraStyle" vanity basin, overall size 610 x 440 x 150mm sealed with and including "Dow Corning 785" or similar approved silicone sealant mounted on vanity slab or counter tops | No       | 68   |        |
| 43                                | "Duravit D-Code" built in bath tub size 1600 x 700mm   | No       | 1    |        |
|                                   | <b><u>WASTE UNIONS ETC</u></b>   |          |      |        |
|                                   | <b><u>Manufactured by "Cobra"</u></b>  |          |      |        |
| 44                                | 32mm chromium plated basin waste union   | No       | 68   |        |
| 45                                | 32mm chromium plated bath overflow union   | No       | 1    |        |
| 46                                | 40mm chromium plated bath or sink waste union  | No       | 19   |        |
|                                   | <b><u>TRAPS ETC</u></b>  |          |      |        |
| 47                                | 32mm Rubber "P" or "S" trap  | No       | 70   |        |
| 48                                | 32mm Rubber bath "P" trap with overflow outlet and pipe  | No       | 1    |        |
| Carried to Collection             |  |          |      | R      |
| Section No. 2                     |  |          |      |        |
| Bill No. 15                       |  |          |      |        |
| PLUMBING & DRAINAGE (PROVISIONAL) |  |          |      |        |
| REFURBISHMENT AND UPGRADES        |  |          |      |        |

| Item No   |  |    | Quantity | Rate | Amount |
|---|--|----|----------|------|--------|
| 49  | 32 x 40mm Rubber double bowl wash trough or sink reseal "P" or "S" trap combination  | No | 9        |      |        |
| 50  | 100mm floor drain  | No | 52       |      |        |
| 51  | Stainless steel floor trap with grating  | No | 1        |      |        |
|   | <u>Manufactured by "Cobra"</u>   |    |          |      |        |
| 52  | 75mm chromium plated hinged urinal domical grating   | No | 13       |      |        |
| 53  | 40mm brass shower trap with chromium plated grating  | No | 46       |      |        |
| 54  | 32mm chromium plated bottle trap   | No | 13       |      |        |
|   | <b><u>TAPS, VALVES, ETC</u></b>  |    |          |      |        |
| 55  | 15mm Brass stopcock  | No | 155      |      |        |
| 56  | 15mm Brass fullway gate valve  | No | 3        |      |        |
| 57  | 15mm Brass hose bib-tap  | No | 6        |      |        |
| 58  | 15mm Brass non-return valve  | No | 3        |      |        |
|   | <b><u>Manufactured by "Victorian Bathrooms" or similar approved</u></b>  |    |          |      |        |
| 59  | 15mm chromium plated extension piece with sliding wall flange  | No | 158      |      |        |
| 60  | "Britannia Shower Set" comprising Shower mixer (Code: 23002660), "Burlington" riser pipe (Code: 12621000), Shower arm (Code: 27097502), Shower rose (Code: 23089601), Diverter (Code: 23009201), Hose (Code: 240085c0), Outlet and Hook (Code: 23004901) fixed to position | No | 39       |      |        |
| 61  | 15mm "Britannia" basin mixer set (Code: 23004201)  | No | 41       |      |        |
| 62  | 15mm "Britannia" chromium plated angle regulating valve and flexible connection pipe   | No | 121      |      |        |
| Carried to Collection   |  |    |          | R    |        |
| <b>Section No. 2</b><br><b>Bill No. 15</b><br><b>PLUMBING &amp; DRAINAGE (PROVISIONAL)</b><br><b>REFURBISHMENT AND UPGRADES</b> |  |    |          |      |        |

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
| 63      | 15mm "Britannia" chromium plated fullway isolating ball valve  | No       | 121  |        |
|         | <b><u>Manufactured by "Cobra" or similar approved</u></b>  |          |      |        |
| 64      | 15mm "Cobra" recess standard single-lever basin mixer set including spout (Code: FBN1W2Y5-0GT0383)   | No       | 26   |        |
| 65      | 15mm "Cobra Ledimo" wall mounted sink mixer with over-arm swivel outlet and adjustable wall flanges (Code: SKU:FSK2W2LE-0GT01)   | No       | 9    |        |
| 66      | 15mm "Cobra Ledimo" stop tap concealed female (Code: FSTAF1LE-0GT01)   | No       | 14   |        |
| 67      | "Cobra" shower head (Code: FSWHR107-0GT0156)   | No       | 7    |        |
| 68      | "Cobra" chromium plated exposed WC "Junior Flushmaster" flush valve with straight chrome plated top entry flush pipe, compression pan connector, wall flange, rubber seat buffer, integral vacuum breaker and control inlet and palm press push button (Code: FJ2.210) | No       | 43   |        |
|         | <b><u>SANITARY PLUMBING</u></b>  |          |      |        |
|         | <b><u>PVC-U soil and vent pipes</u></b>  |          |      |        |
| 69      | 40mm Pipes chased into brickwork   | m        | 10   |        |
| 70      | 50mm Pipes chased into brickwork   | m        | 5    |        |
|         | <b><u>Extra over PVC-U soil and vent pipes for fittings</u></b>  |          |      |        |
| 71      | 40mm End cap   | No       | 2    |        |
| 72      | 40mm BSP adaptor   | No       | 2    |        |
| 73      | 40mm Reducer   | No       | 2    |        |
| 74      | 40mm Eccentric reducer   | No       | 2    |        |
| 75      | 40mm Bend  | No       | 2    |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <b>Section No. 2</b>   |          |      |        |
|         | <b>Bill No. 15</b>   |          |      |        |
|         | <b>PLUMBING &amp; DRAINAGE (PROVISIONAL)</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |

| Item No                                      |   |    | Quantity | Rate | Amount |
|--|---|----|----------|------|--------|
| 76   | 50mm End cap  | No | 2        |      |        |
| 77   | 50mm BSP adaptor  | No | 2        |      |        |
| 78   | 50mm Reducer  | No | 2        |      |        |
| 79   | 50mm Eccentric reducer  | No | 2        |      |        |
| 80   | 50mm Bend   | No | 2        |      |        |
| 81   | 110mm Pan connector   | No | 70       |      |        |
|  | <b><u>Extra over PVC-U soil and vent pipes for cast iron fittings</u></b> |    |          |      |        |
| 82   | 110mm Bend  | No | 1        |      |        |
|  | <b><u>Sundries</u></b>  |    |          |      |        |
| 83   | Wire balloon grating in top of pipe not exceeding 100mm diameter          | No | 1        |      |        |
|  | <b><u>Testing</u></b>   |    |          |      |        |
| 84   | Testing waste pipe system   |    | Item     |      |        |
|  | <b><u>WATER SUPPLIES</u></b>  |    |          |      |        |
|  | <b><u>Class 10 HDPe type IV pipes</u></b>                                 |    |          |      |        |
| 85   | 63mm Pipes laid in and including trenches not exceeding 1m deep           | m  | 50       |      |        |
|  | <b><u>Extra over Class 10 HDPe type IV pipes</u></b>                      |    |          |      |        |
| 86   | 63mm Fittings   | No | 5        |      |        |
| 87   | 63mm Reducer  | No | 5        |      |        |
| 88   | 63mm Bend   | No | 5        |      |        |
| 89   | 63mm Threaded adaptor   | No | 5        |      |        |
| <b>Carried to Collection</b>                 |   |    |          |      | R      |
| <b>Section No. 2</b>                         |   |    |          |      |        |
| <b>Bill No. 15</b>                           |   |    |          |      |        |
| <b>PLUMBING &amp; DRAINAGE (PROVISIONAL)</b> |   |    |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>            |   |    |          |      |        |

| Item No                           |  |    | Quantity | Rate | Amount |
|-----------------------------------|--|----|----------|------|--------|
|                                   | <b><u>Galvanised medium steel pipes with screwed and socketed joints</u></b>                               |    |          |      |        |
| 90                                | 25mm Pipes laid in and including trenches not exceeding 1m deep  | m  | 130      |      |        |
| 91                                | 32mm Pipes laid in and including trenches not exceeding 1m deep  | m  | 130      |      |        |
|                                   | <b><u>Extra over galvanised steel pipes with screwed and socketed joints for medium steel fittings</u></b> |    |          |      |        |
| 92                                | 25mm Fittings  | No | 6        |      |        |
| 93                                | 25mm Bend  | No | 14       |      |        |
| 94                                | 25mm Tee   | No | 10       |      |        |
| 95                                | 25mm Junction  | No | 7        |      |        |
| 96                                | 25mm Reducing junction   | No | 4        |      |        |
| 97                                | 32mm Fittings  | No | 2        |      |        |
| 98                                | 32mm Bend  | No | 14       |      |        |
| 99                                | 32mm Tee   | No | 10       |      |        |
| 100                               | 32mm Junction  | No | 7        |      |        |
| 101                               | 32mm Reducing junction   | No | 5        |      |        |
|                                   | <b><u>Class 1 copper pipes with brass compression couplings</u></b>  |    |          |      |        |
| 102                               | 15mm Pipes   | m  | 30       |      |        |
| 103                               | 22mm Pipes chased into brickwork including brown paper lagging   | m  | 10       |      |        |
|                                   | <b><u>Extra over Class 1 copper pipes for capillary fittings</u></b>                                       |    |          |      |        |
| 104                               | 15mm Fittings  | No | 2        |      |        |
| Carried to Collection             |  |    |          |      | R      |
| Section No. 2                     |  |    |          |      |        |
| Bill No. 15                       |  |    |          |      |        |
| PLUMBING & DRAINAGE (PROVISIONAL) |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES        |  |    |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
| 105     | 15mm Reducer  | No 2     |      |        |
| 106     | 15mm Elbow  | No 2     |      |        |
| 107     | 15mm Tee  | No 2     |      |        |
| 108     | 22mm Fittings   | No 2     |      |        |
| 109     | 22mm Reducer  | No 2     |      |        |
| 110     | 22mm Elbow  | No 2     |      |        |
| 111     | 22mm Tee  | No 2     |      |        |
|         | <b><u>Testing</u></b>   |          |      |        |
| 112     | Testing water pipe system   | Item     |      |        |
|         | <b><u>BATHROOM FITTINGS</u></b>   |          |      |        |
|         | <b><u>Manufactured by "Union" or similar approved</u></b>   |          |      |        |
| 113     | 20mm Diameter chromium plated stainless steel curtain or hanging rail 2100mm long including flanged end brackets, plugged | No 21    |      |        |
| 114     | 20mm Diameter chromium plated stainless steel curtain or hanging rail 1900mm long including flanged end brackets, plugged | No 20    |      |        |
| 115     | 20mm Diameter chromium plated stainless steel towel rail 600mm long including end brackets, plugged                       | No 47    |      |        |
| 116     | 20mm chromium plated stainless steel towel ring, plugged  | No 39    |      |        |
| 117     | Chromium plated stainless steel lockable toilet roll holder, plugged  | No 31    |      |        |
| 118     | Soap dispenser, plugged   | No 69    |      |        |
| 119     | Paper towel dispenser, plugged  | No 14    |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 2</b>  |          |      |        |
|         | <b>Bill No. 15</b>  |          |      |        |
|         | <b>PLUMBING &amp; DRAINAGE (PROVISIONAL)</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |



| Item No   |  |    | Quantity | Rate | Amount |
|---|--|----|----------|------|--------|
| 120   | 32mm chromium plated stainless steel back grab rail<br>800mm long, plugged   | No | 3        |      |        |
| 121   | 32mm chromium plated stainless steel side grab rail<br>800mm girth, plugged  | No | 3        |      |        |
| <b><u>FIRE APPLIANCES ETC</u></b>   |  |    |          |      |        |
| <b><u>Fire hydrant pedestals</u></b>  |  |    |          |      |        |
| 122   | Unreinforced concrete hydrant pedestal 900mm high,<br>cast around vertical pipe with bottom 300mm below<br>ground, 300 x 300mm square at base and tapering to<br>200 x 200mm overall octagonal shaped top, including<br>excavation, formwork and two coats of paint to exposed<br>surfaces | No | 1        |      |        |
| <b><u>HOLES ETC</u></b>   |  |    |          |      |        |
| <b><u>Core drilling hole exceeding 100mm and not<br/>exceeding 200mm diameter</u></b> |  |    |          |      |        |
| 123   | 300mm Thick reinforced concrete slab, beam, wall, etc  | No | 1        |      |        |
| <b><u>AS-BUILT DRAWINGS</u></b>   |  |    |          |      |        |
| 124   | Provision of as-built drawings   |    | Item     |      |        |
| Carried to Collection   |  |    |          |      | R      |
| Section No. 2   |  |    |          |      |        |
| Bill No. 15   |  |    |          |      |        |
| PLUMBING & DRAINAGE (PROVISIONAL)   |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES  |  |    |          |      |        |

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Bill No. 15

PLUMBING & DRAINAGE (PROVISIONAL)

COLLECTION

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PLUMBING & DRAINAGE (PROVISIONAL)  
REFURBISHMENT AND UPGRADES

R



| Item No                    |   |    | Quantity | Rate | Amount |
|----------------------------|---|----|----------|------|--------|
|                            | <b><u>6,38mm PVB "Deep Jade Green" tinted laminated glass</u></b>   |    |          |      |        |
| 6                          | Panes exceeding 0,5m2 and not exceeding 2m2   | m2 | 3        |      |        |
| 7                          | Panes exceeding 2m2 and not exceeding 4m2   | m2 | 2        |      |        |
|                            | <b><u>4mm "Jade Green" tinted toughened safety glass with 20-30% silk screening</u></b>   |    |          |      |        |
| 8                          | Panes exceeding 0,5m2 and not exceeding 2m2   | m2 | 2        |      |        |
|                            | <b><u>Sundries</u></b>  |    |          |      |        |
| 9                          | Butt joints to 4mm toughened glass including polished edges and silicone sealant  | m  | 4        |      |        |
| 10                         | Butt joints to 6,38mm laminated glass including polished edges and silicone sealant   | m  | 4        |      |        |
|                            | <b><u>MIRRORS</u></b>   |    |          |      |        |
|                            | <b><u>6mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork or concrete</u></b> |    |          |      |        |
| 11                         | Mirror 600 x 900 mm high with four screws   | No | 29       |      |        |
| 12                         | Mirror 1200 x 1200 mm high with four screws   | No | 40       |      |        |
| Carried to Collection      |   |    |          |      | R      |
| Section No. 2              |   |    |          |      |        |
| Bill No. 16                |   |    |          |      |        |
| GLAZING                    |   |    |          |      |        |
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GLAZING

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Bill No. 16

GLAZING

REFURBISHMENT AND UPGRADES

R



| Item No |  | Quantity | Rate   | Amount |
|---------|--|----------|--------|--------|
|         | <p><b><u>Previously varnished wood surfaces</u></b></p> <p>Surfaces shall be thoroughly cleaned down. Blistered or flaking varnish shall be completely removed and sanded down to a uniform matt finish and cracks and crevices shall be primed, filled with suitable filler and finished smooth</p> <p><b><u>PAINTWORK, ETC. TO PREVIOUSLY PAINTED WORK</u></b></p> <p><b><u>ON FLOATED PLASTER</u></b></p> <p><b><u>One coat primer and two coats interior quality PVA emulsion paint on previously painted surfaces in moderate condition</u></b></p> |          |        |        |
| 1       | On internal walls  | m2       | 10,091 |        |
| 2       | On ceilings and beams  | m2       | 2,540  |        |
|         | <p><b><u>One coat primer and two coats exterior quality PVA emulsion paint on previously painted surfaces in moderate condition</u></b></p>  |          |        |        |
| 3       | On external walls  | m2       | 3,165  |        |
|         | <p><b><u>Prepare and paint two coats water-based epoxy coating on previously coated surfaces in moderate condition</u></b></p>   |          |        |        |
| 4       | On granolithic floors between equipment in confined spaces   | m2       | 20     |        |
|         | <p><b><u>ON SMOOTH CONCRETE</u></b></p> <p><b><u>One coat primer and two coats interior quality PVA emulsion paint on previously painted surfaces in moderate condition</u></b></p>  |          |        |        |
| 5       | On ceilings and beams  | m2       | 30     |        |
|         | <p><b><u>ON ROOFS</u></b></p>  |          |        |        |
|         |  |          |        |        |
|         |  |          |        |        |
|         | Carried to Collection  |          | R      |        |
|         | Section No. 2  |          |        |        |
|         | Bill No. 17  |          |        |        |
|         | PAINTWORK  |          |        |        |
|         | REFURBISHMENT AND UPGRADES   |          |        |        |

| Item No                    |   | Quantity | Rate  | Amount |
|----------------------------|---|----------|-------|--------|
|                            | <u>One coat primer and two coats exterior quality PVA emulsion paint on existing roof in moderate condition</u>   |          |       |        |
| 6                          | On concrete roof tiles  | m2       | 1,806 |        |
|                            | <u>One coat water based galvanised iron primer and two coats UV-resistant water based alkyd roof paint, on galvanised steel</u>   |          |       |        |
| 7                          | IBR profile troughed roof   | m2       | 120   |        |
|                            | <b><u>ON GALVANISED STEEL</u></b>   |          |       |        |
|                            | <u>Derust, one coat calcium plumbate primer and two coats aluminium paint on galvanised steel</u>   |          |       |        |
| 8                          | On framework of service channel ducts not exceeding 300 mm girth  | m        | 6     |        |
| 9                          | On rails, bars, pipes, etc not exceeding 300 mm girth   | m        | 6     |        |
|                            | <b><u>ON METAL</u></b>  |          |       |        |
|                            | <u>Spot priming bare metal surfaces with zinc chromate primer and applying one undercoat and two coats eggshell enamel paint on previously painted surfaces in moderate condition</u> |          |       |        |
| 10                         | On door frames  | m2       | 75    |        |
| 11                         | On transformer room doors and frames  | m2       | 8     |        |
| 12                         | On gates, grilles, burglar screens, etc. (both sides measured over the full flat area)  | m2       | 96    |        |
|                            | <b><u>ON WOOD</u></b>   |          |       |        |
|                            | <u>Three coats polyurethane eggshell varnish on previously painted surfaces in moderate condition</u>   |          |       |        |
| 13                         | On doors  | m2       | 139   |        |
|                            | <b><u>PAINTWORK ETC TO NEW WORK</u></b>   |          |       |        |
| Carried to Collection      |   |          |       | R      |
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| Bill No. 17                |   |          |       |        |
| PAINTWORK                  |   |          |       |        |
| REFURBISHMENT AND UPGRADES |   |          |       |        |



| Item No                    |  |    | Quantity | Rate | Amount |
|----------------------------|--|----|----------|------|--------|
|                            | <b><u>ON FLOATED PLASTER</u></b>   |    |          |      |        |
|                            | <b><u>One coat primer and two coats interior quality PVA emulsion paint</u></b>                    |    |          |      |        |
| 14                         | On internal walls  | m2 | 1,839    |      |        |
| 15                         | On ceilings and beams  | m2 | 30       |      |        |
| 16                         | On sloping ceilings  | m2 | 5        |      |        |
|                            | <b><u>One coat primer and two coats exterior quality PVA emulsion paint</u></b>                    |    |          |      |        |
| 17                         | On external walls  | m2 | 307      |      |        |
|                            | <b><u>One coat primer and two coats polyurethane velvet enamel paint</u></b>                       |    |          |      |        |
| 18                         | On internal walls  | m2 | 10       |      |        |
|                            | <b><u>One coat primer and two coats eggshell enamel paint</u></b>                                  |    |          |      |        |
| 19                         | On internal walls  | m2 | 8        |      |        |
|                            | <b><u>ON PLASTER BOARD, HARDBOARD, ETC.</u></b>  |    |          |      |        |
|                            | <b><u>One coat primer and two coats interior quality PVA emulsion paint</u></b>                    |    |          |      |        |
| 20                         | On partitions  | m2 | 640      |      |        |
| 21                         | On ceilings and bulkheads  | m2 | 818      |      |        |
| 22                         | On cornices  | m2 | 108      |      |        |
|                            | <b><u>ON FIBRE-CEMENT BOARD</u></b>  |    |          |      |        |
|                            | <b><u>Two coats extremely durable UV-resistant, washable pure acrylic emulsion sheen paint</u></b> |    |          |      |        |
| 23                         | Fascias and barge boards including priming metal jointing strips                                   | m2 | 20       |      |        |
| Carried to Collection      |  |    |          |      | R      |
| Section No. 2              |  |    |          |      |        |
| Bill No. 17                |  |    |          |      |        |
| PAINTWORK                  |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES |  |    |          |      |        |

| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
| 24                         | Fascias and barge boards not exceeding 300mm girth, including priming metal jointing strips  | m        | 920  |        |
|                            | <b><u>ON METAL</u></b>   |          |      |        |
|                            | <b><u>Spot priming defects in pre-primed surfaces with zinc chromate primer and applying one undercoat and two coats eggshell enamel paint</u></b> |          |      |        |
| 25                         | On door frames   | m2       | 319  |        |
| 26                         | On transformer room doors and frames   | m2       | 8    |        |
| 27                         | On structural steel beams, columns, bearers, etc.  | m2       | 30   |        |
| 28                         | On gates, grilles, burglar screens, window frames etc. (both sides measured over the full flat area)   | m2       | 12   |        |
| 29                         | On rails, bars, pipes, etc. of balustrading, ladders, etc. not exceeding 300mm girth   | m        | 20   |        |
| 30                         | On rails, bars, posts, etc. of screens not exceeding 300mm girth   | m        | 10   |        |
|                            | <b><u>One coat calcium plumbate primer, one undercoat and two coats alkyd enamel paint on galvanised steel</u></b>                                 |          |      |        |
| 31                         | On steel frames of cover slabs not exceeding 300mm girth   | m        | 6    |        |
|                            | <b><u>ON WOOD</u></b>  |          |      |        |
|                            | <b><u>One coat wood primer</u></b>   |          |      |        |
| 32                         | On back of medium density fibreboard cornices  | m        | 6    |        |
|                            | <b><u>One coat wood primer and two coats polyurethane velvet enamel paint</u></b>  |          |      |        |
| 33                         | On doors   | m2       | 364  |        |
| 34                         | On partition doors   | m2       | 22   |        |
| Carried to Collection      |  |          |      | R      |
| Section No. 2              |  |          |      |        |
| Bill No. 17                |  |          |      |        |
| PAINTWORK                  |  |          |      |        |
| REFURBISHMENT AND UPGRADES |  |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

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Bill No. 17

PAINTWORK

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Section No. 2

Bill No. 17

PAINTWORK

REFURBISHMENT AND UPGRADES

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| Item No   | Quantity | Rate | Amount |
|---|----------|------|--------|
| <b><u>SECTION NO. 3: EXTERNAL WORKS</u></b>   |          |      |        |
| <b><u>BILL NO. 1</u></b>  |          |      |        |
| <b><u>EARTHWORKS AND DEMOLITIONS (PROVISIONAL)</u></b>  |          |      |        |
| Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.  |          |      |        |
| NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 104 for Haylett Formula purposes.  |          |      |        |
| <b><u>SUPPLEMENTARY PREAMBLES</u></b>   |          |      |        |
| <u>Items, materials or methods to be used specified by trade names or catalogue numbers are only an indication of the quality required. Items, materials or methods of similar quality may be used with prior approval from the architect</u>         |          |      |        |
| <b><u>BULK EXCAVATIONS AND ROADWORKS</u></b>  |          |      |        |
| <b><u>NOTE:</u></b>   |          |      |        |
| <u>The provisions of SABS 1200 as listed on the drawings, shall apply except that should anything in these Bills of Quantities be at variance with the provisions of SABS 1200 the provisions in these Bills of Quantities shall take precedence.</u> |          |      |        |
| <u>In this respect any reference to method of measurement in SABS 1200 is specifically deleted and the method used in these Bills of Quantities shall apply</u>   |          |      |        |
| <b><u>SITE CLEARANCE, ETC.</u></b>  |          |      |        |
| Carried to Collection   |          |      | R      |
| Section No. 3   |          |      |        |
| Bill No. 1  |          |      |        |
| EARTHWORKS AND DEMOLITIONS (PROVISIONAL)  |          |      |        |
| REFURBISHMENT AND UPGRADES  |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b><u>Site Clearance</u></b>  |          |      |        |
| 1       | Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.   | m2       | 459  |        |
| 2       | Stripping average 150mm thick layer of top soil around the buildings and stockpiling on site  | m3       | 44   |        |
|         | <b><u>REMOVAL OF TREES ETC</u></b>  |          |      |        |
|         | <b><u>Cutting down and removing, grubbing up roots and filling in holes</u></b>   |          |      |        |
| 3       | Take out and remove tree with trunk exceeding 200mm and not exceeding 500mm girth including grubbing up roots and filling in holes with clean dry earth filling                                 | No       | 3    |        |
|         | <b><u>BULK EXCAVATION</u></b>   |          |      |        |
|         | <b><u>Open face excavation</u></b>  |          |      |        |
| 4       | Open face excavation to form platforms, etc and depositing excavated material in prescribed stock piles on site not exceeding 250mm from site of excavations                                    | m3       | 10   |        |
| 5       | Excavate in earth not exceeding 2m deep under floors and associated works, etc and depositing excavated material in prescribed stock piles on site not exceeding 500mm from site of excavations | m3       | 5    |        |
|         | <b><u>Excavation not exceeding 2m deep</u></b>  |          |      |        |
| 6       | Trenches  | m3       | 5    |        |
| 7       | Holes   | m3       | 4    |        |
|         | <b><u>Extra over bulk excavation in earth for excavation in</u></b>   |          |      |        |
| 8       | Soft rock   | m3       | 1    |        |
| 9       | Hard rock   | m3       | 1    |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 3</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>EARTHWORKS AND DEMOLITIONS (PROVISIONAL)</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No                                  |  | Quantity | Rate | Amount |
|--|--|----------|------|--------|
|  | <b><u>Extra over all excavations for carting away</u></b>                                      |          |      |        |
| 10                                       | Surplus material from stock piles on site to a dumping site to be located by the contractor    | m3       | 10   |        |
|  | <b><u>Risk of collapse of excavations</u></b>  |          |      |        |
| 11                                       | Sides of excavations for layerwork not exceeding 1,5m deep                                     | m2       | 38   |        |
|  | <b><u>FILLING, ETC.</u></b>  |          |      |        |
|  | <b><u>Prescribed density tests</u></b>   |          |      |        |
| 12                                       | Sand displacement density test   | No       | 2    |        |
| 13                                       | Maximum dry density and optimum moisture content test  | No       | 2    |        |
|  | <b><u>Compacted sand filling</u></b>   |          |      |        |
| 14                                       | 25mm clean sand under floors, pavings, footings, etc   | m2       | 6    |        |
|  | <b><u>Earth filling compacted to 93% Mod AASHTO density</u></b>                                |          |      |        |
| 15                                       | Backfilling from the excavations compacted in 150mm layers to 95% modified AASHTO density.(LI) | m3       | 80   |        |
|  | <b><u>Earth filling supplied by the contractor under pavings etc</u></b>                       |          |      |        |
| 16                                       | Earth filling to make up levels under pavings, walkways, etc                                   | m3       | 2    |        |
| Carried to Collection                    |  |          |      | R      |
| Section No. 3                            |  |          |      |        |
| Bill No. 1                               |  |          |      |        |
| EARTHWORKS AND DEMOLITIONS (PROVISIONAL) |  |          |      |        |
| REFURBISHMENT AND UPGRADES               |  |          |      |        |



| Item No                                  |   | Quantity | Rate | Amount |
|--|---|----------|------|--------|
|  | <b><u>Compaction of surfaces</u></b>  |          |      |        |
| 17                                       | Rip insitu material to a depth of 150mm and recompaction of ground surfaces under roads, pavings, channels, etc., including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod AASHTO density | m2       | 6    |        |
|  | <b><u>Approved soil insecticide</u></b>   |          |      |        |
| 18                                       | Under floors, pavings, etc., including forming and poisoning shallow furrows against foundation walls, etc, filling in furrows and ramming  | m2       | 41   |        |
|  | <b><u>REINFORCED CONCRETE</u></b>   |          |      |        |
|  | <b><u>25MPa/19mm concrete</u></b>   |          |      |        |
| 19                                       | Stub columns  | m3       | 6    |        |
|  | <b><u>DEMOLITIONS</u></b>   |          |      |        |
|  | <b><u>Buildings</u></b>   |          |      |        |
|  | <b><u>Take down and demolish the following existing Rondavel building comprising brickwork construction, thatched timber roof structure including removal of foundations, carting away rubble from site and filling with imported materials to match existing levels</u></b>    |          |      |        |
| 20                                       | Single storey building, size 3500mm2 (on plan) X 2600mm high approximately  | No       | 1    |        |
|  | <b><u>Covered Parking</u></b>   |          |      |        |
| Carried to Collection                    |   |          |      | R      |
| Section No. 3                            |   |          |      |        |
| Bill No. 1                               |   |          |      |        |
| EARTHWORKS AND DEMOLITIONS (PROVISIONAL) |   |          |      |        |
| REFURBISHMENT AND UPGRADES               |   |          |      |        |

| Item No   |  |    | Quantity | Rate | Amount |
|---|--|----|----------|------|--------|
|   | <b><u>Take down existing covered parking comprising shadeport net covering on steel support structure including removal of foundations, carting away rubble from site and filling with imported materials to match existing levels</u></b>   |    |          |      |        |
| 21  | Covered parking with shade net approximately 10.4 x 20m  | No | 1        |      |        |
|   | <b><u>REMOVAL OF EXISTING ITEMS</u></b>  |    |          |      |        |
| 22  | Break out and remove 230mm brick walls including all foundations, carting away excavated materials and filling with imported material to match existing levels.  | m2 | 30       |      |        |
| 23  | Take out and remove manhole including cover, disconnecting from pipes, traps, etc and include carting away excavated materials and filling with imported material to match existing levels   | No | 2        |      |        |
| 24  | Take out and remove fire hydrants including piping, excavations, carting away excavated materials and filling with imported material to match existing levels  | No | 2        |      |        |
| 25  | Take down and remove metal waste bin   | No | 5        |      |        |
|   | <b><u>METALWORK</u></b>  |    |          |      |        |
|   | <b><u>Security fencing including site clearance and preparation of ground</u></b>  |    |          |      |        |
| 26  | Cochrance Clear Vu the invisible high density anti climbing anti cut pressed mesh panel fencing 2400mm high, formed of 3 mm diameter horizontal and 4mm diameter vertical high tensile wires galvanized with aperature size 76.2mm x 12.7mm and reinforced v-section ribs, bolted with vandal resistant bolts and clamping plates to 85-45mm taper locking post bedded in 400 x 400 x 600mm deep concrete base | m  | 55       |      |        |
| <b>Carried to Collection</b>                    |  |    |          |      | R      |
| <b>Section No. 3</b>                            |  |    |          |      |        |
| <b>Bill No. 1</b>                               |  |    |          |      |        |
| <b>EARTHWORKS AND DEMOLITIONS (PROVISIONAL)</b> |  |    |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>               |  |    |          |      |        |

| Item No                                  |  |    | Quantity | Rate | Amount |
|--|--|----|----------|------|--------|
| 27                                       | Clear VU manual sliding gate size 5,0 x 2.4m high overall complete with rails locking equipments etc   | No | 1        |      |        |
| 28                                       | 200mm Galvanised heavy duty barrel bolt welded onto gate stile   | No | 1        |      |        |
| 29                                       | Locking chain 600mm long with 50mm links   | No | 1        |      |        |
| 30                                       | 63mm Brass five pin tumbler padlock with two keys  | No | 1        |      |        |
|  | <b><u>"Barnes SKU: 300043" or similar approved steel palisade fence</u></b>  |    |          |      |        |
| 31                                       | Steel palisade fence 2.4m high above ground level over flat or sloping terrain   | m  | 56       |      |        |
| 32                                       | 1.2 x 2.4m high overall steel palisade pedestrian gate complete with locking equipments etc  | No | 1        |      |        |
|  | <b><u>PRECAST CONCRETE</u></b>   |    |          |      |        |
|  | <b><u>"Concretex" or similar approved reinforced precast concrete wall finished smooth on exposed surfaces, including site clearance and preparation of ground</u></b>           |    |          |      |        |
| 33                                       | Precast concrete wall 2.4m high above ground level over flat or sloping terrain  | m  | 28       |      |        |
|  | <b><u>"Concretex" or similar approved reinforced precast concrete palisade fence finished smooth on exposed surfaces, including site clearance and preparation of ground</u></b> |    |          |      |        |
| 34                                       | Precast concrete palisade fence 2.4m high above ground level over flat or sloping terrain  | m  | 28       |      |        |
|  |  |    |          | R    |        |
| Carried to Collection                    |  |    |          |      |        |
| Section No. 3                            |  |    |          |      |        |
| Bill No. 1                               |  |    |          |      |        |
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Bill No. 1

EARTHWORKS AND DEMOLITIONS (PROVISIONAL)

REFURBISHMENT AND UPGRADES



| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <p><u>The provisions of SABS 1200 as listed on the drawings, shall apply except that should anything in these Bills of Quantities be at variance with the provisions of SABS 1200 the provisions in these Bills of Quantities shall take precedence.</u></p> <p><u>In this respect any reference to method of measurement in SABS 1200 is specifically deleted and the method used in these Bills of Quantities shall apply</u></p> <p><b><u>BULK EXCAVATION</u></b></p> <p><b><u>Excavation not exceeding 2m deep</u></b></p> |          |      |        |
| 6       | <p>Average 150mm deep over site to remove topsoil and depositing excavated materials in prescribed stock piles on site</p> <p><b><u>Open face excavation</u></b></p>   | m2       | 300  |        |
| 7       | <p>Open face excavation to form platforms and roads layerworks etc and depositing excavated material in prescribed stock piles on site not exceeding 250mm from site of excavations</p> <p><b><u>Extra over bulk excavation in earth for excavation in</u></b></p>   | m3       | 10   |        |
| 8       | <p>Soft rock</p>   | m3       | 5    |        |
| 9       | <p>Hard rock</p> <p><b><u>Extra over all excavations for carting away</u></b></p>  | m3       | 2    |        |
| 10      | <p>Surplus material from stock piles on site to a dumping site to be located by the contractor</p> <p><b><u>Risk of collapse of excavations</u></b></p>  | m3       | 15   |        |
| 11      | <p>Sides of excavations for layerwork not exceeding 1,5m deep</p> <p><b><u>FILLING, ETC.</u></b></p>   | m2       | 50   |        |
|         | <p style="text-align: right;"><b>Carried to Collection</b></p>   |          |      |        |
|         | <p><b>Section No. 3</b><br/> <b>Bill No. 2</b><br/> <b>ROADWORKS (PROVISIONAL)</b><br/> <b>REFURBISHMENT AND UPGRADES</b></p>  |          |      |        |

| Item No                    |   | Quantity | Rate  | Amount |
|----------------------------|---|----------|-------|--------|
|                            | <b><u>Prescribed density tests</u></b>  |          |       |        |
| 12                         | Sand displacement density test  | No       | 5     |        |
| 13                         | Maximum dry density and optimum moisture content test   | No       | 5     |        |
|                            | <b><u>Compacted sand filling</u></b>  |          |       |        |
| 14                         | 25mm clean sand under floors, pavings, footings, etc  | m2       | 3,035 |        |
|                            | <b><u>Earth filling cemented gravel (C4) material supplied by the contractor stabilized with Portland cement to obtain a UCS of between 0.75 to 1.5 MPa at 95% Mod AASHTO density and maximum particle size of 53mm compacted to 95% Mod AASHTO density</u></b> |          |       |        |
| 15                         | 150mm Upper sub base  | m3       | 28    |        |
|                            | <b><u>Earth filling of G5 (SANS 1200 D) material natural gravel supplied by contractor including compaction to 95% Mod AASHTO density</u></b>   |          |       |        |
| 16                         | Earth filling to make up levels under pavings, walkways, etc  | m3       | 28    |        |
|                            | <b><u>Earth filling of G7 (SANS 1200 D) material natural gravel supplied by contractor including compaction to 95% Mod AASHTO density</u></b>   |          |       |        |
| 17                         | Earth filling to make up levels under pavings, walkways, etc  | m3       | 53    |        |
|                            | <b><u>Base course of G1 graded crushed stone of maximum 25mm (SANS 1200 D) material supplied by contractor including compaction to 95% Mod AASHTO density</u></b>   |          |       |        |
| 18                         | Crusher run filling to make up levels to walkways, etc  | m3       | 113   |        |
| Carried to Collection      |   |          |       | R      |
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| Item No |   | Quantity | Rate  | Amount |
|---------|---|----------|-------|--------|
|         | <b><u>Compaction of surfaces</u></b>  |          |       |        |
| 19      | Rip insitu material to a depth of 150mm and recompaction of ground surfaces under roads, pavings, channels, etc., including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod AASHTO density | m2       | 3,010 |        |
|         | <b><u>Approved soil insecticide</u></b>   |          |       |        |
| 20      | Under floors, pavings, etc., including forming and poisoning shallow furrows against foundation walls, etc, filling in furrows and ramming  | m2       | 3,035 |        |
|         | <b><u>BITUMINOUS HOT APPLIED ROAD SURFACING</u></b>   |          |       |        |
| 21      | 40mm Thick continuously graded TPA medium asphalt to parking areas, roadways, etc including bitumin spray to base course  | m2       | 80    |        |
|         | <b><u>Kerbs</u></b>   |          |       |        |
| 22      | (SANS 927 Fig 5) Kerbing on all sides with 100 x 100mm class 15/19 unreinforced concrete haunching continuous at back of kerbing, including filling planter with potting soil, excavation, backfilling,etc  | m        | 10    |        |
| 23      | Ditto, circular on plan not exceeding 4m radius   | m        | 5     |        |
| 24      | Ditto, circular on plan exceeding 4m radius   | m        | 5     |        |
|         | <b><u>PRECAST CONCRETE</u></b>  |          |       |        |
|         | <b><u>"Technicrete Bondbrick" or similar approved interlocking precast concrete paving blocks laid to pattern, on and including 25mm riversand bed to comply with SABS 1200 MJ-1984, with sand swept into joints</u></b>  |          |       |        |
| 25      | 60mm Paving to falls  | m2       | 2,590 |        |
| 26      | Circular cutting and waste  | m        | 240   |        |
|         | <b>Carried to Collection</b>  |          |       | R      |
|         | <b>Section No. 3</b>  |          |       |        |
|         | <b>Bill No. 2</b>   |          |       |        |
|         | <b>ROADWORKS (PROVISIONAL)</b>  |          |       |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |       |        |



| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b><u>Kerbs</u></b>   |          |      |        |
| 27      | Fig 3 Barrier Kerb  | m        | 230  |        |
| 28      | Ditto, circular on plan not exceeding 4m radius   | m        | 331  |        |
| 29      | Ditto, circular on plan exceeding 4m radius   | m        | 60   |        |
| 30      | Fig 5 Barrier Kerb  | m        | 170  |        |
| 31      | Ditto, circular on plan not exceeding 4m radius   | m        | 331  |        |
| 32      | Ditto, circular on plan exceeding 4m radius   | m        | 60   |        |
| 33      | C900 Mountable Kerb   | m        | 92   |        |
|         | <b><u>"Corobrik Champagne Cobble" or equal and approved 20-30MPa coloured clay paving bricks on and including 25mm river sand bed laid to approved patterns with sand swept over joints</u></b> |          |      |        |
| 34      | 50mm Paving to falls (Walkways)   | m2       | 307  |        |
| 35      | Circular cutting and waste  | m        | 86   |        |
|         | <b><u>Kerbs</u></b>   |          |      |        |
| 36      | Fig 12 Walkway Kerb   | m        | 224  |        |
|         | <b><u>Carefully clean and relay paving bricks previously set aside on and including 25mm river sand bed laid to approved patterns with sand swept over joints</u></b>                           |          |      |        |
| 37      | 60mm Paving to falls  | m2       | 200  |        |
|         | <b><u>"Grey Pavers" or equal and approved 20-30MPa coloured clay paving bricks on and including 25mm river sand bed laid to approved patterns with sand swept over joints</u></b>               |          |      |        |
| 38      | 50mm Paving to falls  | m2       | 300  |        |
| 39      | Circular cutting and waste  | m        | 46   |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 3</b>  |          |      |        |
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|         | <b>ROADWORKS (PROVISIONAL)</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No                    |   | Quantity | Rate | Amount |
|----------------------------|---|----------|------|--------|
|                            | <b><u>Kerbs</u></b>   |          |      |        |
| 40                         | Fig 12 Walkway Kerb   | m        | 140  |        |
|                            | <b><u>ROAD MARKINGS</u></b>   |          |      |        |
|                            | <b><u>Prepare and apply traffic paint on precast concrete paving</u></b>  |          |      |        |
| 41                         | 100mm Barrier line  | m        | 186  |        |
| 42                         | Ditto, circular on plan   | m        | 56   |        |
| 43                         | Figure 1100 x 200mm wide  | No       | 5    |        |
| 44                         | Figure depicting one-way direction arrow  | No       | 3    |        |
| 45                         | Figure depicting yield sign   | No       | 5    |        |
|                            | <b><u>ROAD SIGNS</u></b>  |          |      |        |
| 46                         | Supply and fix in position approved stop sign type R1 on and including a 100mm diameter painted pipe standard 2400mm long embedded in and including 300 x 300 x 500mm unreinforced concrete base in ground including all necessary excavation, formwork, etc. | No       | 1    |        |
| Carried to Collection      |   |          |      | R      |
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Bill No. 2

ROADWORKS (PROVISIONAL)

REFURBISHMENT AND UPGRADES



## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
| 8       | 160mm Bend   | No 3     |      |        |
| 9       | 110mm Access bend  | No 2     |      |        |
| 10      | 160mm Access bend  | No 2     |      |        |
| 11      | 110mm Access junction  | No 3     |      |        |
| 12      | 160mm Access junction  | No 2     |      |        |
| 13      | 110mm Access reducing junction   | No 4     |      |        |
| 14      | 160mm Access reducing junction   | No 1     |      |        |
| 15      | 110mm Rodding eye  | No 1     |      |        |
| 16      | 160mm Rodding eye  | No 1     |      |        |
|         | <b>Sundries</b>  |          |      |        |
| 17      | 450 x 450 x 50mm Precast concrete inspection eye marker slab set in ground   | No 1     |      |        |
| 18      | 100mm Cast iron "ABC" cleaning eye   | No 1     |      |        |
| 19      | Gulley not exceeding 1m deep to invert comprising 100mm diameter vitrified clay gulley trap and head, fitted with 190mm diameter cast iron grating, including excavating for, bedding on and encasing in 15MPa/19mm mass concrete and fitted with and including precast gulley top bedded in cement mortar | No 2     |      |        |
| 20      | Extra on backfilling to pipe trenches not exceeding 1m deep for selected granular material minimum 100mm and maximum 200mm deep around pipes and compacting to 93% Mod AASHTO density  | m 60     |      |        |
| 21      | Ditto, exceeding 1m and not exceeding 2m deep  | m 10     |      |        |
| 22      | Encase 160mm vertical bend in concrete   | No 5     |      |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <b>Section No. 3</b>   |          |      |        |
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|         | <b>SEWER RETICULATION (PROVISIONAL)</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |

| Item No                          |   |    | Quantity | Rate | Amount |
|----------------------------------|---|----|----------|------|--------|
| 23                               | Testing drainage pipe system  |    | Item     |      |        |
|                                  | <b><u>Inspection Chambers</u></b>   |    |          |      |        |
|                                  | <b><u>Precast concrete circular inspection chambers including 560mm diameter heavy duty precast concrete covers</u></b>   |    |          |      |        |
| 24                               | Inspection chamber 1000mm diameter and not exceeding 1m deep internally   | No | 1        |      |        |
|                                  | <b><u>THE FOLLOWING IN PRE-FABRICATED PRECAST CONCRETE MANHOLES</u></b>   |    |          |      |        |
|                                  | <b><u>Shallow type manhole not exceeding 2000mm deep to invert level formed of precast concrete manhole rings components all bedded and jointed with approved watertight joints, the top chamber comprising 750mm internal diameter x 55mm wall thickness rings, with a reducer slab 1250 top 750mm, the bottom ring set comprising 1250mm internal diameter x 75mm wall thickness on and including 260mm thick 20MPa/19mm mass concrete base projecting 75mm beyond external face of chamber ring and sealed to ring with 75mm wide x 125mm high 20MPa/19mm mass concrete triangular fillet complete with precast concrete medium duty cover and frame comprising 150mm thick x 67kg frame and 150mm thick x 66kg cover, complete with and including necessary step irons, 20MPa/19mm mass granolithic concrete benching in bottom with top surfaces to falls and finished smooth with (1:1) cement plaster, 160mm vitrified clay channels, channel bends, channel junctions, etc., additional excavation and backfilling compacted to 90% modified AASHTO density</u></b> |    |          |      |        |
| 25                               | Manhole exceeding not exceeding 1000mm deep   | No | 1        |      |        |
| 26                               | Manhole exceeding 1000mm and not exceeding 2000mm deep  | No | 1        |      |        |
| Carried to Collection            |   |    |          | R    |        |
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| Item No                          |  | Quantity | Rate | Amount |
|----------------------------------|--|----------|------|--------|
|                                  | <p><u>Deep type manhole exceeding 2000mm deep to invert level formed of precast concrete manhole rings components all bedded and jointed with approved watertight joints, the top chamber comprising 750mm internal diameter x 55mm wall thickness rings, with a reducer slab 1250 top 750mm, the bottom ring set comprising 1250mm internal diameter x 75mm wall thickness on and including 260mm thick 20MPa/19mm mass concrete base projecting 75mm beyond external face of chamber ring and sealed to ring with 75mm wide x 125mm high 20MPa/19mm mass concrete triangular fillet complete with precast concrete medium duty cover and frame comprising 150mm thick x 67kg frame and 150mm thick x 66kg cover, complete with and including necessary step irons, 20MPa/19mm mass granolithic concrete benching in bottom with top surfaces to falls and finished smooth with (1:1) cement plaster, 160mm vitrified clay channels, channel bends, channel junctions, etc., additional excavation and backfilling compacted to 90% modified AASHTO density</u></p> |          |      |        |
| 27                               | Manhole exceeding 2000mm and not exceeding 3000mm deep   | No       | 1    |        |
|                                  | <b><u>MASS CONCRETE</u></b>  |          |      |        |
|                                  | <b><u>15MPa/19mm</u></b>   |          |      |        |
| 28                               | In surface blinding under slab   | m3       | 1    |        |
|                                  | <b><u>REINFORCED CONCRETE</u></b>  |          |      |        |
|                                  | <b><u>25MPa/19mm concrete</u></b>  |          |      |        |
| 29                               | In surface bed   | m3       | 1    |        |
|                                  | <b><u>ROUGH FORMWORK (DEGREE OF ACCURACY II)</u></b>   |          |      |        |
|                                  | <b><u>Rough formwork to soffits</u></b>  |          |      |        |
| 30                               | Slabs  | m2       | 3    |        |
| Carried to Collection            |  |          |      | R      |
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| REFURBISHMENT AND UPGRADES       |  |          |      |        |

| Item No                          |  | Quantity | Rate | Amount |
|----------------------------------|--|----------|------|--------|
|                                  | <u>Rough formwork to sides</u>                                   |          |      |        |
| 31                               | Edges, risers, ends and reveals not exceeding 300mm high or wide | m12      |      |        |
| Carried to Collection            |  |          |      | R      |
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REFURBISHMENT AND UPGRADES



| Item No                          |  |    | Quantity | Rate | Amount |
|----------------------------------|--|----|----------|------|--------|
| 10                               | Bend   | No | 4        |      |        |
| 11                               | Reducer  | No | 4        |      |        |
| 12                               | Tee  | No | 4        |      |        |
|                                  | <b><u>Extra over 32mm PVC-U pressure pipes for fittings with solvent welded joints</u></b> |    |          |      |        |
| 13                               | Fittings   | No | 4        |      |        |
| 14                               | Bend   | No | 4        |      |        |
| 15                               | Reducer  | No | 4        |      |        |
| 16                               | Tee  | No | 4        |      |        |
|                                  | <b><u>Extra over 50mm PVC-U pressure pipes for fittings with solvent welded joints</u></b> |    |          |      |        |
| 17                               | Fittings   | No | 4        |      |        |
| 18                               | Bend   | No | 4        |      |        |
| 19                               | Reducer  | No | 4        |      |        |
| 20                               | Tee  | No | 4        |      |        |
|                                  | <b><u>Extra over 63mm PVC-U pressure pipes for fittings with solvent welded joints</u></b> |    |          |      |        |
| 21                               | Fittings   | No | 4        |      |        |
| 22                               | Bend   | No | 4        |      |        |
| 23                               | Reducer  | No | 4        |      |        |
| 24                               | Tee  | No | 4        |      |        |
|                                  | <b><u>HDPE pipes</u></b>   |    |          |      |        |
| 25                               | 63mm Pipes   | m  | 30       |      |        |
| 26                               | 75mm Pipes   | m  | 55       |      |        |
| Carried to Collection            |  |    |          |      | R      |
| Section No. 3                    |  |    |          |      |        |
| Bill No. 4                       |  |    |          |      |        |
| WATER RETICULATION (PROVISIONAL) |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES       |  |    |          |      |        |

| Item No                                 |  |    | Quantity | Rate | Amount |
|---|--|----|----------|------|--------|
|   | <b><u>Extra over 63mm HDPE pipes for fittings</u></b>  |    |          |      |        |
| 27                                      | Fittings   | No | 4        |      |        |
| 28                                      | Bend   | No | 4        |      |        |
| 29                                      | Reducer  | No | 4        |      |        |
| 30                                      | Threaded adaptor   | No | 4        |      |        |
|   | <b><u>Extra over 75mm HDPE pipes for fittings</u></b>  |    |          |      |        |
| 31                                      | Fittings   | No | 4        |      |        |
| 32                                      | Bend   | No | 4        |      |        |
| 33                                      | Reducer  | No | 4        |      |        |
| 34                                      | Threaded adaptor   | No | 4        |      |        |
|   | <b><u>Sundries</u></b>   |    |          |      |        |
| 35                                      | Unreinforced concrete in thrust blocks in trenches at bends, tees, etc including extra excavation, formwork, etc | m3 | 1        |      |        |
| 36                                      | 225 x 225 x 100mm Deep internally cast iron stopcock box including brick chamber below 75mm deep internally      | No | 1        |      |        |
|   | <b><u>Testing</u></b>  |    |          |      |        |
| 37                                      | Testing water pipe system  |    | Item     |      |        |
| <b>Carried to Collection</b>            |  |    |          |      | R      |
| <b>Section No. 3</b>                    |  |    |          |      |        |
| <b>Bill No. 4</b>                       |  |    |          |      |        |
| <b>WATER RETICULATION (PROVISIONAL)</b> |  |    |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>       |  |    |          |      |        |

Section No. 3

Bill No. 4

WATER RETICULATION (PROVISIONAL)

COLLECTION

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Section No. 3

Bill No. 4

WATER RETICULATION (PROVISIONAL)

REFURBISHMENT AND UPGRADES



| Item No                               |  |    | Quantity | Rate | Amount |
|---------------------------------------|--|----|----------|------|--------|
| 5                                     | 450mm junction with inspection eye   | No | 1        |      |        |
| 6                                     | Junction box type A  | No | 1        |      |        |
|                                       | <b><u>Catch Pits</u></b>   |    |          |      |        |
| 7                                     | Storm water catch pit, approximate overall size 920mm x 920 x average 350mm deep, comprising 170mm Thick concrete base with V-shaped channel 310mm wide x 170mm thick and 230mm walls edges in brick-on-edge coping, all including lid and surrounds   | No | 1        |      |        |
| 8                                     | Kerb-inlet approximate overall size 2000 x 920 x average 350mm deep,   | No | 1        |      |        |
|                                       | <b><u>Sundries</u></b>   |    |          |      |        |
| 9                                     | Gulley not exceeding 1000mm deep to invert comprising 100mm diameter vitrified clay gulley trap and head, fitted with 190mm diameter cast iron grating, including excavating for, bedding on and encasing in 15MPa/19mm mass concrete and fitted with and including precast gulley top bedded in (3:1) cement mortar | No | 1        |      |        |
| Carried to Collection                 |  |    |          |      | R      |
| Section No. 3                         |  |    |          |      |        |
| Bill No. 5                            |  |    |          |      |        |
| STORMWATER RETICULATION (PROVISIONAL) |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES            |  |    |          |      |        |

Section No. 3

Bill No. 5

STORMWATER RETICULATION (PROVISIONAL)

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Section No. 3

Bill No. 5

STORMWATER RETICULATION (PROVISIONAL)

REFURBISHMENT AND UPGRADES

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| Item No |  | Quantity | Rate  | Amount |
|---------|--|----------|-------|--------|
|         | <b><u>SECTION NO. 3: EXTERNAL WORKS</u></b>  |          |       |        |
|         | <b><u>BILL NO. 6</u></b>   |          |       |        |
|         | <b><u>COVERED CARPORT AND WALKWAY (PROVISIONAL)</u></b>  |          |       |        |
|         | Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.   |          |       |        |
|         | NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 134 for Haylett Formula purposes.   |          |       |        |
|         | <b><u>COVERED CARPORT</u></b>  |          |       |        |
|         | <b><u>Roof Covering</u></b>  |          |       |        |
|         | <u>0.6mm Thick Klip-Lok-700 metal roof sheeting in 700mm wide single lengths with Chromadek finish to approved colour on one side and standard grey backing finish on reverse side, all fixed to steel rafters (elsewhere measured) in accordance with the manufacturer's instructions</u> |          |       |        |
| 1       | Roof covering with pitch not exceeding 25 degrees.   | m2       | 215   |        |
| 2       | Flashings with 100mm laps  | m2       | 6     |        |
|         | <b><u>Structural Steel</u></b>   |          |       |        |
| 3       | 100x100x4mm SHS Column   | kg       | 650   |        |
| 4       | 150x150x4,5mm SHS Rafter   | kg       | 1,096 |        |
| 5       | 125x50x20x2,5mm CFLC Purlin  | kg       | 993   |        |
| 6       | 101,6mm Dia x 3mm thick CHS Rafter Bracing   | kg       | 438   |        |
| 7       | 40x40x3mm Equal Angle Sag Bar  | kg       | 165   |        |
|         | <b>Carried to Collection</b>   |          |       | R      |
|         | <b>Section No. 3</b>   |          |       |        |
|         | <b>Bill No. 6</b>  |          |       |        |
|         | <b>COVERED CARPORT AND WALKWAY (PROVISIONAL REFURBISHMENT AND UPGRADES</b>   |          |       |        |

| Item No |  |    | Quantity | Rate | Amount |
|---------|--|----|----------|------|--------|
|         | <b><u>Structural Steel Sundries</u></b>  |    |          |      |        |
| 8       | 260x260x10mm Base plate  | kg | 106      |      |        |
| 9       | M16 "Trufix" bolts   | No | 80       |      |        |
| 10      | M12 Grade 8,8 Bolt   | No | 220      |      |        |
|         | <b><u>Drainage</u></b>   |    |          |      |        |
| 11      | 150x100mm Steel gutter   | m  | 10       |      |        |
| 12      | 100mm Diameter downpipe 3000mm long  | No | 10       |      |        |
|         | <b><u>Painting</u></b>   |    |          |      |        |
|         | <u>Prepare and apply one coat zinc chromate primer, one undercoat and two coats high gloss enamel paint</u>  |    |          |      |        |
| 13      | On steel members not exceeding 300mm girth   | m  | 468      |      |        |
|         | <b><u>COVERED WALKWAY</u></b>  |    |          |      |        |
|         | <b><u>Roof Covering</u></b>  |    |          |      |        |
|         | <u>0.6mm Thick Klip-Lok-700 metal roof sheeting in 700mm wide single lengths with Chromadek finish to approved colour on one side and standard grey backing finish on reverse side, all fixed to steel rafters (elsewhere measured) in accordance with the manufacturer's instructions</u> |    |          |      |        |
| 14      | Roof covering with pitch not exceeding 25 degrees.   | m2 | 17       |      |        |
| 15      | Flashings with 100mm laps  | m2 | 3        |      |        |
|         | <b><u>Structural Steel</u></b>   |    |          |      |        |
| 16      | 100x100x4mm SHS Column   | kg | 330      |      |        |
| 17      | 150x150x4,5mm SHS Rafter   | kg | 145      |      |        |
| 18      | 125x50x20x2,5mm CFLC Purlin  | kg | 166      |      |        |
|         | <b>Carried to Collection</b>   |    |          |      | R      |
|         | <b>Section No. 3</b>   |    |          |      |        |
|         | <b>Bill No. 6</b>  |    |          |      |        |
|         | <b>COVERED CARPORT AND WALKWAY (PROVISIONAL REFURBISHMENT AND UPGRADES</b>   |    |          |      |        |

| Item No  |   |    | Quantity | Rate | Amount |
|--|---|----|----------|------|--------|
| 19   | 101,6mm Dia x 3mm thick CHS Rafter Bracing  | kg | 5        |      |        |
| 20   | 40x40x3mm Equal Angle Sag Bar   | kg | 8        |      |        |
|  | <b><u>Structural Steel Sundries</u></b>   |    |          |      |        |
| 21   | 260x260x10mm Base plate   | kg | 54       |      |        |
| 22   | M16 "Trufix" bolts  | No | 40       |      |        |
| 23   | M12 Grade 8,8 Bolt  | No | 100      |      |        |
|  | <b><u>Drainage</u></b>  |    |          |      |        |
| 24   | 150x100mm Steel gutter  | m  | 11       |      |        |
| 25   | 100mm Diameter downpipe 3000mm long   | No | 5        |      |        |
|  | <b><u>Painting</u></b>  |    |          |      |        |
|  | <u>Prepare and apply one coat zinc chromate primer, one undercoat and two coats high gloss enamel paint</u> |    |          |      |        |
| 26   | On steel members not exceeding 300mm girth  | m  | 80       |      |        |
| Carried to Collection  |   |    |          |      | R      |
| Section No. 3  |   |    |          |      |        |
| Bill No. 6   |   |    |          |      |        |
| COVERED CARPORT AND WALKWAY (PROVISIONAL REFURBISHMENT AND UPGRADES) |   |    |          |      |        |

Section No. 3

Bill No. 6

COVERED CARPORT AND WALKWAY (PROVISIONAL)

COLLECTION

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Section No. 3

Bill No. 6

COVERED CARPORT AND WALKWAY (PROVISIONAL  
REFURBISHMENT AND UPGRADES

| Item No  |   | Quantity | Rate | Amount |
|--|---|----------|------|--------|
| <b><u>SECTION NO. 3: EXTERNAL WORKS</u></b>  |   |          |      |        |
| <b><u>BILL NO. 7</u></b>   |   |          |      |        |
| <b><u>BUILDER'S WORK IN CONNECTION WITH SERVICES (PROVISIONAL)</u></b>   |   |          |      |        |
| Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill. |   |          |      |        |
| NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 146 for Haylett Formula purposes.                                   |   |          |      |        |
| <b><u>uPVC pipes in underground sleeving</u></b>   |   |          |      |        |
| 1  | 160mm Pipes laid in ground including excavation not exceeding 1m deep, filling in and compacting to 90% Mod AASHTO density. | m        | 5    |        |
| 2  | 110mm Pipes laid in ground including excavation not exceeding 1m deep, filling in and compacting to 90% Mod AASHTO density. | m        | 10   |        |
| <b><u>Extra over uPVC pipes for fittings</u></b>   |   |          |      |        |
| 3  | 160mm Bend  | No       | 2    |        |
| 4  | 110mm Bend  | No       | 3    |        |
| Carried Forward to Summary of Section No. 3  |   |          |      | R      |
| Section No. 3  |   |          |      |        |
| Bill No. 7   |   |          |      |        |
| BUILDER'S WORK IN CONNECTION WITH (PROVISIO  |   |          |      |        |
| REFURBISHMENT AND UPGRADES   |   |          |      |        |



| Item No                     |  | Quantity | Rate | Amount |
|-----------------------------|--|----------|------|--------|
| 8                           | Coping tile to be laid around perimeter of the pool<br>Sponge with all relevant grout and expansion joint as necessary   | m        | 130  |        |
|                             | <b><u>MOSAIC</u></b>   |          |      |        |
| 9                           | Approved Cobalt Blue mosaics   | m2       | 52   |        |
|                             | <b><u>WEIR</u></b>   |          |      |        |
| 10                          | Allow for cleaning and servicing existing weirs  | No       | 4    |        |
|                             | <b><u>INTERIOR FINISH</u></b>  |          |      |        |
| 11                          | Apply the marbelite on and including light blue Durabond or other equal and approved pool coating to concrete pool shell   | m2       | 445  |        |
|                             | <b><u>SUNDRIES</u></b>   |          |      |        |
| 12                          | Provide all necessary commercial filtration hi-rate sand unit with 4 hour turnover in accordance with DIN 19643 specification and class 6 PVC piping   | No       | 2    |        |
| 13                          | Provide a pump with and including precast pump house   | No       | 2    |        |
| 14                          | Allow for the cleaning equipment comprising of 2No. aluminium handles 1No. leaf net 1No. brush 2No. vacuum cleaners and test kit with and including 1No. cleaning manual and startup chemicals | No       | 2    |        |
| 15                          | "Specktralight Aqua Blue" or other equal and approved LED Pool Light   | No       | 12   |        |
| Carried to Collection       |  |          |      | R      |
| Section No. 3               |  |          |      |        |
| Bill No. 8                  |  |          |      |        |
| SWIMMING POOL (PROVISIONAL) |  |          |      |        |
| REFURBISHMENT AND UPGRADES  |  |          |      |        |

Section No. 3

Bill No. 8

SWIMMING POOL (PROVISIONAL)

COLLECTION

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Section No. 3

Bill No. 8

SWIMMING POOL (PROVISIONAL)

REFURBISHMENT AND UPGRADES



| Bill No                                     | Section No. 3<br>EXTERNAL WORKS (PROVISIONAL)<br><u>SECTION SUMMARY</u> | Page No | Amount |
|---|---|---------|--------|
| 1   | EARTHWORKS AND DEMOLITIONS (PROVISIONAL)                                | 294     |        |
| 2   | ROADWORKS (PROVISIONAL)   | 301     |        |
| 3   | SEWER RETICULATION (PROVISIONAL)  | 307     |        |
| 4   | WATER RETICULATION (PROVISIONAL)  | 311     |        |
| 5   | STORMWATER RETICULATION (PROVISIONAL)                                   | 314     |        |
| 6   | COVERED CARPORT AND WALKWAY (PROVISIONAL)                               | 318     |        |
| 7   | BUILDER'S WORK IN CONNECTION WITH (PROVISIONAL)                         | 319     |        |
| 8   | SWIMMING POOL (PROVISIONAL)   | 322     |        |
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| Section No. 3<br>REFURBISHMENT AND UPGRADES |   |         |        |

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <p><b><u>SECTION NO. 4 ELECTRICAL WORKS</u></b><br/><b><u>(PROVISIONAL)</u></b></p> <p><b><u>BILL NO. 1</u></b></p> <p><b><u>CABLE AND CABLE TRENCHING</u></b><br/><b><u>(PROVISIONAL)</u></b></p> <p>Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.</p> <p>Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section A: Preamble to Standard Specification" before pricing this bill.</p> <p>Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section B: Installation Specification" before pricing this bill.</p> <p>Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section C: Quality Specifications for Material and Equipment of Electrical Installations" before pricing this bill.</p> <p>NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 162 for Haylett Formula purposes. All electrical works items are for the supply and installation.</p> <p>Cables shall be given in metres. Descriptions shall be deemed to include glands, running joints, extra length due to snaking and allowance for making off.</p> |          |      |        |
|         | Carried to Collection  |          | R    |        |
|         | <p>Section No. 4</p> <p>Bill No. 1</p> <p>CABLE AND CABLE TRENCHING (PROVISIONAL)</p> <p>REFURBISHMENT AND UPGRADES</p>  |          |      |        |

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <p><u>Specifications, drawings, etc</u></p> <p>Tenderers are referred to the specification and drawings numbered ? to ? prepared by ?, annexed to these bills of quantities (accompanying these bills of quantities?) for the electrical work, for the full descriptions of the following items which are to be read and priced in conjunction with the said specification and drawings</p> <p><u>Contract price adjustment provisions</u></p> <p>With reference to clause ? of the Preliminaries all items in this bill will be subject to fluctuations in the cost of labour and material on the following basis:</p> <p>(a) Ring main units, miniature substations, transformers, main low tension boards, distribution boards and busbars between transformer and low tension boards calculated on the indices published by the Steel and Engineering Industries Federation of South Africa</p> <p>(b) Cables in excess of 16mm<sup>2</sup> calculated on the basis of proven cost</p> <p>(c) All other work calculated on the index for work group ?</p> <p><u>Distribution boards etc</u></p> <p>Rates for distribution boards etc are to include for busbars, jumpers, neutral bars, internal wiring and connections, circuit identification markers, control gear labels, circuit legend cards and working drawings</p> <p><u>Switches, socket outlets, etc</u></p> <p>Rates for switches, socket outlets, etc are to include for screwing to outlet boxes, connecting up and cover plates</p> <p><u>Light fittings</u></p> <p>Rates for light fittings are to include for hanging, fixing and connecting and for lamp holders and fluorescent tubes and lamps of the type and wattage described</p> |          |      |        |
|         | Carried to Collection  |          | R    |        |
|         | <p><b>Section No. 4</b></p> <p><b>Bill No. 1</b></p> <p><b>CABLE AND CABLE TRENCHING (PROVISIONAL)</b></p> <p><b>REFURBISHMENT AND UPGRADES</b></p>  |          |      |        |

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| Item No  |   |   | Quantity | Rate | Amount |
|--|---|---|----------|------|--------|
|  | <u>Supply and deliver and install bare copper earth conductors:</u> |   |          |      |        |
| 19   | 95 mm <sup>2</sup>  | m | 30       |      |        |
| 20   | 50 mm <sup>2</sup>  | m | 40       |      |        |
| 21   | 25 mm <sup>2</sup>  | m | 40       |      |        |
| 22   | 16 mm <sup>2</sup>  | m | 30       |      |        |
| 23   | 10 mm <sup>2</sup>  | m | 25       |      |        |
| 24   | 6 mm <sup>2</sup>   | m | 100      |      |        |
| 25   | 4 mm <sup>2</sup>   | m | 90       |      |        |
| Carried to Collection  |   |   |          |      | R      |
| Section No. 4<br>Bill No. 1<br>CABLE AND CABLE TRENCHING (PROVISIONAL)<br>REFURBISHMENT AND UPGRADES |   |   |          |      |        |

Section No. 4

Bill No. 1

CABLE AND CABLE TRENCHING (PROVISIONAL)

COLLECTION

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Section No. 4

Bill No. 1

CABLE AND CABLE TRENCHING (PROVISIONAL)

REFURBISHMENT AND UPGRADES



| Item No  |   |    | Quantity | Rate | Amount |
|--|---|----|----------|------|--------|
| 4  | DB-FLOOR(change switchgear only,shell and cable remains)                                    | No | 7        |      |        |
| 5  | DB-HVAC (IP65 rated)  | No | 3        |      |        |
| 6  | DB-HALL   | No | 1        |      |        |
| 7  | DB-TYPICAL HOTEL ROOM(change switchgear only,shell and cable remains)                       | No | 10       |      |        |
| <b><u>REPAIRS TO EXISTING DISTRIBUTION BOARDS</u></b>  |   |    |          |      |        |
| <b><u>Supply and deliver and install the following single pole circuit breakers,etc:</u></b> |   |    |          |      |        |
| 8  | Replace 10A Circuit Breaker.  | No | 17       |      |        |
| 9  | Replace 15A Circuit Breaker.  | No | 15       |      |        |
| 10   | Replace 20A Circuit Breaker.  | No | 15       |      |        |
| 11   | Replace 25A Circuit Breaker.  | No | 15       |      |        |
| 12   | Replace 30A Circuit Breaker.  | No | 15       |      |        |
| 13   | Replace 32A Circuit Breaker.  | No | 15       |      |        |
| 14   | Replace 63A Earth Leakage Unit.   | No | 5        |      |        |
| 15   | Replace 30A Isolator.   | No | 9        |      |        |
| 16   | Earth Bonding Strip (water pipes, etc.) as per SANS 10142 and detailed in the Specification | m  | 20       |      |        |
| <b><u>Supply and deliver and install the following double pole circuit breakers,etc:</u></b> |   |    |          |      |        |
| 17   | Replace 10A Circuit Breaker.  | No | 2        |      |        |
| 18   | Replace 15A Circuit Breaker.  | No | 3        |      |        |
| 19   | Replace 20A Circuit Breaker.  | No | 3        |      |        |
| 20   | Replace 25A Circuit Breaker.  | No | 3        |      |        |
| <b>Carried to Collection</b>   |   |    |          |      | R      |
| <b>Section No. 4</b>   |   |    |          |      |        |
| <b>Bill No. 2</b>  |   |    |          |      |        |
| <b>DISTRIBUTION BOARDS (PROVISIONAL)</b>   |   |    |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>  |   |    |          |      |        |



## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

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Section No. 4

Bill No. 2

DISTRIBUTION BOARDS (PROVISIONAL)

COLLECTION

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Section No. 4

Bill No. 2

DISTRIBUTION BOARDS (PROVISIONAL)

REFURBISHMENT AND UPGRADES

| Item No  | Quantity                            | Rate | Amount |
|--|-------------------------------------|------|--------|
| <b><u>SECTION NO. 4 ELECTRICAL WORKS</u></b>   |                                     |      |        |
| <b><u>BILL NO. 3</u></b>   |                                     |      |        |
| <b><u>LIGHT FITTINGS (PROVISIONAL)</u></b>   |                                     |      |        |
| Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.   |                                     |      |        |
| Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section A: Preamble to Standard Specification" before pricing this bill.  |                                     |      |        |
| Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section B: Installation Specification" before pricing this bill.  |                                     |      |        |
| Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section C: Quality Specifications for Material and Equipment of Electrical Installations" before pricing this bill. |                                     |      |        |
| NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 162 for Haylett Formula purposes.   |                                     |      |        |
| <b><u>Supply ,deliver and install light fittings complete:</u></b>   |                                     |      |        |
| 1  | Type A                              | No   | 25     |
| 2  | Type LED (1200x600 LED PANEL)       | No   | 40     |
| 3  | Type C (600X600)                    | No   | 20     |
| 4  | Type D (LED WALL LIGHT)             | No   | 40     |
| 5  | Type B                              | No   | 60     |
| 6  | 28W LED channel Light(waetherproof) | No   | 30     |
| <b>Carried to Collection</b>   |                                     |      | R      |
| <b>Section No. 4</b><br><b>Bill No. 3</b><br><b>LIGHT FITTINGS (PROVISIONAL)</b><br><b>REFURBISHMENT AND UPGRADES</b>  |                                     |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
| 7       | Type K adjustable swivel downlight  | No       | 15   |        |
| 8       | Type P  | No       | 50   |        |
| 9       | Type W wall light   | No       | 20   |        |
| 10      | 15W LED Boardroom downlight   | No       | 40   |        |
| 11      | Hotel room bathroom light   | No       | 80   |        |
| 12      | Hotel room bedroom light  | No       | 45   |        |
| 13      | Hotel room bulkhead downlight   | No       | 120  |        |
| 14      | Hotel room bedside lamp   | No       | 85   |        |
| 15      | Downlights with daylight harvesting sensor  | No       | 50   |        |
| 16      | Decorative droplights suspended from ceiling  | No       | 20   |        |
|         | <b><u>Light points complete, including 20 mm diameter PVC conduits and all conduit accessories, wall boxes, and wiring:</u></b> |          |      |        |
| 17      | (a) Supply and install, conduits, outlet boxes  | No       | 40   |        |
| 18      | (b) Supply and install wiring   | No       | 40   |        |
|         | <b><u>Supply, deliver and install light switches complete:</u></b>  |          |      |        |
| 19      | 1 lever 1 way   | No       | 15   |        |
| 20      | 1 lever 2 way   | No       | 10   |        |
| 21      | 1 lever 1 way with dimmer control   | No       | 10   |        |
| 22      | Photo-electric daylight switches, complete with mounting brackets:  | No       | 3    |        |
| 23      | Timer Switch  | No       | 4    |        |
| 24      | Presence/Absence detector : Shorrock automation type CP electronics EBDSPiR-PRM or equal  | No       | 60   |        |
|         | <b>Carried to Collection</b>  |          |      |        |
|         | <b>Section No. 4</b>  |          |      |        |
|         | <b>Bill No. 3</b>   |          |      |        |
|         | <b>LIGHT FITTINGS (PROVISIONAL)</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

[illegible]

[illegible]

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b><u>SECTION NO. 4 ELECTRICAL WORKS</u></b>  |          |      |        |
|         | <b><u>BILL NO. 4</u></b>  |          |      |        |
|         | <b><u>SMALL POWER (PROVISIONAL)</u></b>   |          |      |        |
|         | NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 162 for Haylett Formula purposes.  |          |      |        |
|         | The tenderer is referred to Clause 18 of the "Agreement and Schedule of Conditions of Building Sub-Contract, Nominated Sub-Contract" and clause 15 of "Additional General Conditions of Contract" in the PRELIMINARIES section for the definitions and adjustment of "Attendance" |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.  |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section A: Preamble to Standard Specification" before pricing this bill.   |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section B: Installation Specification" before pricing this bill.   |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section C: Quality Specifications for Material and Equipment of Electrical Installations" before pricing this bill.  |          |      |        |
|         | <b><u>Supply, deliver and install switched socket outlets flush mounted, complete with cradle and cover plate:</u></b>  |          |      |        |
| 1       | 16A 3-pin single  | No       | 20   |        |
|         | <b>Carried to Collection</b>  |          |      | R      |
|         | <b>Section No. 4</b>  |          |      |        |
|         | <b>Bill No. 4</b>   |          |      |        |
|         | <b>SMALL POWER (PROVISIONAL)</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No                    |  |    | Quantity | Rate | Amount |
|----------------------------|--|----|----------|------|--------|
| 2                          | 16A 3-pin double   | No | 30       |      |        |
|                            | <u>Supply, deliver and install switched socket outlets installed in power skirting, complete with cradle, mounting clips, and cover plate:</u> |    |          |      |        |
| 3                          | 16A 3-pin single   | No | 60       |      |        |
| 4                          | 16A 3-pin dedicated single   | No | 60       |      |        |
| 5                          | Supply and deliver plug tops for dedicated socket outlets  | No | 60       |      |        |
|                            | <u>Supply and install un-switched socket outlets, including pvc inspection box, conduits and all accessories:</u>                              |    |          |      |        |
| 6                          | Supply and deliver 5A 3-pin miniature socket outlet  | No | 201      |      |        |
| 7                          | Install 5A 3-pin miniature socket outlet   | No | 201      |      |        |
|                            | <u>Supply, deliver and install isolators for fixed equipment:</u>  |    |          |      |        |
| 8                          | 20A 2-pole surface mounted   | No | 17       |      |        |
| 9                          | 20A 2-pole surface mounted IP56  | No | 15       |      |        |
| 10                         | 20A 3-pole surface mounted IP56  | No | 30       |      |        |
| 11                         | 40A 3-pole surface mounted IP56  | No | 3        |      |        |
| 12                         | 60A 3-pole flush mounted   | No | 4        |      |        |
|                            | <u>Flush mounted socket outlet points complete, including PVC conduits and all conduit accessories, wall boxes, and wiring:</u>                |    |          |      |        |
| 13                         | (a) Supply and install conduits and outlet boxes   | No | 32       |      |        |
| 14                         | (b) Supply and install wiring  | No | 32       |      |        |
|                            | <u>Flush mounted industrial socket outlet points complete, including PVC conduits and all conduit accessories, wall boxes, and wiring:</u>     |    |          |      |        |
| Carried to Collection      |  |    |          | R    |        |
| Section No. 4              |  |    |          |      |        |
| Bill No. 4                 |  |    |          |      |        |
| SMALL POWER (PROVISIONAL)  |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES |  |    |          |      |        |



| Item No                    |  |    | Quantity | Rate | Amount |
|----------------------------|--|----|----------|------|--------|
|                            | <b><u>P8000 wiring channel</u></b>   |    |          |      |        |
| 15                         | Single phase industrial socket outlet  | No | 5        |      |        |
| 16                         | Three phase industrial socket outlet   | No | 5        |      |        |
|                            | <b><u>Surface mounted socket outlet points complete, including PVC conduits and all conduit accessories, extension boxes, and wiring:</u></b>  |    |          |      |        |
| 17                         | (a) Supply and install conduits and outlet boxes   | No | 6        |      |        |
| 18                         | (b) Supply and install wiring  | No | 6        |      |        |
| 19                         | Supply and install wiring to socket outlet points in power skirting  | No | 120      |      |        |
| 20                         | Supply and install wiring to socket outlet points in floor boxes   | No | 3        |      |        |
|                            | <b><u>Flush mounted isolator outlet points complete in ceiling void, including PVC conduits and all conduit accessories, outlet boxes, wiring and cable (refer to DB drawing for wire size):</u></b> |    |          |      |        |
| 21                         | (a) Supply and install conduits and outlet boxes   | No | 8        |      |        |
| 22                         | (b) Supply and install wiring  | No | 8        |      |        |
|                            | <b><u>Surface mounted isolator outlet points complete, including PVC conduits and all conduit accessories, wall boxes, and wiring:</u></b>   |    |          |      |        |
| 23                         | (a) Supply and install conduits and outlet boxes   | No | 24       |      |        |
| 24                         | (b) Supply and install wiring  | No | 24       |      |        |
|                            | <b><u>Weatherproof surface mounted isolator outlet points complete, including galvanised steel conduits and all conduit accessories, wall boxes, wiring and cabling (refer to DB for sizes):</u></b> |    |          |      |        |
| 25                         | (a) Supply and install conduits and outlet boxes   | No | 3        |      |        |
|                            |  |    |          | R    |        |
| Carried to Collection      |  |    |          |      |        |
| Section No. 4              |  |    |          |      |        |
| Bill No. 4                 |  |    |          |      |        |
| SMALL POWER (PROVISIONAL)  |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES |  |    |          |      |        |

| Item No                    |   |    | Quantity | Rate | Amount |
|----------------------------|---|----|----------|------|--------|
| 26                         | (b) Supply and install wiring   | No | 3        |      |        |
|                            | <u>Supply, deliver and install mild steel powder coated power skirting complete with covers and all accessories:</u>            |    |          |      |        |
| 27                         | 2-compartment, 2-channel  | m  | 80       |      |        |
|                            | <u>Supply and deliver galvanised steel channels complete with covers and accessories:</u>                                       |    |          |      |        |
| 28                         | P2000 wiring channel  | m  | 120      |      |        |
| 29                         | P8000 wiring channel  | m  | 150      |      |        |
|                            | <u>Install galvanised steel channels complete with covers and accessories in walls or floors:</u>                               |    |          |      |        |
| 30                         | P2000 wiring channel  | m  | 120      |      |        |
| 31                         | P8000 wiring channel  | m  | 150      |      |        |
|                            | <u>Supply, deliver and install 300mm wide hot dipped galvanised steel perforated cable trays complete with all accessories:</u> |    |          |      |        |
| 32                         | Heavy duty straight lengths   | m  | 150      |      |        |
| 33                         | Heavy duty horizontal elbow   | No | 9        |      |        |
| 34                         | Heavy duty tee  | No | 13       |      |        |
| 35                         | Heavy duty 4-way crossover  | No | 1        |      |        |
|                            | <u>PVC conduit to link all power skirting, ducting, and trunking to distribution boards, including all conduit accessories:</u> |    |          |      |        |
| 36                         | Supply and install 20 mm diameter conduit   | m  | 150      |      |        |
| 37                         | Supply and install 25 m diameter conduit  | m  | 35       |      |        |
| 38                         | Supply and install 32 mm diameter conduit   | m  | 30       |      |        |
|                            |   |    |          | R    |        |
| Carried to Collection      |   |    |          |      |        |
| Section No. 4              |   |    |          |      |        |
| Bill No. 4                 |   |    |          |      |        |
| SMALL POWER (PROVISIONAL)  |   |    |          |      |        |
| REFURBISHMENT AND UPGRADES |   |    |          |      |        |

| Item No                    |  | Quantity | Rate | Amount |
|----------------------------|--|----------|------|--------|
|                            | <b><u>PVC conduit outlet points to electronic and HVAC systems</u></b>   |          |      |        |
| 39                         | HVAC controller points complete, including 20 mm diameter PVC conduits and all conduit accessories and wall outlet box |          | SUM  |        |
| 40                         | TV points complete, including 20 mm diameter PVC conduits and all conduit accessories and outlet box                   | No       | 7    |        |
| Carried to Collection      |  |          |      | R      |
| Section No. 4              |  |          |      |        |
| Bill No. 4                 |  |          |      |        |
| SMALL POWER (PROVISIONAL)  |  |          |      |        |
| REFURBISHMENT AND UPGRADES |  |          |      |        |

Section No. 4

Bill No. 4

SMALL POWER (PROVISIONAL)

COLLECTION

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Section No. 4

Bill No. 4

SMALL POWER (PROVISIONAL)

REFURBISHMENT AND UPGRADES

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <b><u>SECTION NO. 4 ELECTRICAL WORKS</u></b>   |          |      |        |
|         | <b><u>BILL NO. 5</u></b>   |          |      |        |
|         | <b><u>COMMUNICATIONS (PROVISIONAL)</u></b>   |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.   |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section A: Preamble to Standard Specification" before pricing this bill.  |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section B: Installation Specification" before pricing this bill.  |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section C: Quality Specifications for Material and Equipment of Electrical Installations" before pricing this bill. |          |      |        |
|         | NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 162 for Haylett Formula purposes.   |          |      |        |
|         | <b><u>Telephone and Data</u></b>   |          |      |        |
| 1       | Supply and install Telephone termination panel (Authority approved)  | No       | 2    |        |
| 2       | Supply and install combined data and telephone point complete with , cover plate for 50 x 50mm module and 50 x 50mm blank plate on power skirting  | No       | 60   |        |
|         | Carried Forward to Summary of Section No. 4  |          |      | R      |
|         | Section No. 4  |          |      |        |
|         | Bill No. 5   |          |      |        |
|         | COMMUNICATION (PROVISIONAL)  |          |      |        |
|         | REFURBISHMENT AND UPGRADES   |          |      |        |



| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b><u>Licensing &amp; Development</u></b>   |          |      |        |
| 1       | Management of Environmental license, License to generate, PPA, Land and other development activities, up to ready to build.   | Item     |      |        |
|         | <b><u>Earthing &amp; Lightning Protection</u></b>   |          |      |        |
| 2       | Allow for a completely earthed system with surge protection as shown on the drawing   | Item     |      |        |
|         | <b><u>Solar Panels: Supply and Install</u></b>  |          |      |        |
|         | Allow for solar panels complete with mounting accessories (dekite multilead multi cable,end and middle clamps, stainless steel roof hooks, rail connectors, mounting rails, nails, etc) |          |      |        |
| 3       | Canadian Solar 455W panels with all accessories(Or Equivalent)  | No 180   |      |        |
| 4       | Allow for DC cables and junction boxes (MC4 pre-terminated cables,MC4 Connector twin pack,6mm2 DC Cable,4Sq mm AC Cable etc)  |          | SUM  |        |
| 5       | 70 Sq 4C AC+ 50 Sq E Cable with all terminations and accessories  | m 60     |      |        |
| 6       | 16 sq 4C+10 sq Earth and terminations   | m 50     |      |        |
|         | <b><u>Inverters , E-house with Power Control</u></b>  |          |      |        |
|         | Allow for hybrid smart string inverters,in an E-House with all accessories (power plant control,AC & DC DBs,protection boxes,Type 11 SPD,touch display,smart solar MPPT etc)            |          |      |        |
| 7       | Sungrow Hybrid Smart SG series 20kWAC 3PH Inverter/Charger (Or Equivalent)  | No 4     |      |        |
|         | <b><u>Sleeves,wireways and trenching</u></b>  |          |      |        |
| 8       | Perforated Metal Cable Tray (Medium Duty) with multi directional support for runs of cabling including all accessories  | m 60     |      |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 4</b>  |          |      |        |
|         | <b>Bill No. 6</b>   |          |      |        |
|         | <b>SOLAR PV INSTALLATION (PROVISIONAL)</b>  |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No                             |  |    | Quantity | Rate | Amount |
|-------------------------------------|--|----|----------|------|--------|
| 9                                   | 110 dia sleeves +draw wire   | m  | 50       |      |        |
|                                     | <b><u>Batteries</u></b>  |    |          |      |        |
| 10                                  | Pylon UP5000 4.8kWh Li-Ion Solar Battery 48V in a cabinet with support rails and 3 ph AC disconnecting switches                  | No | 15       |      |        |
| 11                                  | Pylon UP5000 Cabinet With Support Rails  | No | 4        |      |        |
|                                     | <b><u>Notices and Danger Signs</u></b>   |    |          |      |        |
| 12                                  | Notices and Danger Signs for E-room and all equipment  |    | Item     |      |        |
| 13                                  | 4.5kg DCP Fire extinguishers in E-Room   | No | 2        |      |        |
| 14                                  | Fully equiped First Aid kit in E-Room  | No | 1        |      |        |
|                                     | <b><u>Testing,Commisioning &amp; Training</u></b>  |    |          |      |        |
| 15                                  | Test and commission the complete Solar Plant and issue the necessary test certificates,train maintenance staff and offer support |    | Item     |      |        |
| Carried to Collection               |  |    |          |      | R      |
| Section No. 4                       |  |    |          |      |        |
| Bill No. 6                          |  |    |          |      |        |
| SOLAR PV INSTALLATION (PROVISIONAL) |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES          |  |    |          |      |        |



Section No. 4

Bill No. 6

SOLAR PV INSTALLATION (PROVISIONAL)

COLLECTION

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Section No. 4

Bill No. 6

SOLAR PV INSTALLATION (PROVISIONAL)

REFURBISHMENT AND UPGRADES



TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                    |  |    | Quantity | Rate | Amount |
|----------------------------|--|----|----------|------|--------|
| 6                          | Workstation PC i9 Win 10 Pro 16GB RAM 250SSD 1TB SSD | No | 1        |      |        |
| 7                          | 8TB HDD  | No | 12       |      |        |
| 8                          | 12 Port Gigabit PoE Switch                           | No | 8        |      |        |
| 9                          | Junction Box   | No | 6        |      |        |
| 10                         | UPS 5KVa   | No | 3        |      |        |
| 11                         | 9U Rack Free Standing including PDU and 2 Fans       | No | 6        |      |        |
| 12                         | Cat 6a Cable   | No | 3,000    |      |        |
| 13                         | 24 Port Patch Panel                                  | No | 2        |      |        |
| 14                         | Brush Panel  | No | 1        |      |        |
| 15                         | HDMI Cables and Extenders                            | No | 2        |      |        |
| 16                         | Configuration and Training                           | No | 1        |      |        |
| Carried to Collection      |  |    |          |      | R      |
| Section No. 4              |  |    |          |      |        |
| Bill No. 7                 |  |    |          |      |        |
| SECURITY (PROVISIONAL)     |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES |  |    |          |      |        |

Section No. 4

Bill No. 7

SECURITY (PROVISIONAL)

COLLECTION

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Section No. 4

Bill No. 7

SECURITY (PROVISIONAL)

REFURBISHMENT AND UPGRADES

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| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <b><u>SECTION NO. 4 ELECTRICAL WORKS</u></b>   |          |      |        |
|         | <b><u>BILL NO. 8</u></b>   |          |      |        |
|         | <b><u>EARTHING SYSTEM (PROVISIONAL)</u></b>  |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill.   |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section A: Preamble to Standard Specification" before pricing this bill.  |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section B: Installation Specification" before pricing this bill.  |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Standard Electrical Specifications - Section C: Quality Specifications for Material and Equipment of Electrical Installations" before pricing this bill. |          |      |        |
|         | NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 162 for Haylett Formula purposes.   |          |      |        |
|         | <b><u>Earthing and bonding</u></b>   |          |      |        |
| 1       | Contractor to price based on submitted drawing. Before any installation commences ,engineer has to approve the installer credentials and shop drawings   | Item     |      |        |
|         | Carried Forward to Summary of Section No. 4  |          |      | R      |
|         | Section No. 4  |          |      |        |
|         | Bill No. 8   |          |      |        |
|         | EARTHING SYSTEMS (PROVISIONAL)   |          |      |        |
|         | REFURBISHMENT AND UPGRADES   |          |      |        |

|            |                                |   |            |  |        |     |
|------------|--------------------------------|---|------------|--|--------|-----|
| Bill<br>No | Section No. 4                  |   | Page<br>No |  | Amount |     |
|            | ELECTRICAL WORKS (PROVISIONAL) |   |            |  |        |     |
|            | SECTION SUMMARY                |   |            |  |        |     |
|            | 1                              | CABLE AND CABLE TRENCHING (PROVISIONAL) |            |  |        | 328 |
|            | 2                              | DISTRIBUTION BOARDS (PROVISIONAL)       |            |  |        | 332 |
|            | 3                              | LIGHT FITTINGS (PROVISIONAL)            |            |  |        | 336 |
|            | 4                              | SMALL POWER (PROVISIONAL)               |            |  |        | 342 |
|            | 5                              | COMMUNICATION (PROVISIONAL)             |            |  |        | 343 |
|            | 6                              | SOLAR PV INSTALLATION (PROVISIONAL)     |            |  |        | 347 |
|            | 7                              | SECURITY (PROVISIONAL)                  |            |  |        | 350 |
| 8          | EARTHING SYSTEMS (PROVISIONAL) | 351                                     |            |  |        |     |
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| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b><u>OUTDOOR UNITS (HEAT RECOVERY)</u></b>   |          |      |        |
|         | <b><u>Supply and Install Outdoor Units complete with all necessary fittings to make a complete installation</u></b> |          |      |        |
| 7       | 72.0 kW Cooling, 73.7 Heating out door condensor unit using R410A (ODU1)  | No       | 1    |        |
| 8       | 40.0 kW Cooling, 40.5 Heating out door condensor unit using R410A (ODU2)  | No       | 1    |        |
| 9       | 48.0 kW Cooling, 48.5 Heating out door condensor unit using R410A (ODU3)  | No       | 2    |        |
| 10      | 158.0 kW Cooling, 158.5 Heating out door condensor unit using R410A (ODU4)  | No       | 1    |        |
|         | <b><u>REFRIGERANT SUPPLY PIPE (R410A GAS)</u></b>   |          |      |        |
| 11      | Diameter 15mm copper  | m        | 190  |        |
| 12      | Diameter 19mm copper pipe   | m        | 190  |        |
| 13      | Diameter 22mm copper pipe   | m        | 190  |        |
| 14      | Diameter 28mm copper pipe   | m        | 90   |        |
| 15      | Diameter 35mm copper pipe   | m        | 90   |        |
| 16      | Diameter 43mm copper pipe   | m        | 65   |        |
| 17      | Y branch pipe for connection of outdoor units   |          | Item |        |
| 18      | Y branch pipe for connection of indoor units  |          | Item |        |
|         | <b><u>REFRIGERANT PIPE INSULATION</u></b>   |          |      |        |
| 19      | Diameter 15mm copper  | m        | 190  |        |
| 20      | Diameter 19mm copper pipe   | m        | 190  |        |
| 21      | Diameter 22mm copper pipe   | m        | 190  |        |
| 22      | Diameter 28mm copper pipe   | m        | 90   |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 5</b>  |          |      |        |
|         | <b>Bill No. 1</b>   |          |      |        |
|         | <b>HVAC (PROVISIONAL)</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No   |                             |    | Quantity | Rate | Amount |
|---|-----------------------------|----|----------|------|--------|
| 23  | Diameter 35mm copper pipe   | m  | 90       |      |        |
| 24  | Diameter 43mm copper pipe   | m  | 85       |      |        |
| 25  | 25mm PVC pipe for drainage  | m  | 150      |      |        |
| <b><u>AIR CONDITIONING DUCTS AND ACCESSORIES INSULATED WITH FIBRE GLASS</u></b> |                             |    |          |      |        |
| <b><u>Allow for ductwork as shown in the drawings</u></b>                       |                             |    |          |      |        |
| <b><u>Supply Air Ducts</u></b>  |                             |    |          |      |        |
| 26  | 450*450 (Uninsulated)       | m  | 10       |      |        |
| 27  | 300*300 (Uninsulated)       | m  | 50       |      |        |
| 28  | 250*250 (Uninsulated)       | m  | 75       |      |        |
| <b><u>Flexible Round Duct</u></b>   |                             |    |          |      |        |
| 29  | ø250mm Flexible Round duct. | m  | 70       |      |        |
| 30  | ø200mm Flexible Round duct. | m  | 45       |      |        |
| 31  | ø150mm Flexible Round duct. | m  | 90       |      |        |
| <b><u>Accessories (Insulated)</u></b>   |                             |    |          |      |        |
| <b><u>DUCT REDUCERS</u></b>   |                             |    |          |      |        |
| 32  | From 200x200mm to 150x150mm | No | 35       |      |        |
| 33  | From 300x300mm to 250x250mm | No | 5        |      |        |
| 34  | From 450x450mm to 400x400mm | No | 5        |      |        |
| 35  | From 400x400mm to 300x300mm | No | 5        |      |        |
| <b><u>FAN DUCT CONNECTORS</u></b>   |                             |    |          |      |        |
| 36  | ø200mm x 1,5 m long duct    | No | 10       |      |        |
| Carried to Collection   |                             |    |          |      | R      |
| Section No. 5   |                             |    |          |      |        |
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| HVAC (PROVISIONAL)  |                             |    |          |      |        |
| REFURBISHMENT AND UPGRADES  |                             |    |          |      |        |

| Item No                                   |  | Quantity | Rate | Amount |
|---|--|----------|------|--------|
| <b><u>T-PIECES</u></b>                    |  |          |      |        |
| 37  | 400 x 400mm, 150 x 150mm, 400 x 400mm Duct | No       | 6    |        |
| 38  | 400 x 400mm, 200 x 200mm, 400 x 400mm Duct | No       | 6    |        |
| 39  | 400 x 400mm, 300 x 300mm, 400 x 400mm Duct | No       | 5    |        |
| 40  | 400 x 400mm, 350 x 350mm, 400 x 400mm Duct | No       | 5    |        |
| 41  | 350 x 350mm, 150 x 150mm, 350 x 350mm Duct | No       | 6    |        |
| 42  | 350 x 350mm, 200 x 200mm, 350 x 350mm Duct | No       | 5    |        |
| 43  | 350 x 350mm, 250 x 250mm, 350 x 350mm Duct | No       | 5    |        |
| 44  | 300 x 300mm, 150 x 150mm, 300 x 300mm Duct | No       | 1    |        |
| 45  | 300 x 300mm, 200 x 200mm, 300 x 300mm Duct | No       | 1    |        |
| <b><u>ELBOWS</u></b>                      |  |          |      |        |
| 46  | 250 x 250mm Duct                           | No       | 8    |        |
| 47  | 300 x 300mm Duct                           | No       | 10   |        |
| 48  | 350 x 350mm Duct                           | No       | 5    |        |
| 49  | 400 x 400mm Duct                           | No       | 10   |        |
| <b><u>WALL MOUNTED EXTRACTOR FANS</u></b> |  |          |      |        |
| 50  | Extraction Fan 80 L/s (EA02)               | No       | 27   |        |
| 51  | Extraction Fan 150 L/s (EA01)              | No       | 25   |        |
| 52  | Wall Mounted toilet extarction fan Sensor  | No       | 25   |        |
| <b><u>AIR TERMINALS</u></b>               |  |          |      |        |
| 53  | Spigot of diameter 250mm                   | No       | 52   |        |
| 54  | Spigot of diameter 200mm                   | No       | 20   |        |
| <b>Carried to Collection</b>              |  |          |      |        |
| <b>Section No. 5</b>                      |  |          |      |        |
| <b>Bill No. 1</b>                         |  |          |      |        |
| <b>HVAC (PROVISIONAL)</b>                 |  |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>         |  |          |      |        |

| Item No                    |   |    | Quantity | Rate | Amount |
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| 55                         | Spigot of diameter 150mm  | No | 52       |      |        |
|                            | <b><u>Supply and Install ceiling diffuser including spigots</u></b>   |    |          |      |        |
| 56                         | Ducted 200mm Constant Air Volume Air Diffuser Unit with 25mm thick acoustic insulation 104L/s (CAD01)   | No | 104      |      |        |
|                            | <b><u>PRESSURE CONTROL DAMPERS &amp; ACCESSORIES</u></b>  |    |          |      |        |
| 57                         | Pressure sensor : 140 Pa for Fresh Air supply duct, Damper c/w rotary actuator : 400 x 400mm for Fresh Air supply duct  | No | 3        |      |        |
| 58                         | Pressure sensor : 140 Pa for Fresh Air supply duct, Damper c/w rotary actuator : 300 x 300mm for Fresh Air supply duct  | No | 3        |      |        |
| 59                         | Pressure sensor : 140 Pa for Fresh Air supply duct, Damper c/w rotary actuator : 350 x 350mm for Fresh Air supply duct  | No | 1        |      |        |
|                            | <b><u>Return Air Plenums</u></b>  |    |          |      |        |
|                            | <b><u>Note: Supply and Install Return Air Plenum Complete with Support Hangers, Flexible, Filters and Duct Plenum Connection to Indoor Unit, Suspended from the Slab or Steel Structure. Supports to Include all Galvanised Hanger Brackets, 10 mm Threaded Rod, Raw bolts/Clamps, etc.</u></b> |    |          |      |        |
| 60                         | Return Air Plenum Box complete with filter section, hinged louver grilles and fresh air introduction point. (1200 x 600.)   | No | 10       |      |        |
| 61                         | Return Air Grill, White, 595 x 595, Aluminium, with blades and plenum box   | No | 10       |      |        |
|                            | <b><u>Fans, Fresh Air System</u></b>  |    |          |      |        |
| Carried to Collection      |   |    |          |      | R      |
| Section No. 5              |   |    |          |      |        |
| Bill No. 1                 |   |    |          |      |        |
| HVAC (PROVISIONAL)         |   |    |          |      |        |
| REFURBISHMENT AND UPGRADES |   |    |          |      |        |

| Item No                           |   | Quantity | Rate | Amount |
|-----------------------------------|---|----------|------|--------|
|                                   | <b><u>Note: Supply and Install Fresh Air Fan System as Specified in the Drawing, Suspended from Slab or Steel Structure. Supports to Include all Galvanised Hanger Brackets, 10 mm Threaded Rod, Raw bolts/Clamps, etc.</u></b> |          |      |        |
| 62                                | Fan, Inline, Ø350, Complete With Sound Attenuator Rated NC35 (250L/S) Aand all necessary fittings and accessories for a complete installation. Fan shall be vandal prof and mounted on the roof.                                | No       | 2    |        |
| 63                                | Fan, Inline, Ø400, Complete With Sound Attenuator Rated NC35, (561L/S) Aand all necessary fittings and accessories for a complete installation. Fan shall be vandal prof and mounted on the roof.                               | No       | 4    |        |
| 64                                | Fan, Inline, Ø450, Complete With Sound Attenuator Rated NC35 (1186L/S) Aand all necessary fittings and accessories for a complete installation. Fan shall be vandal prof and mounted on the roof.                               | No       | 1    |        |
| 65                                | Weather Louvre, 350x350, Natural Anodised Aluminium, with Vermin Proof Mesh.  | No       | 45   |        |
| 66                                | Weather Louvre, 450x450, Natural Anodised Aluminium, with Vermin Proof Mesh.  | No       | 1    |        |
| 67                                | Weather Louvre, 200x200, Natural Anodised Aluminium, with Vermin Proof Mesh.  | No       | 1    |        |
| 68                                | Fan, Inline, Ø400, Complete With Sound Attenuator Rated NC35 (800L/S) Aand all necessary fittings and accessories for a complete installation. Fan shall be vandal prof and mounted in the parking. Extraction Fan              | No       | 1    |        |
|                                   | <b><u>HEAT RECOVERY BOXES</u></b>   |          |      |        |
| 69                                | Heat recovery 6 Port Box (BIC)*   | No       | 10   |        |
| 70                                | Heat recovery 4 Port Box (BIC)*   | No       | 5    |        |
| 71                                | Smart touch controller: All controllers shall be wired and shall be digital   | No       | 50   |        |
| <b>Carried to Collection</b>      |   |          |      | R      |
| <b>Section No. 5</b>              |   |          |      |        |
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| <b>HVAC (PROVISIONAL)</b>         |   |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b> |   |          |      |        |

| Item No |  |      | Quantity | Rate | Amount |
|---------|--|------|----------|------|--------|
|         | <b><u>FIRE DAMPERS</u></b>   |      |          |      |        |
| 72      | 400 x 400 mm c/w frame and made of steel   |      | Item     |      |        |
| 73      | 450 x 450 mm c/w frame and made of steel   |      | Item     |      |        |
| 74      | 350 x 350 mm c/w frame and made of steel   |      | Item     |      |        |
| 75      | Secondary Air Filters 0,1 micron @ 99% efficiency  | No   | 10       |      |        |
|         | <b><u>ELECTRICAL WORK</u></b>  |      |          |      |        |
| 76      | Electrical installation & wiring etc, complete for VRV indoor and outdoor air coonditioning units including local starter/isolator switch Including all trunking and wiring channels also for extraction fan   |      | Item     |      |        |
|         | <b><u>CABLE TRAY AND SUPPORTS</u></b>  |      |          |      |        |
| 77      | Supply and Install Cable tray, approximately sized to support refrigerant pipes, inter connecting power cables and control cables, suspended from slab or steel structure. Supporters to include all galvanised hanger brackets, 10mm threaded rod, raw bolts/clamps, etc. | m    | 250      |      |        |
|         | <b><u>CONTROLS</u></b>   |      |          |      |        |
| 78      | Allow for the intergration of the building fire systems and HVAC system  |      | Item     |      |        |
|         | <b><u>PROJECT ENGINEERING AND QUALITY MANAGEMENT</u></b>   |      |          |      |        |
|         | <b><u>Testing, balancing, commissioning and handover of air conditioning units and fans including compilation of submitted to the Engineer for approval.</u></b>   |      |          |      |        |
| 79      | Operation and Maintenance Instruction Manuals  | Sets | 4.0      |      |        |
| 80      | User Training  |      | Item     |      |        |
| 81      | Sets of "as built" drawings "including 1 cd"   | No   | 6        |      |        |
|         | <b>Carried to Collection</b>   |      |          | R    |        |
|         | <b>Section No. 5</b>   |      |          |      |        |
|         | <b>Bill No. 1</b>  |      |          |      |        |
|         | <b>HVAC (PROVISIONAL)</b>  |      |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |      |          |      |        |



## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

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Section No. 5

Bill No. 1

HVAC (PROVISIONAL)

COLLECTION

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Section No. 5

Bill No. 1

HVAC (PROVISIONAL)

REFURBISHMENT AND UPGRADES



TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                         |  |    | Quantity | Rate | Amount |
|---------------------------------|--|----|----------|------|--------|
| 3                               | Platform Scale electric  | No | 1        |      |        |
| 4                               | 225 Oil jacketed boiling pot electric  | No | 1        |      |        |
| 5                               | 225 Oil jacketed boiling pot Gas   | No | 1        |      |        |
| 6                               | Rational combi master 20 Pan Gas   | No | 1        |      |        |
| 7                               | Rational combi master 20 Pan Electric  | No | 1        |      |        |
| 8                               | Extra over combination steamer solid stainless steel insert 55mm deep              | No | 20       |      |        |
| 9                               | Extra over combination steamer perforated stainless steel insert 55mm deep         | No | 20       |      |        |
| 10                              | Extra over combination steamer grid wire 530x325 deepwith chromium plated finish   | No | 20       |      |        |
| 11                              | Extra over combination steamer for wash tablet (100 tablets per pack)              | No | 1        |      |        |
| 12                              | Extra over combination steamer for rinse tablet (100 tablets per pack)             | No | 1        |      |        |
| 13                              | Extra over combination steamer for waste pipe bracket for top drain pipe           | No | 1        |      |        |
| 14                              | Extra over combination steamer for waste pipe bracket for bottom drain pipe        | No | 1        |      |        |
| 15                              | Frytop griddle (1 smooth )   | No | 1        |      |        |
| 16                              | Electric deep double pan fryer capacity 2x20litre c/w oil receiver                 | No | 1        |      |        |
| 17                              | Electric deep double pan fryer capacity 2x20litre c/w oil receiver (gas)           | No | 1        |      |        |
| 18                              | Extra over fryer for expanded metal tin plated fryer basket, 175 x 280 x130mm deep | No | 2        |      |        |
| 19                              | Extra over fryer for expanded metal tin plated fryer basket, 394 x 280 x130mm deep | No | 2        |      |        |
| Carried to Collection           |  |    |          |      | R      |
| Section No. 5                   |  |    |          |      |        |
| Bill No. 2                      |  |    |          |      |        |
| KITCHEN EQUIPMENT (PROVISIONAL) |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES      |  |    |          |      |        |

TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                         |  |    | Quantity | Rate | Amount |
|---------------------------------|--|----|----------|------|--------|
| 20                              | Extra over fryer for conical filter holder                         | No | 2        |      |        |
| 21                              | Extra over fryer for filter paper conical type (pack of 50)        | No | 2        |      |        |
| 22                              | Chip storage table c/w recessed top and warmer lamp                | No | 2        |      |        |
| 23                              | Mobile food warming cabinets c/w aluminium trays                   | No | 2        |      |        |
| 24                              | Bread moulder  | No | 1        |      |        |
| 25                              | Bread slicer   | No | 1        |      |        |
| 26                              | Hydroboil 25l stainless steel finish, 2x2                          | No | 3        |      |        |
| 27                              | 50kg dough mixer   | No | 1        |      |        |
| 28                              | Mobile crockery rack   | No | 2        |      |        |
| 29                              | Roller outlet table 1150 x 620 c/w basket shelf                    | No | 1        |      |        |
| 30                              | Rolling dishwasher   | No | 1        |      |        |
| 31                              | Single bowl sink   | No | 3        |      |        |
| 32                              | 2000 x 750 steel table   | No | 3        |      |        |
| 33                              | Refuse bin plastic drum  | No | 2        |      |        |
| 34                              | Platform scale   | No | 1        |      |        |
| 35                              | 650mm Dump table with scape hole                                   | No | 1        |      |        |
| 36                              | Potato peeler 30kg/min   | No | 1        |      |        |
| 37                              | 3600 x 8300 extraction canopy                                      | No | 1        |      |        |
| 38                              | Dishup stainless steel table                                       | No | 2        |      |        |
| 39                              | Bain marie hot cupboard 8 division stainless steel incl insert lid | No | 2        |      |        |
| 40                              | Heavy duty trolley   | No | 4        |      |        |
| Carried to Collection           |  |    |          |      | R      |
| Section No. 5                   |  |    |          |      |        |
| Bill No. 2                      |  |    |          |      |        |
| KITCHEN EQUIPMENT (PROVISIONAL) |  |    |          |      |        |
| REFURBISHMENT AND UPGRADES      |  |    |          |      |        |

TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                         |   |    | Quantity | Rate | Amount |
|---------------------------------|---|----|----------|------|--------|
| 41                              | Knee operated wash hand basin   | No | 1        |      |        |
| 42                              | Steel cambro shelving   | No | 39       |      |        |
| 43                              | Tray Clearing Trolley Stainless steel 20x14No. Trays, 10-back to back | No | 2        |      |        |
| 44                              | Table top vacuum pack machine   | No | 1        |      |        |
| 45                              | Chopping block  | No | 1        |      |        |
| 46                              | Rheninghaus argenta meat slicer 300mm dia blade                       | No | 1        |      |        |
| 47                              | Scotman ice machine   | No | 1        |      |        |
| 48                              | Wrapping machine  | No | 2        |      |        |
| 49                              | Vegetable preparation machine   | No | 1        |      |        |
| 50                              | Band saw machine  | No | 1        |      |        |
| 51                              | Under bar refrigerator  | No | 1        |      |        |
| 52                              | Upright double sliding door beverage cooler                           | No | 1        |      |        |
| 53                              | Water cooler  | No | 1        |      |        |
| 54                              | Meat tenderizer   | No | 1        |      |        |
| 55                              | Cambor shelving post kit  | No | 3        |      |        |
| 56                              | Camshelving 1220x460x1830h  | No | 6        |      |        |
| 57                              | Camshelving 910x460x1830h   | No | 4        |      |        |
| 58                              | 20 ltr planetary mixer  | No | 1        |      |        |
| 59                              | 30kg PORTION SCALE  | No | 1        |      |        |
| 60                              | Bakestar pro 3 deck 3 pan oven  | No | 1        |      |        |
| 61                              | Electric fly killer   | No | 2        |      |        |
| Carried to Collection           |   |    |          |      | R      |
| Section No. 5                   |   |    |          |      |        |
| Bill No. 2                      |   |    |          |      |        |
| KITCHEN EQUIPMENT (PROVISIONAL) |   |    |          |      |        |
| REFURBISHMENT AND UPGRADES      |   |    |          |      |        |

| Item No |  |      | Quantity | Rate | Amount |
|---------|--|------|----------|------|--------|
| 62      | Cambro shelving connector set  | No   | 24       |      |        |
|         | <b><u>GAS EQUIPMENT</u></b>  |      |          |      |        |
| 63      | Supply and Install Gas Isolation valves 32mm   | No   | 2        |      |        |
| 64      | Supply, deliver, test and commission LPG Gas Tanks for Gas stove 48Kg.   | No   | 4        |      |        |
| 65      | dia 32mm steel pipe to stove   | m    | 90       |      |        |
| 66      | Dia 32mm rubber tube   | m    | 50       |      |        |
| 67      | Pressure regulator   | No   | 1        |      |        |
| 68      | Provision for steel bars ,chains for securing gas cylinders and a suitable fabricated cage for accomodating a maximum of 8 by 48kg LP Gas cylinders. The Cage to be welded to SABS Standards and certified to the relavant SABS standards and to the satisfaction of the Mechanical Engineer |      | Item     |      |        |
| 69      | Provide automatic change over panel complete with shut off valves  | No   | 1        |      |        |
|         | <b><u>PROJECT ENGINEERING AND QUALITY MANAGEMENT</u></b>   |      |          |      |        |
| 70      | Provide OSH certificate for compliance on Equipment system installed   |      | Item     |      |        |
| 71      | Additional Tests and Measurements as required by the engineer  |      | Item     |      |        |
| 72      | Allow for transportation and travelling charges  |      | Item     |      |        |
| 73      | Allow for site inspection and measurements for detailed production of shopfloor drawings   |      | Item     |      |        |
| 74      | Operation and Maintenance Instruction Manuals  | Sets | 6.0      |      |        |
| 75      | User Training  |      | Item     |      |        |
| 76      | Sets of "as built' drawings "including 1 cd"   | No   | 6        |      |        |
|         | <b>Carried to Collection</b>   |      |          | R    |        |
|         | <b>Section No. 5</b>   |      |          |      |        |
|         | <b>Bill No. 2</b>  |      |          |      |        |
|         | <b>KITCHEN EQUIPMENT (PROVISIONAL)</b>   |      |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |      |          |      |        |

TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                         |   | Quantity | Rate | Amount |
|---------------------------------|---|----------|------|--------|
| 77                              | 12 Months free maintenance  | Item     |      |        |
| 78                              | Test and Commission   | Item     |      |        |
| 79                              | Ditto but in the presence of and to the entire satisfaction of the Consulting Engineer. | Item     |      |        |
| Carried to Collection           |   |          |      | R      |
| Section No. 5                   |   |          |      |        |
| Bill No. 2                      |   |          |      |        |
| KITCHEN EQUIPMENT (PROVISIONAL) |   |          |      |        |
| REFURBISHMENT AND UPGRADES      |   |          |      |        |



Section No. 5

Bill No. 2

KITCHEN EQUIPMENT (PROVISIONAL)

COLLECTION

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KITCHEN EQUIPMENT (PROVISIONAL)  
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Section No. 5

Bill No. 3

PASSENGER LIFT (PROVISIONAL)

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Section No. 5

Bill No. 3

PASSENGER LIFT (PROVISIONAL)

REFURBISHMENT AND UPGRADES

R



| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <b><u>Install new Fire Extinguishers c/w wooded backing plate and mounting bracket as per drawing</u></b>   |          |      |        |
| 2       | 4.5kg DCP STP Fire Extinguisher SABS 1910 approved and suitable for Class A, B or C fires, or a combination of these type of fires.   | No       | 45   |        |
| 3       | DCP 9kg Fire Extinguisher (Firemate) fitted with a high pressure discharge hose and discharge nozzle which locates onto a L-shape nozzle holder fixed to the foot ring of the extinguisher. Suitable for Class A, B or C fires, or a combination of these types. All extinguishers supplied conform to the miniumum fire ratings as specified in SANS 1910:2009 | No       | 12   |        |
| 4       | 5kg CO2 carbon steel extinguishers is specifically designed for fires involving flammable liquids and electrical hazards, Class C and Class B fires. SANS 1567 certified carbon dioxide fire extinguishers are cased in steel or aluminium.   | No       | 2    |        |
| 5       | 890mm Heigh x 590mm Width x 285mm Depth Fire Extinguishers Cabinet c/w mounting.  | No       | 57   |        |
| 6       | Increase existing water tank by 100000L capacity for fire   |          | Item |        |
|         | <b><u>PIPING (Galvanized Steel - Class 16) - Piping price should include excavations and backfilling.</u></b>   |          |      |        |
| 7       | Diam. 140mm   | m        | 120  |        |
| 8       | Diam. 120mm   | m        | 210  |        |
| 9       | Diam. 100mm   | m        | 170  |        |
| 10      | Diam. 80mm  | m        | 300  |        |
| 11      | Diam 50mm   | m        | 150  |        |
| 12      | Diam. 32mm  | m        | 150  |        |
| 13      | Diam. 25mm  | m        | 150  |        |
|         | <b>Carried to Collection</b>  |          | R    |        |
|         | <b>Section No. 5<br/>Bill No. 4<br/>FIRE PROTECTION (PROVISIONAL)<br/>REFURBISHMENT AND UPGRADES</b>  |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <b><u>Equal Tees (Galvanized Steel)</u></b>      |          |      |        |
| 14      | Diameter 100mm                                   | No       | 4    |        |
| 15      | Diameter 80mm                                    | No       | 6    |        |
| 16      | Diameter 50mm                                    | No       | 5    |        |
| 17      | Diameter 32mm                                    | No       | 5    |        |
| 18      | Diameter 25mm                                    | No       | 8    |        |
|         | <b><u>Reducers (Galvanized Steel)</u></b>        |          |      |        |
| 19      | Diameter 140mm to Diameter 120mm                 | No       | 1    |        |
| 20      | Diameter 120mm to Diameter 100mm                 | No       | 1    |        |
| 21      | Diameter 100mm to Diameter 80mm                  | No       | 1    |        |
| 22      | Diameter 80mm to Diameter 50mm                   | No       | 1    |        |
| 23      | Diameter 50mm to Diameter 40mm                   | No       | 2    |        |
| 24      | Diameter 40mm to Diameter 32mm                   | No       | 5    |        |
| 25      | Diameter 32mm to 25mm Galvanised Mild Steel Pipe | No       | 10   |        |
|         | <b><u>Isolation Valves</u></b>                   |          |      |        |
| 26      | Diameter 140mm                                   | No       | 1    |        |
| 27      | Diameter 120mm                                   | No       | 2    |        |
| 28      | Diameter 100mm                                   | No       | 1    |        |
| 29      | Diameter 80mm                                    | No       | 1    |        |
| 30      | Diameter 50mm                                    | No       | 2    |        |
| 31      | Diameter 32mm                                    | No       | 2    |        |
| 32      | Diameter 25mm                                    | No       | 10   |        |
|         | <b>Carried to Collection</b>                     |          | R    |        |
|         | <b>Section No. 5</b>                             |          |      |        |
|         | <b>Bill No. 4</b>                                |          |      |        |
|         | <b>FIRE PROTECTION (PROVISIONAL)</b>             |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>                |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

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| Item No                              |   |    | Quantity | Rate | Amount |
|--------------------------------------|---|----|----------|------|--------|
|                                      | <b><u>Fire Signage (Supply and Install). All Signage shall be wall mounted or ceiling hanging</u></b>   |    |          |      |        |
|                                      | <b><u>Fire Equipment Signage to be Photoluminescent Type</u></b>  |    |          |      |        |
| 50                                   | F4  | No | 35       |      |        |
| 51                                   | F5  | No | 42       |      |        |
| 52                                   | F6  | No | 25       |      |        |
| 53                                   | F13   | No | 30       |      |        |
| 54                                   | F14   | No | 28       |      |        |
| 55                                   | F30   | No | 10       |      |        |
| 56                                   | F39   | No | 20       |      |        |
| 57                                   | F49   | No | 25       |      |        |
|                                      | <b><u>Emergency Evacuation Signage to be Photoluminescent Type</u></b>  |    |          |      |        |
| 58                                   | E1  | No | 85       |      |        |
| 59                                   | E2  | No | 90       |      |        |
| 60                                   | E3  | No | 54       |      |        |
| 61                                   | E6  | No | 35       |      |        |
| 62                                   | E13   | No | 12       |      |        |
| 63                                   | E14   | No | 14       |      |        |
|                                      | <b><u>LETTERS, NAMEPLATES, ETC</u></b>  |    |          |      |        |
|                                      | <b><u>Manufactured by approved supplier</u></b>   |    |          |      |        |
| 64                                   | 150 x 150mm Ref IF4/IF5/E1/E2/E3F5/F6/F4/E6<br>anodised aluminium plate with fire exit, fire extinguisher,<br>fire hose reel or fire hydrant symbol | No | 25       |      |        |
|                                      |   |    |          | R    |        |
|                                      |   |    |          |      |        |
| <b>Carried to Collection</b>         |   |    |          |      |        |
| <b>Section No. 5</b>                 |   |    |          |      |        |
| <b>Bill No. 4</b>                    |   |    |          |      |        |
| <b>FIRE PROTECTION (PROVISIONAL)</b> |   |    |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>    |   |    |          |      |        |

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Section No. 5

Bill No. 4

FIRE PROTECTION (PROVISIONAL)

COLLECTION

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Section No. 5

Bill No. 4

FIRE PROTECTION (PROVISIONAL)

REFURBISHMENT AND UPGRADES



| Item No  |  | Quantity | Rate | Amount |
|--|--|----------|------|--------|
| 5  | Zyton (code: DMN700R100-KITR) or similar approved manual conventional break glass unit | No 25    |      |        |
| 6  | Flashing beacon  | No 28    |      |        |
| 7  | PH120 or similar approved fire resistant wiring  | m 1,400  |      |        |
| 8  | 5KVA UPS and backup power system   | No 1     |      |        |
| <b><u>PUBLIC ADDRESS AND VOICE EVACUATION INSTALLATION</u></b>   |  |          |      |        |
| <b><u>Supply, deliver, installation, testing, commissioning and handing over in working order and maintenance during guarantee period.</u></b> |  |          |      |        |
| <b><u>FRONT END EQUIPMENT</u></b>  |  |          |      |        |
| 9  | 1 Channel power amplifier @ 240W RMS per channel                                       | No 1     |      |        |
| 10   | Voice Alarm System Amplifier 240W - 1 Zone   | No 1     |      |        |
| 11   | Power amplifier input module   | No 1     |      |        |
| 12   | VM Extension Amplifier   | No 1     |      |        |
| 13   | Firemans Microphone Extension  | No 1     |      |        |
| 14   | Emergency Power supply unit  | No 1     |      |        |
| 15   | 12 Volt 100 A/H Battery  | No 4     |      |        |
| 16   | 19" rack 25U, 800mm, Complete.   | No 1     |      |        |
| 17   | 5KVA UPS and backup power system   | No 1     |      |        |
| <b><u>FIELD DEVICES</u></b>  |  |          |      |        |
| 18   | 10 W Speaker (BS Version) Vandall Proof  | No 30    |      |        |
| 19   | PH120 1mm 1 pair Fire resistant cable  | m 1,400  |      |        |
| 20   | Diameter 25mm steel conduit  | m 1,400  |      |        |
| Carried to Collection  |  |          |      | R      |
| Section No. 5  |  |          |      |        |
| Bill No. 5   |  |          |      |        |
| FIRE DETECTION AND PUBLIC ADDRESS SYSTEM (P  |  |          |      |        |
| REFURBISHMENT AND UPGRADES   |  |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

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| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <b><u>SECTION NO. 5 MECHANICAL WORKS</u></b>   |          |      |        |
|         | <b><u>BILL NO. 6</u></b>   |          |      |        |
|         | <b><u>WET SERVICES (PROVISIONAL)</u></b>   |          |      |        |
|         | <b><u>NOTE:</u></b>  |          |      |        |
|         | Tenderers are advised to study the "Department of Public Works: Specification of Materials and Methods to be used - (PW371 B) Edition 2.2" before pricing this bill. |          |      |        |
|         | NOTE: Unless otherwise stated all items in this bill shall be deemed to fall into Work Group No. 171 for Haylett Formula purposes.                                   |          |      |        |
|         | <b><u>Supply and install heat pump, water heating systems for each comprising of an insulated water and associated valves and fittings .</u></b>                     |          |      |        |
| 1       | Storage Tank capacity: 2500litres  | No       | 3    |        |
| 2       | Electrical back-up element: 6.0kW  | No       | 3    |        |
|         | <b><u>HEAT PUMPS</u></b>   |          |      |        |
| 3       | Supply and install a 46 kW heat pump (HP1) including all accessories etc to make it a complete installation  | No       | 3    |        |
| 4       | Hydroboil 3.0 Litre, 1.5Kw, Stainless steel including installation   | No       | 1    |        |
|         | <b><u>HOT &amp; COLD WATER INSTALLATION</u></b>  |          |      |        |
|         | <b><u>Hard drawn copper pipes with capillary type soldered joints made in accordance with manufactures written instructions, coupling in running light.</u></b>      |          |      |        |
| 5       | 42mm dia. pipe   | m        | 170  |        |
| 6       | 35mm dia. pipe   | m        | 140  |        |
| 7       | 28mm dia. pipe   | m        | 380  |        |
|         | Carried to Collection  |          |      | R      |
|         | Section No. 5  |          |      |        |
|         | Bill No. 6   |          |      |        |
|         | WET SERVICES (PROVISIONAL)   |          |      |        |
|         | REFURBISHMENT AND UPGRADES   |          |      |        |



## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No  |   | Quantity | Rate | Amount |
|--|---|----------|------|--------|
| 8  | 22mm dia. pipe                          | m        | 220  |        |
| 9  | 15mm dia. pipe                          | m        | 220  |        |
| <b><u>Extra over 42mm dia. pipe capillary soldered fittings.</u></b> |   |          |      |        |
| 10   | 42mm dia. tee                           | No       | 10   |        |
| 11   | 42 x 35 x 42mm dia. tee                 | No       | 10   |        |
| 12   | 42 x 28 x 42mm dia. tee                 | No       | 20   |        |
| 13   | 42 x 22 x 42mm dia. tee                 | No       | 20   |        |
| 14   | 42 x 15 x 42mm dia. tee                 | No       | 30   |        |
| 15   | 42mm dia. bend                          | No       | 25   |        |
| 16   | 42 x 35mm dia. reducer straight coupler | No       | 30   |        |
| 17   | 42 x 28mm dia. reducer straight coupler | No       | 10   |        |
| 18   | 42 x 22mm dia. reducer straight coupler | No       | 10   |        |
| 19   | 42 x 15mm dia. reducer straight coupler | No       | 10   |        |
| <b><u>Extra over 35mm dia. pipe capillary soldered fittings.</u></b> |   |          |      |        |
| 20   | 35mm dia. tee                           | No       | 25   |        |
| 21   | 35 x 28 x 35mm dia. tee                 | No       | 20   |        |
| 22   | 35 x 22 x 35mm dia. tee                 | No       | 20   |        |
| 23   | 35 x 15 x 35mm dia. tee                 | No       | 18   |        |
| 24   | 35mm dia. bend                          | No       | 20   |        |
| 25   | 35 x 28mm dia. reducer straight coupler | No       | 15   |        |
| 26   | 35 x 22mm dia. reducer straight coupler | No       | 12   |        |
| 27   | 35 x 15mm dia. reducer straight coupler | No       | 10   |        |
| <b>Carried to Collection</b>   |   |          |      |        |
| <b>Section No. 5</b>   |   |          |      |        |
| <b>Bill No. 6</b>  |   |          |      |        |
| <b>WET SERVICES (PROVISIONAL)</b>                                    |   |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b>                                    |   |          |      |        |

| Item No                    |   |    | Quantity | Rate | Amount |
|----------------------------|---|----|----------|------|--------|
|                            | <u>Extra over 28mm dia. pipe capillary soldered fittings.</u>   |    |          |      |        |
| 28                         | 28mm dia. tee   | No | 18       |      |        |
| 29                         | 28 x 22 x 28mm dia. tee   | No | 30       |      |        |
| 30                         | 28 x 15 x 28mm dia. tee   | No | 25       |      |        |
| 31                         | 28mm dia. bend  | No | 35       |      |        |
| 32                         | 28 x 22mm dia. reducer straight coupler   | No | 10       |      |        |
| 33                         | 28 x 15mm dia. reducer straight coupler   | No | 20       |      |        |
|                            | <u>Extra over 22mm dia. pipe capillary soldered fittings.</u>   |    |          |      |        |
| 34                         | 22mm dia. tee   | No | 15       |      |        |
| 35                         | 22 x 15 x 22mm dia. tee   | No | 40       |      |        |
| 36                         | 22mm dia. bend  | No | 30       |      |        |
| 37                         | 22 x 15mm dia. reducer straight coupler   | No | 30       |      |        |
| 38                         | 22mm dia. copper to iron adapter  | m  | 50       |      |        |
| 39                         | Supply & install minimum 25mm fibreglass insulation clading 0.6mm galvanised steel sheeting muff complete with mitred bends | m  | 500      |      |        |
|                            | <u>Extra over 15mm dia. pipe capillary soldered fittings.</u>   |    |          |      |        |
| 40                         | 15mm dia. Bend  | No | 96       |      |        |
| 41                         | 15mm dia. copper to iron adapter  | No | 48       |      |        |
|                            | <u>Brass fittings</u>   |    |          |      |        |
| 42                         | 42mm dia. gate valve c/w threads, flanges etc to enable complete connection   | No | 20       |      |        |
| 43                         | 35mm dia. gate valve c/w threads, flanges etc to enable complete connection   | No | 4        |      |        |
| Carried to Collection      |   |    |          |      | R      |
| Section No. 5              |   |    |          |      |        |
| Bill No. 6                 |   |    |          |      |        |
| WET SERVICES (PROVISIONAL) |   |    |          |      |        |
| REFURBISHMENT AND UPGRADES |   |    |          |      |        |

| Item No                           |   |    | Quantity | Rate | Amount |
|-----------------------------------|---|----|----------|------|--------|
| 44                                | 28mm dia. gate valve c/w threads, flanges etc to enable complete connection   | No | 4        |      |        |
| 45                                | 22mm dia. gate valve c/w threads, flanges etc to enable complete connection   | No | 41       |      |        |
| 46                                | 15mm dia. gate valve c/w threads, flanges etc to enable complete connection   | No | 180      |      |        |
| 47                                | Omnidirectional Float switch with max temp 90DegreesC (250VAC)  | No | 1        |      |        |
| 48                                | stainless steel Level Sensor Temp range -25 to 90DegreesC   | No | 1        |      |        |
| 49                                | Control panel for sensors and switches and booster pump incl wiring and programming                                       | No | 1        |      |        |
| 50                                | Hot water Control panel for temperature sensors incl wiring and programming   | No | 1        |      |        |
| 51                                | Supply and install Circulation pump for hot water 2.5L/sr rated 1kw   | No | 6        |      |        |
| 52                                | Supply and install domestic electric booster pump set, c/w high and low level switches as specified, Duty: 3 l/s @ 600kPa | No | 2        |      |        |
| 53                                | Supply and install primary pumps for hot water, 0.35m3/hr rated 0.5HP   | No | 6        |      |        |
| 54                                | Supply and Install HDPE pipe 80mm in diameter incl trenching  | m  | 100      |      |        |
| 55                                | Supply and Install HDPE pipe 40mm in diameter incl trenching  | m  | 130      |      |        |
| 56                                | Supply and Install HDPE pipe 50mm in diameter incl trenching  | m  | 150      |      |        |
| <b><u>DRAINAGE</u></b>            |   |    |          |      |        |
| <b>Carried to Collection</b>      |   |    |          |      | R      |
| <b>Section No. 5</b>              |   |    |          |      |        |
| <b>Bill No. 6</b>                 |   |    |          |      |        |
| <b>WET SERVICES (PROVISIONAL)</b> |   |    |          |      |        |
| <b>REFURBISHMENT AND UPGRADES</b> |   |    |          |      |        |

| Item No |   | Quantity | Rate | Amount |
|---------|---|----------|------|--------|
|         | <u>uPVC Pipes and fittings with butt welded joints, electro weld sockets and bracketing, all as necessary, as per uPVC - Pipes and fittings for Sanitary Drainage Installations and in accordance with the details, specifications and recommendations for uPVC Applications.</u> |          |      |        |
| 57      | 50 mm Pipes   | m        | 100  |        |
| 58      | 110 mm Pipes  | m        | 60   |        |
| 59      | 50 mm Pipes in chase  | m        | 65   |        |
| 60      | 110 mm Pipes in chase   | m        | 40   |        |
| 61      | 110 mm Reducer to 50mm  | No       | 10   |        |
| 62      | 50 mm 45° Bends   | No       | 40   |        |
| 63      | 110 mm 45° Bends  | No       | 45   |        |
| 64      | 50 mm 90° Bends   | No       | 40   |        |
| 65      | 110 mm 90° Bends  | No       | 30   |        |
| 66      | 50 mm Y-branch fitting  | No       | 35   |        |
| 67      | 110 mm Y-branch fitting   | No       | 30   |        |
| 68      | 50 mm Double Y-branch fitting   | No       | 35   |        |
| 69      | 110 mm Double Y-branch fitting  | No       | 20   |        |
| 70      | 50 mm T-branch fitting  | No       | 24   |        |
| 71      | 110 mm T-branch fitting   | No       | 27   |        |
| 72      | 110 mm (90°) Access pipe with round screwed cover   | No       | 18   |        |
| 73      | 50 mm (90°) Access pipe with round screwed cover  | No       | 30   |        |
| 74      | 110 mm Complete stop end with screwed end   | No       | 15   |        |
| 75      | 50 mm Complete stop end with screwed end  | No       | 18   |        |
|         | <b>Carried to Collection</b>  |          |      |        |
|         | <b>Section No. 5</b>  |          |      |        |
|         | <b>Bill No. 6</b>   |          |      |        |
|         | <b>WET SERVICES (PROVISIONAL)</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>   |          |      |        |

| Item No   |   |      | Quantity | Rate | Amount |
|---|---|------|----------|------|--------|
| 76  | 50 mm Expansion socket with anchor  | No   | 35       |      |        |
| 77  | 110 mm Expansion socket with anchor   | No   | 18       |      |        |
| 78  | 50 mm Two way air relief vent   | No   | 15       |      |        |
| 79  | 110 mm Two way air relief vent  | No   | 8        |      |        |
| 80  | 110 mm Two way air relief vent  | No   | 8        |      |        |
| 81  | Non Return Valve 80mm Steel   | No   | 4        |      |        |
| 82  | Isolating Valves 80mm Steel   | No   | 3        |      |        |
| 83  | Isolating valves 50mm steel   | No   | 2        |      |        |
| 84  | 80mm Strainer   | No   | 2        |      |        |
| 85  | Isolating valves 40mm steel   | No   | 2        |      |        |
| 86  | Supply and install new plant room for fire and domestic water pumps 5m x 5m x 3m(h) |      | Item     |      |        |
| 87  | Supply and install pressure guages in plant room (max 10KPA)                        | No   | 8        |      |        |
| 88  | Supply and install industrial washing machines 55kg                                 | No   | 2        |      |        |
| 89  | Supply and install 2 Industrial irons   | No   | 2        |      |        |
| <b><u>PROJECT ENGINEERING AND QUALITY MANAGEMENT</u></b>  |   |      |          |      |        |
| <b><u>Testing, commissioning and handover of Pumping system, including pressure testing and inspection and compilation of plans submitted to the Engineer for approval.</u></b> |   |      |          |      |        |
| 90  | Operation and Maintenance Instruction Manuals                                       | Sets | 4.0      |      |        |
| 91  | User Training   |      | Item     |      |        |
| 92  | Sets of "as built" drawings "including 1 cd"  | No   | 6        |      |        |
| Carried to Collection   |   |      |          |      | R      |
| Section No. 5   |   |      |          |      |        |
| Bill No. 6  |   |      |          |      |        |
| WET SERVICES (PROVISIONAL)  |   |      |          |      |        |
| REFURBISHMENT AND UPGRADES  |   |      |          |      |        |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

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Section No. 5

Bill No. 6

WET SERVICES (PROVISIONAL)

COLLECTION

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Section No. 5

Bill No. 6

WET SERVICES (PROVISIONAL)

REFURBISHMENT AND UPGRADES

| Item No |  | Quantity | Rate | Amount |
|---------|--|----------|------|--------|
|         | <b><u>SECTION NO. 5 MECHANICAL WORKS</u></b>   |          |      |        |
|         | <b><u>BILL NO. 7</u></b>   |          |      |        |
|         | <b><u>REFRIGERATION (PROVISIONAL)</u></b>  |          |      |        |
|         | <b><u>PREAMBLES</u></b>  |          |      |        |
|         | For preambles see "Construction Specifications - General Specification (PW371-A)"  |          |      |        |
|         | <b><u>COLD ROOM</u></b>  |          |      |        |
|         | <b><u>Supply and install New Cold room Complete (4700x3300mmx2700mm) C/w 0.5mm Chromadeck cladding, frost white cladding finish, 75mm thick 35kg/cub.m Fire retardent polyurethane insulation and R404A gas with 3.2kw Condensing Unit</u></b>     |          |      |        |
| 1       | Supply and installation  | Item     |      |        |
|         | <b><u>Supply and install New Freezer room Complete (4700x3300mmx2700mm) C/w 0.5mm Chromadeck cladding, frost white cladding finish, 100mm thick 35kg/cub.m Fire retardent polyurethane insulation and R404A gas with 4.0kw Condensing Unit</u></b> |          |      |        |
| 2       | Supply and installation  | Item     |      |        |
|         | <b><u>PROJECT ENGINEERING AND QUALITY MANAGEMENT</u></b>   |          |      |        |
| 3       | Provide OSH certificate for compliance on Equipment system installed   | Item     |      |        |
| 4       | Allow for site inspection and measurements for detailed production of shopfloor drawings   | Item     |      |        |
| 5       | Issuing of COC by a registered personal Personal   | Item     |      |        |
|         | <b><u>TEST &amp; COMMISSION</u></b>  |          |      |        |
| 6       | Test and Commission  | Item     |      |        |
|         | <b>Carried to Collection</b>   |          | R    |        |
|         | <b>Section No. 5</b>   |          |      |        |
|         | <b>Bill No. 7</b>  |          |      |        |
|         | <b>REFRIGERATION (PROVISIONAL)</b>   |          |      |        |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |      |        |



| Item No                     |   | Quantity | Rate | Amount |
|-----------------------------|---|----------|------|--------|
| 7                           | Ditto but in the presence of and to the entire satisfaction of the Consulting Engineer. | Item     |      |        |
| Carried to Collection       |   |          |      | R      |
| Section No. 5               |   |          |      |        |
| Bill No. 7                  |   |          |      |        |
| REFRIGERATION (PROVISIONAL) |   |          |      |        |
| REFURBISHMENT AND UPGRADES  |   |          |      |        |

Section No. 5

Bill No. 7

REFRIGERATION (PROVISIONAL)

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Section No. 5

Bill No. 7

REFRIGERATION (PROVISIONAL)

REFURBISHMENT AND UPGRADES

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| Item No  |  | Quantity | Rate | Amount     |
|--|--|----------|------|------------|
| <b><u>SECTION No. 6 PROVISIONAL SUMS</u></b>   |  |          |      |            |
| <b><u>BILL No. 1</u></b>   |  |          |      |            |
| <b><u>PROVISIONAL AMOUNTS</u></b>  |  |          |      |            |
| Note: The following Provisional Amounts cover the supply of all materials and equipment and the installation thereof by the Main Contractor, which amount may be used, in whole or in part, on the instructions of the Representative/Agent. |  |          |      |            |
| <b><u>LED LIGHT FITTINGS TO RECEPTION BULKHEADS</u></b>  |  |          |      |            |
| 1  | Provisional Sum of R 80 000.00 (Eighty Thousand Rand) for the supply and installation of LED Light Fittings to Reception Bulkheads | Item     |      | 80,000.00  |
| 2  | Allow for general attendance on ditto  | Item     |      |            |
| 3  | Allow for profit if required   | Item     |      |            |
| <b><u>PUT - PUT COURSE</u></b>   |  |          |      |            |
| 4  | Provisional Sum of R 60 000.00 (Sixty Thousand Rand) for the repairs of the Put-Put Course   | Item     |      | 60,000.00  |
| 5  | Allow for general attendance on ditto  | Item     |      |            |
| 6  | Allow for profit if required   | Item     |      |            |
| <b><u>RECREATIONAL FACILITY</u></b>  |  |          |      |            |
| 7  | Provisional Sum of R 150 000.00 (One Hundred and Fifty Thousand Rand) for the refurbishment of the Recreational Facility           | Item     |      | 150,000.00 |
| 8  | Allow for general attendance on ditto  | Item     |      |            |
| 9  | Allow for profit if required   | Item     |      |            |
|  |  |          | R    |            |
| Carried to Collection  |  |          |      |            |
| Section No. 6<br>Bill No. 1<br>PROVISIONAL SUMS<br>REFURBISHMENT AND UPGRADES  |  |          |      |            |

| Item No |  | Quantity | Rate | Amount       |
|---------|--|----------|------|--------------|
|         | <b><u>MAIN ENTRANCE DOORS</u></b>  |          |      |              |
| 10      | Provisional Sum of R 550 000.00 (Five Hundred and Fifty Thousand Rand) for the supply and installation of the Main Entrance Doors      | Item     |      | 550,000.00   |
| 11      | Allow for general attendance on ditto  | Item     |      |              |
| 12      | Allow for profit if required   | Item     |      |              |
|         | <b><u>BAR COUNTER FITTINGS &amp; EQUIPMENT</u></b>   |          |      |              |
| 13      | Provisional Sum of R 400 000.00 (Four Hundred Thousand Rand) for the supply and installation of the Bar Counter Fittings and Equipment | Item     |      | 400,000.00   |
| 14      | Allow for general attendance on ditto  | Item     |      |              |
| 15      | Allow for profit if required   | Item     |      |              |
|         | <b><u>IRONMONGERY FITTINGS</u></b>   |          |      |              |
| 16      | Provisional Sum of R 1 200 000.00 (One Million and Two Hundred Thousand Rand) for the supply and installation of Ironmongery Fittings  | Item     |      | 1,200,000.00 |
| 17      | Allow for general attendance on ditto  | Item     |      |              |
| 18      | Allow for profit if required   | Item     |      |              |
|         | <b><u>HOTEL DOOR ACCESS MANAGEMENT SYSTEM</u></b>  |          |      |              |
| 19      | Provisional Sum of R 500 000.00 (Five Hundred Thousand Rand) for the Hotel Door Access Management System                               | Item     |      | 500,000.00   |
| 20      | Allow for general attendance on ditto  | Item     |      |              |
| 21      | Allow for profit if required   | Item     |      |              |
|         | <b>Carried to Collection</b>   |          | R    |              |
|         | <b>Section No. 6</b>   |          |      |              |
|         | <b>Bill No. 1</b>  |          |      |              |
|         | <b>PROVISIONAL SUMS</b>  |          |      |              |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |      |              |

## TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No |  | Quantity | Rate | Amount       |
|---------|--|----------|------|--------------|
|         | <b><u>LANDSCAPING</u></b>  |          |      |              |
| 22      | Provisional Sum of R 300 000.00 (Three Hundred Thousand Rand) for Landscaping  | Item     |      | 300,000.00   |
| 23      | Allow for general attendance on ditto  | Item     |      |              |
| 24      | Allow for profit if required   | Item     |      |              |
|         | <b><u>JOINERY FITTINGS</u></b>   |          |      |              |
| 25      | Provisional Sum of R 3 200 000.00 (Three Million and Two Hundred Thousand Rand) for Joinery Fittings                               | Item     |      | 3,200,000.00 |
| 26      | Allow for general attendance on ditto  | Item     |      |              |
| 27      | Allow for profit if required   | Item     |      |              |
|         | <b><u>DECORATIVE WALLPAPER</u></b>   |          |      |              |
| 28      | Provisional Sum of R 80 000.00 (Eighty Thousand Rand) for the supply and installation of LED Light Fittings to Reception Bulkheads | Item     |      | 80,000.00    |
| 29      | Allow for general attendance on ditto  | Item     |      |              |
| 30      | Allow for profit if required   | Item     |      |              |
|         | <b><u>FOLDING DOORS</u></b>  |          |      |              |
| 31      | Provisional Sum of R 50 000.00 (Fifty Thousand Rand) for the servicing of existing Folding Doors                                   | Item     |      | 50,000.00    |
| 32      | Allow for general attendance on ditto  | Item     |      |              |
| 33      | Allow for profit if required   | Item     |      |              |
|         | <b><u>FURNITURE STORAGE</u></b>  |          |      |              |
| 34      | Provisional Sum of R 1 500 000.00 (One Million Five Hundred Rand) for Furniture Storage for a period of twelve (12) Months         | Item     |      | 1,500,000.00 |
| 35      | Allow for general attendance on ditto  | Item     |      |              |
|         | <b>Carried to Collection</b>   |          | R    |              |
|         | <b>Section No. 6</b>   |          |      |              |
|         | <b>Bill No. 1</b>  |          |      |              |
|         | <b>PROVISIONAL SUMS</b>  |          |      |              |
|         | <b>REFURBISHMENT AND UPGRADES</b>  |          |      |              |

TAUNG HOTEL SCHOOL & CONVENTION CENTRE

| Item No                    |   | Quantity | Rate | Amount       |
|----------------------------|---|----------|------|--------------|
| 36                         | Allow for profit if required  | Item     |      |              |
|                            | <b><u>MOBILE OFFICE SPACE</u></b>   |          |      |              |
| 37                         | Provisional Sum of R 1 200 000.00 (One Million Two Hundred Thousand Rand) for the rental of Mobile Office Space | Item     |      | 1,200,000.00 |
| 38                         | Allow for general attendance on ditto   | Item     |      |              |
| 39                         | Allow for profit if required  | Item     |      |              |
|                            | <b><u>TENNIS COURT</u></b>  |          |      |              |
| 40                         | Provisional Sum of R 100 000.00 (One Hundred Thousand Rand) for the repairs to the Tennis Court                 | Item     |      | 100,000.00   |
| 41                         | Allow for general attendance on ditto   | Item     |      |              |
| 42                         | Allow for profit if required  | Item     |      |              |
|                            | <b><u>COMMUNITY LIASON OFFICER</u></b>  |          |      |              |
| 43                         | Provisional Sum of R 72 000.00 (Seventy-Two Thousand Rand) for the Community Liason Officer                     | Item     |      | 72,000.00    |
|                            | <b><u>PROJECT STEERING COMMITTEE</u></b>  |          |      |              |
| 44                         | Provisional Sum of R 18 000.00 (Eighteen Thousand Rand) for the Project Steering Committee                      | Item     |      | 18,000.00    |
|                            | <b><u>CONTINGENCY AMOUNT</u></b>  |          |      |              |
| 45                         | Allowance for Contingency of R 2 500 000.00 (Two Million and Five Hundred Thousand Rand)                        | Item     |      | 2,500,000.00 |
| Carried to Collection      |   |          |      | R            |
| Section No. 6              |   |          |      |              |
| Bill No. 1                 |   |          |      |              |
| PROVISIONAL SUMS           |   |          |      |              |
| REFURBISHMENT AND UPGRADES |   |          |      |              |

Section No. 6

Bill No. 1

PROVISIONAL SUMS

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Section No. 6

Bill No. 1

PROVISIONAL SUMS

REFURBISHMENT AND UPGRADES





| Section No | FINAL SUMMARY   | Page No | Amount |
|------------|---|---------|--------|
| 1          | PRELIMINARIES   | 180     |        |
| 2          | BUILDING WORKS  | 287     |        |
| 3          | EXTERNAL WORKS (PROVISIONAL)  | 323     |        |
| 4          | ELECTRICAL WORKS (PROVISIONAL)  | 352     |        |
| 5          | MECHANICAL WORKS (PROVISIONAL)  | 397     |        |
| 6          | PROVISIONAL SUMS  | 402     |        |
|            | Sub-Total   |         | R      |
|            | <b>ADD:</b><br>VALUE ADDED TAX (15%)  |         | R      |
|            | Sub-Total   |         | R      |
| 7          | CREDIT FOR OLD MATERIAL   | 403     |        |
|            | <b>Carried to Form of Offer and Acceptance</b><br><b>REFURBISHMENT AND UPGRADES</b> |         | R      |

**PART C3: SCOPE OF WORK**

**C3 SCOPE OF WORK**

## C3 Scope of Work

### 1 DESCRIPTION OF THE WORKS

#### 1.1 Employer's objectives

The primary objective of the employer is to appoint a contractor for the **Refurbishment and Upgrades to Existing Taung Hotel School & Convention Centre**, on the following **Scope of Work**;

- |   |   |
|---|---|
| 1.1.1 Refurbishment of <b>MAIN BUILDING</b> (Hotel):  | electrical & mechanical works, plumbing, sanitary fittings, painting, floor finishes, installation of new equipment, ceilings, doors, installation of upgraded systems, new furniture, signage.                                 |
| 1.1.2 Refurbishment of <b>HOTEL ROOMS</b> :           | refer to <b>item-1</b> above.   |
| 1.1.3 Construction of <b>GAZEBO</b> :                 | new building with flat concrete & hipped roofs.   |
| 1.1.4 Construction of <b>BOMA</b> :                   | new building with flat concrete & hipped roofs, repairs to screen walls   |
| 1.1.5 Refurbishment of <b>RECREATIONAL FACILITY</b> : | electrical & mechanical works, plumbing, sanitary fittings, painting, tiling, installation of doors & shopfront, ceilings   |
| 1.1.6 Refurbishment of <b>EXTERNAL WORKS</b> :        | erection of new carports roofs, refurbishment of swimming pool, erection of fencing, pre-cast walls, installation of gates, refurbishment of tennis court & putt-putt golf course, open walkways, paving, landscape, irrigation |
| 1.1.7 Other:  | temporary storage for existing furniture (1000sqm) and temporary / mobile offices (08 - 10 offices and 1 x board room for a period of 13 x months)  |

The employer may include the following statement in the tender documents should the employer wish to have specific training carried out as an objective of the project:

#### 1.2 Location of the works

The project is located **Taung Hotel School & Convention Centre**. The GPS coordinates are **27°34'22" S** and **24°44'30" E**. (Dr. Ruth Segomotsi Mompati District Municipality, along N18 / Kimberley-Vryburg Road)

To be communicated to the winning Bidder before construction commences

## **2 DRAWINGS**

- **Architect – Annexure to the Tender Document**
- **Civil & Structural Engineer – Annexure to the Tender Document**
- **Electrical Engineer – Annexure to the Tender Document**
- **Mechanical Engineer – Annexure to the Tender Document**

## **3 Subcontracting**

### **3.2**

#### **3.2.1 Scope of mandatory subcontract work**

As per the mandatory sub-contracting clause, the Contractor must not sub-contract more than 25%, 10% of which should be allocated to the IDT CDP contractors between 2GB and 3GB (list per cluster will be provided upon appointment).

The Contractor shall without delay enter into contracts with the Domestic Subcontractors as submitted on the returnable schedule and forward a copy of these agreements to the Principal Agent. The Contractor shall remain responsible for providing the subcontracted portion of the works as if the work had not been subcontracted.

The Contractor to take note of item 3.2.2 below

#### **3.2.2 Preferred subcontractors / suppliers**

#### **3.2.3 Subcontracting procedures**

See items 3.2.1 and 3.2.2 as well as BID data

#### **3.2.4 Attendance on subcontractors**

Attendance to Domestic Sub-contractors as stated above should be priced under the relevant items in the Preliminaries section of the bills of quantities. Attendance to nominated sub-contractors should be priced under the relevant items in the Provisional Sums section of the bills of quantities.

## **4. MANAGEMENT**

### **4.1 Recording of weather**

The Contractor shall erect an effective rainfall gauge on the site and record the daily rainfall figures in a book. Such book shall be handed to the employer's representative for his signature no later

than 12 days after rain that is considered to justify an extension of time occurs.

#### **4.2 Unauthorized persons**

The Contractor shall keep unauthorized persons from the works at all times. Under no circumstances may any person except guards be allowed to sleep on the building site.

#### **4.3 Management meetings**

The Employer's Representative and the Contractor shall hold meetings relating to the progress of the works at regular intervals and at other such times as may be necessary. The Contractor shall attend all site meetings and shall ensure that all persons under his jurisdiction are notified timeously of all site meetings should the Employer's Representative require their attendance at such meetings.

The Contractor shall keep on site a set of minutes of all site meetings, daily records of resources (people and equipment employed), a site instruction book, a complete set of contract working drawings and a copy of the procurement document and make these available at all reasonable times to all persons concerned with the contract.

#### **4.4 Forms for contract administration**

The Contractor shall be required to submit an updated contractor monthly report during site meetings, which will be used by the consultant to update the client.

#### **4.5 Payment certificates**

The Contractor to ensure that the VAT invoice required with each certificate is delivered timeously. The date of the certificate will be that of the date when the certificate is received by the consultant.

The Contractor to ensure timeous submission of all required documentation for the expedient processing of payment certificates, as required by the client, eg BAS entity forms, company registration details, VAT clearance certificates, etc. The Contractor is responsible for such documentation submission.

#### **4.7 Addenda**

**PART C4: SITE INFORMATION**



**C4 SITE INFORMATION**

## INDEPENDENT DEVELOPMENT TRUST

***BID DATA FOR APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT) NORTH-WEST PROVINCE – BID NUMBER: DOT01NWER15***

### **C4 Site Information**

| PROJECT NAME                             | LOCATION  | LATITUDE           | LONGITUDE           |
|--|---|--------------------|---------------------|
| Taung Hotel School and convention Centre | <b>Taung Hotel School &amp; Convention Centre.</b> (Dr. Ruth Segomotsi Mompati District Municipality, along N18 / Kimberley-Vryburg Road) | <b>27°34'22" S</b> | <b>24°44'30" E.</b> |

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# **ADDENDUM A**

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## **Occupational Health and Safety Regulations**

GOVERNMENT NOTICE

DEPARTMENT OF LABOUR

No. R. ....

7 February 2014

**OCCUPATIONAL HEALTH AND SAFETY ACT, 1993**

# **CONSTRUCTION REGULATIONS, 2014**

The Minister of Labour has under section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule.

ADDENDUM A

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993

NOTIFICATION OF CONSTRUCTION WORK

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---

1.(a) Name and postal address of principal contractor:

\_\_\_\_\_

(b) Name and tel. no of principal contractor's contact person:

\_\_\_\_\_

2. Principal contractor's compensation registration number: \_\_\_\_\_

3.(a) Name and postal address of client:

\_\_\_\_\_

(b) Name and tel no of client's contact person or agent:

\_\_\_\_\_

4.(a) Name and postal address of designer(s) for the project:

\_\_\_\_\_

(b) Name and tel. no of designer(s) contact person:

\_\_\_\_\_

5. Name and telephone number of principal contractor's construction supervisor on site appointed in terms of regulation 6.(1). \_\_\_\_\_

6. Name/s of principal contractor's sub-ordinate supervisors on site appointed in terms of regulation 6.(2). \_\_\_\_\_

7. Exact physical address of the construction site or site office:

\_\_\_\_\_

8. Nature of the construction work:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9. Expected commencement date: \_\_\_\_\_

10. Expected completion date: \_\_\_\_\_

11. Estimated maximum number of persons on the construction site.

\_\_\_\_\_

12. Planned number of contractors on the construction site accountable to principal contractor:

\_\_\_\_\_

13. Name(s) of contractors already chosen.

\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Principal Contractor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Client

\_\_\_\_\_  
Date

- THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE.
- **ALL PRINCIPAL CONTRACTORS** THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER PRINCIPAL CONTRACTOR ON THE SAME SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.

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## **ADDENDUM B**

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### **Occupational Health and Safety Specification**

**APPOINTMENT OF A CONTRACTOR FOR REFURBISHMENT AND UPGRADES TO  
EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR: DEPARTMENT OF  
ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM (DEDECT)  
NORTH-WEST PROVINCE**

### **INDEPENDENT DEVELOPMENT TRUST**

(Hereinafter referred to as the Employer)

### **OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION**

This specification shall be used in conjunction with all other applicable safety specifications, legislation and regulations in force at the time of the contract. Where unique site specifications are in force, those site specifications shall take precedence over this Specification.

The Independent Development Trust (IDT)

4071 Joules Street

Industrial Site

Mahikeng

2745

**ADDENDUM “A”**

**PRO-FORMA AGREEMENT IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY ACT  
1993**

## **PRO-FORMA AGREEMENT IN TERMS OF**

### **OCCUPATIONAL HEALTH AND SAFETY ACT 1993 – SECTION 37 (2)**

#### **NEW CONSTRUCTION SAFETY REGULATIONS**

The above-mentioned regulations were promulgated in the Govt. Gazette on Friday, 18 July 2014 under the Occupational Health & Safety Act (85 of 1993) and are now in force.

The Employer and the Contractor hereby agree, in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act 1993 (Act 85 of 1993, hereinafter referred to as the Act), that the following arrangements and procedures shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely:

- (a) The Contractor undertakes to acquaint the appropriate officials and employees of the Contractor with all the relevant provisions of the Act and the regulations promulgated in terms of the Act, and the Employer's Health and Safety Specifications included in the contract documents.
- (b) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and Regulations and the Employer's Health and Safety Specifications included in the contract documents will be complied with in all respects.
- (c) In relation to any work or activity performed by the Contractor, his workmen or any other person for whose acts or omissions the Contractor is responsible in terms of the Contract, the Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and Regulations and expressly absolves the Employer from itself being obliged to comply with any of the aforesaid duties, obligations and prohibitions.
- (d) The Contractor agrees that any duly authorised officials of the Employer shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the Contractor has complied with his undertakings as set out more fully in paragraphs (a) and (b) above, which steps may include, but will not be limited to,



the right to inspect any appropriate site or premises occupied by the Contractor, or to inspect any appropriate records held by the Contractor.

(e) The Contractor shall be obliged to report forthwith in writing to the Representative/Agent full details of any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the Act and Regulations, pursuant to work performed in terms of this Contract.

(f) Forward "safety meeting" minutes to the representative/Agent.

For the Employer: \_\_\_\_\_ Date: \_\_\_\_\_

Witnesses: 1) : \_\_\_\_\_ 2) \_\_\_\_\_

For the Contractor: \_\_\_\_\_ Date: \_\_\_\_\_

Witnesses: 1) : \_\_\_\_\_ 2) \_\_\_\_\_

## **ADDENDUM “B”**

### **NOTIFICATION OF CONSTRUCTION WORK**

**NOTIFICATION OF CONSTRUCTION WORK**  
(Regulation 3 of the Construction Regulations, 2014)

**1. CONTRACTOR**

1.1 Name and postal address of Contractor:

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1.2 Name and telephone number of Contractor's contact person:

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1.3 Contractor's compensation registration number:

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1.4 Name and telephone number of Contractor's Construction Supervisor :

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1.5 Physical address of the construction site or site office:

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1.5 Estimated number of persons on the construction site:

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1.6 Estimated number of Subcontractors on the construction site accountable to the Contractor:

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**2. EMPLOYER**

2.1 Name and postal address of Employer :

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2.2 Name and telephone number of Employer's Principal Agent:

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### 3. DESIGN CONSULTANTS

3.1 Name and postal address of OHS consultants:

3.1.1 Occupational Health and Safety

**To be advised**

3.1.2 Other (if any):

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3.2 Name and telephone number of design consultant's contact person:

3.2.1 Construction project managers/ Principal Agent:

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3.2.2 Architects:

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3.2.3 Structural engineer :

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3.2.4 Electrical engineer:

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3.2.5 Mechanical engineer:

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3.2.6 Civil engineer:

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3.2.7 Other (if any):

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#### 4. THE WORKS

Nature of the works:

Commencement date:

\_\_\_\_\_

Completion date:

\_\_\_\_\_

Contractor: \_\_\_\_\_ Date: \_\_\_\_\_

Employer: \_\_\_\_\_ Date: \_\_\_\_\_

THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE.

ALL CONTRACTORS THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER CONTRACTOR ON THE SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.

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## **ADDENDUM C**

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### **Environmental Management Plan**

TO BE PROVIDED BY THE SUCCESSFUL BIDDER

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# **ADDENDUM I**

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## **Drawings**

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## **ADDENDUM J**

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## IDT Addendum to the JBCC



## **ADDENDUM**

To the

## **THE JBCC PRINCIPAL BUILDING AGREEMENT**

**NAME OF PROJECT:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## INTRODUCTION

**WHEREAS**, the Independent Development Trust (“IDT”) made an Offer of Appointment and the Contractor has accepted such appointment subject to the conditions stipulated in the aforesaid Offer of Appointment Letter, which conditions include signing of the JBCC Agreement, Edition ..... (hereinafter referred to as “Main Agreement”).

**AND WHEREAS**, this addendum shall form part of the Main Agreement between the Employer and the Contractor.

### 1. ADDENDUM TO THE MAIN AGREEMENT

1.1 This Agreement will constitute an Addendum to the Main Agreement as contemplated herein;

1.2 The Terms of Reference, Accepted Proposal or BID, Standard Conditions of BID, Special Conditions of BID and adjusted Priced Bills of Quantities shall form part of the agreement between the Contractor and the Employer;

1.3 This Addendum will be deemed to incorporate, with or without variation, all the provisions of the Main Agreement, unless the context clearly requires otherwise;

1.4 All words and phrases used in this Addendum which are defined in the Main Agreement, will bear the same meaning assigned to them in the Main Agreement; and

1.5 All references in the Main Agreement to “the/this Agreement” itself, will be deemed to be references also to the Main Agreement duly amended by this Addendum.

#### 1.6 Interpretations and Definition

1.6.01 **Financial Implications** shall mean the variation amount over and above the awarded contract sum.

## **2. SPECIAL CONDITION**

If there is any conflict between the contents or any part of this Addendum and the contents or any part of the Main Agreement and other annexures, the content of this Addendum shall prevail.

## **3. WAIVER OF CONTRACTOR'S LIEN**

- 3.1 The Contractor hereby waives, in favour of the Employer, any lien or right of retention that is or may be held in respect of the Works to be executed on the Site.
- 3.2 The Employer, as an Organ of State, shall not be required to provide payment guarantees.

## **4. ASSIGNMENT OF RIGHTS OR OBLIGATIONS**

- 4.1 Neither **party** shall assign or cede rights or obligations without the written consent of the other **party**, which consent shall not be unreasonable withheld.
- 4.2 Where the Contractor intend to cedes any right to monies due or to become due under this agreement as security in favour of a financial institution, a written consent in accordance with clause 4.1 above, shall be obtained from the Employer prior to entering into such cession.
- 4.3 Any cession entered into without the necessary written consent from the either party, shall be null and void.
- 4.4 The Employer shall not consent to a cession of monies due or to become due under this agreement as security in favour of a financial institution, unless such financial institution submitted to the IDT a Valid Tax Clearance Certificate, is registered as a credit provider in terms of the National Credit Act and as a vendor in the IDT's Vendor Management System.

## 5 INTERIM PAYMENT

- 5.1 The **Employer** shall, in accordance with clause 8.2.3 of the treasury regulation of March 2005, pay to the **Contractor** the amount certified in an interim **payment certificate** within **thirty (30) calendar days** of the date of submission of the **payment certificate**".
- 5.2 Default interest, where applicable, shall only be effective after the 30 calendar days of the date of receipt of the interim **payment certificate from the Principal Agent**.
- 5.3 The Employer shall be entitled to apply a set-off against a legitimate and liquid claim against the Contractor from which a valid invoice has been received.

## 6 TAX COMPLIANCE MEASURES

- 6.1 The Contractor hereby grant confirmation that SARS may, on on-going basis during the contract term, disclose the Contractor's tax compliance status to the employer.
- 6.2 Should the Contractor appoint a sub-contractor to execute a portion of a work in excess of the threshold (currently 25%) prescribed by the National Treasury, the Contractor must ensure that a sub-contractor is tax compliant and remains tax compliant for the full duration of the contract. The contractor shall obtain a written consent from its sub-contractors confirming that SARS may on on-going basis during the contract term, disclose the sub-contractor's tax compliance status to the employer.
- 6.3 The Contractor shall submit a valid tax clearance certificate within 10 working days from the date of expiry of the tax clearance certificate. The Employer reserve the right to demand a valid Tax Clearance Certificate prior to making any payment to the Contractor, should it become aware that the tax clearance corticated has expired.
- 6.4 Unless the Employer receive a written confirmation that the Contractor has challenged its tax compliance status with SARS, the Employer shall not process

any payment to the Contractor, if 30 days has lapsed since the written notice by the Employer and the Contractor has failed to remedy its tax compliance status.

- 6.5 Employer's non-payment of the Contractor's invoice in accordance with clause 6.4 above shall not absolve the contractor from performing its obligation in terms of the contract.
- 6.6 Unless the Employer receives a written confirmation that the Contractor or sub-Contractor has challenged its tax compliance status with SARS, the Employer shall be entitled to cancel the contract with the Contractor or instruct the Contractor to cancel its contract with the Sub-Contractor.
- 6.7 Where a Contractor is a JV, each party to a JV must be tax compliant and remains tax compliant for the full duration of the contract, failing which, the Employer shall invoke paragraph 6.4 or 6.6 above.

## **7. APPROVAL OF VARIATION ORDERS**

- 7.1 Upon receipt of the Variation Order (VO), the Principal Agent must professionally consider the merits of the Variation Order and make a recommendation to the Employer.
- 7.2 The Principal Agent shall not have the power to approve any deviation or variation which has financial implications on the Employer without the necessary written approval of the Employer, except under emergency circumstances wherein failure to undertake the work may result in loss of life.
- 7.3 The Employer must communicate the approval of a Variation Order in writing to the Principal Agent and the Principal Agent shall, upon receipt of confirmation of the approval of the VO, issue the necessary Contract Instruction to the contractor to undertake the works.
- 7.4 The Contractor shall not commence with any Variation Order Works without the written approval of the Variation Order from the Employer, except under circumstances mentioned in paragraph 7.2 above.

- 7.5 Should the Contractor undertakes the Variation Order Works without the necessary written approval of the Variation Order from the Employer, the Contractor shall be entirely liable for any financial and any related implications and hereby indemnify and hold harmless the Employer from and against any and all claims, actions, damages, liabilities, injuries, costs, fees, expenses, or losses, including and without limitation, reasonable attorney's fees and costs of investigation and litigation, whatsoever which may be incurred by, or for which liability may be asserted against, the Employer arising out of the Contractor's performance or non-performance of unauthorized works, but only to the extent caused by the negligent acts, errors or omissions of the Contractor.
- 7.6 The Contractor shall not accept any instructions from any party, including beneficiary Department, other than the Principal Agent.

## **8. JOINT VENTURE AGREEMENT**

- 8.1 Should the Joint Venture Agreement be dissolved or any of the JV partner pull out the JV Agreement for any reasons whatsoever, the Employer hereby reserve its right to terminate the contract with immediate effect.
- 8.2 Should the Employer decide not to terminate the contract upon the dissolution of the JV Agreement and the replacement JV partner does not meet the BBBEE threshold stipulated in the BID document, the IDT shall be entitled to cancel the contract with immediate effect.
- 8.3 Should the BBBEE status of the Joint Venture be changed to a lower rate than the Bidding rate, based on legislation applicable at the closing date of the
- 8.4 BID, the IDT shall be entitled to cancel the contract.

## **9. BREACH**

9.1 In the event that the contractor: -

9.1.1 commits an act of insolvency; or

9.1.2 is placed under a provisional or final winding-up or judicial management order; or

9.1.3 is placed under or applied for business rescue; or

9.1.4 makes an assignment of more than 25% of either its right and/or its obligation for the benefit of the third party without the written consent of the employer; or

9.1.5 the Contractor is registered or fails to renew his registration with the CIDB or changes directorship during the course of the project, resulting in the contravention of BBBEE statutory requirement; or

9.1.6 fails to satisfy or take steps to have set aside any judgment taken against it within 14 (Fourteen) business days after such judgment has come to its notice,

then the other Employer will be entitled to terminate the Agreement on written notice.

Signed at ..... on this the ..... day of .....**2023**.

**AS WITNESSES:**

1. \_\_\_\_\_

\_\_\_\_\_  
For and on behalf of the **Employer:**  
(.....), in his/her  
capacity as the .....

2. \_\_\_\_\_

\_\_\_\_\_  
For and on behalf of the **Employer:**  
(.....), in his/her  
capacity as the -----  
-----.

Signed at ..... on this the ..... day of .....**2023**

**AS WITNESSES:**

3. \_\_\_\_\_

4. \_\_\_\_\_

\_\_\_\_\_  
For and on behalf of the **Contractor:**  
.....  
in his/her capacity as  
.....,  
who hereby confirm that he/she is  
duly authorized







# INDEPENDENT DEVELOPMENT TRUST

## VOLUME 2 OF 2

### TENDER SPECIFICATIONS AND DRAWINGS

APPOINTMENT OF A CONTRACTOR: REFURBISHMENT AND UPGRADES TO  
EXISTING TAUNG HOTEL SCHOOL & CONVENTION CENTRE FOR:  
DEPARTMENT OF  
ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM  
(DEDECT) NORTH-WEST PROVINCE

BID No. DOT01NWER015

CLOSING DATE AND TIME: 27<sup>th</sup> SEPTEMBER 2023 at 12h00

Independent Development Trust

*SCM / Technical Enquiries*

E-mail: [noxolod@idt.org.za](mailto:noxolod@idt.org.za)  
[andrewn@idt.org.za](mailto:andrewn@idt.org.za)

Bidder: .....

CIDB Registration Number: .....7GB GENERAL BUILDING OR HIGHER

CSD Registration Number: .....

COIDA / FEMA Certificate Number: .....

Contact Person: .....

Contact Details: .....

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# **HIV/AIDS Specifications and Schedules**

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# **DEPARTMENT OF PUBLIC WORKS**

## **HIV/AIDS**

### **SPECIFICATION**

**OCTOBER 2004**

## **SECTION**

### **HIV/AIDS SPECIFICATION**

#### **HIV/AIDS REQUIREMENTS**

##### **1 SCOPE**

This specification contains all requirements applicable to the Contractor for creating HIV/AIDS awareness amongst all of the Workers involved in this project for the duration of the construction period, through the following strategies:

- Raising awareness about HIV/AIDS through education and information on the nature of the disease, how it is transmitted, safe sexual behaviour, attitudes towards people affected and people living with HIV/AIDS, how to live a healthy lifestyle with HIV/AIDS, the importance of voluntary testing and counselling, the diagnosis and treatment of Sexually Transmitted Infections and the closest health Service Providers;
- Informing Workers of their rights with regard to HIV/AIDS in the workplace;
- Providing Workers with access to condoms and other awareness material that will enable them to make informed decisions about sexual practices.

##### **2 DEFINITIONS AND ABBREVIATIONS**

###### **2.1 Definitions**

Service Provider: The natural or juristic person recognised and approved by the Department of Public Works as a specialist in conducting HIV/AIDS awareness programmes.

Service Provider Workshop Plan: A plan outlining the content, process and schedule of the training and education workshops, presented by a Service Provider which has been approved by the Representative/Agent.

Worker: Person in the employ of the Contractor or under the direction or supervision of the Contractor or any of his Sub-contractors, who is on site for a minimum period of 30 days in all.

###### **2.2 Abbreviations**

- HIV : Human Immunodeficiency Virus.
- AIDS : Acquired Immune Deficiency Syndrome.
- STI : Sexually Transmitted Infection.

##### **3 BASIC METHOD REQUIREMENT**

###### **3.1 The Contractor shall, through a Service Provider, conduct onsite workshops with the Workers.**

The Service Provider shall develop and compile a Service Provider Workshop Plan to be presented at the workshops and which will be best suited for this project to achieve the specified objectives with regard to HIV/AIDS awareness.

The Service Provider Workshop Plan shall be based on the following information provided by the Contractor:

- Number of Workers and Sub-contractors on site;
- When new Workers or Sub-contractors will join the construction project;
- Duration of Workers and Sub-contractors on site;
- How the maximum number of Workers can be targeted with workshops;
- How the Contractor prefers workshops to be scheduled, e.g. three hourly sessions per Worker, or one 2.5 hour workshop per Worker;
- Profile of Workers, including educational level, age and gender (if available);
- Preferred time of day or month to conduct workshops;
- A Gantt chart reflecting the construction programme, for scheduling of workshops;
- Suitable venues for workshops.

The Contractor shall submit the Service Provider Workshop Plan for approval within 21 days after the tender acceptance date. After approval by the Representative/Agent, the Contractor shall make available a suitable venue that will be conducive to education and training.

3.2 The Service Provider Workshop Plan shall address, but will not be limited to the following:

- 3.2.1 The nature of the disease;
- 3.2.2 How it is transmitted;
- 3.2.3 Safe sexual behaviour;
- 3.2.4 Post exposure services such as voluntary counselling and testing (VCT) and nutritional plans for people living with HIV/AIDS;
- 3.2.5 Attitudes towards other people with HIV/AIDS;
- 3.2.6 Rights of the Worker in the workplace;
- 3.2.7 How the Awareness Champion will be equipped prior to commencement of the HIV/AIDS awareness programme with basic HIV/AIDS information and the necessary skills to handle questions regarding the HIV/AIDS awareness programme on site sensitively and confidentially;
- 3.2.8 How the Service Provider will support the Awareness Champion;
- 3.2.9 Location and contact numbers of the closest clinics, VCT facilities, counselling services and referral systems;
- 3.2.10 How the workshops will be presented, including frequency and duration;
- 3.2.11 How the workshops will fit in with the construction programme;
- 3.2.12 How the Service Provider will assess the knowledge and attitude levels of attendees to structure workshops accordingly;
- 3.2.13 How the video will be used;
- 3.2.14 How the Service Provider will elicit maximum participation from the Workers;
- 3.2.15 A questions and answers slot (interactive session).

The Service Provider Workshop Plan shall encompass the Specific Learning Outcomes (SLO) as stipulated.

## **4 HIV/ AIDS AWARENESS EDUCATION AND TRAINING**

### **4.1 Workshops**

The Contractor shall ensure that all Workers attend the workshops.

The workshops shall adequately deal with all the aspects contained in the Service Provider Workshop Plan. A video of HIV/AIDS in the construction industry, which can be obtained from all Regional Offices of the Department of Public Works, is to be screened to Workers at workshops. In order to enhance the

learning experience, groups of not exceeding 25 people shall attend the interactive sessions of the workshops.

## **4.2 Recommended practice**

### **4.2.1 Workshop Schedule**

Presenting information contained in the Service Provider Workshop Plan can be divided in as many workshop sessions as deemed practicable by the Contractor, provided that all Workers are exposed to all aspects of the workshops as outlined in the Service Provider Workshop Plan.

Breaking down the content of information to be presented to Workers into more than one workshop session however, has the added advantage that messages are reinforced over time while providing opportunity between workshop sessions for Workers to reflect and test information. Workers will also have an opportunity to ask questions at a following session.

### **4.2.2 Service Providers**

A database of recommended Service Providers is available from all Regional Offices of the Department of Public Works.

### **4.2.3 HIV/AIDS Specific Learning Outcomes and Assessment Criteria**

Workers shall be exposed to workshops for a minimum duration of two-and-a-half hours. In order to set a minimum standard requirement, the following specific learning outcomes and assessment criteria shall be met.

#### **4.2.3.1 UNIT 1: The nature of HIV/AIDS**

After studying and understanding this unit, the Worker will be able to differentiate between HIV and AIDS and comprehend whether or not it is curable. The Worker will also be able to explain how the HI virus operates once a person is infected and identify the symptoms associated with the progression of HIV/AIDS.

Assessment Criteria:

1. Define and describe HIV and AIDS;
2. List and describe the progression of HIV/AIDS.

#### **4.2.3.2 UNIT 2: Transmission of the HI virus**

After studying and understanding this unit, the Worker will be able to identify bodily fluids that carry the HI virus. The Worker will be able to recognise how HIV/AIDS is transmitted and how it is not transmitted.

Assessment Criteria:

1. Record in what bodily fluids the HI virus can be found;
2. Describe how HIV/AIDS can be transmitted;
3. Demonstrate the ability to distinguish between how HIV/AIDS is transmitted and misconceptions around transmittance of HIV/AIDS.

#### **4.2.3.3 UNIT 3: HIV/AIDS preventative measures**

After studying and understanding this unit, the Worker will comprehend how to act in a way that would minimise the risk of HIV/AIDS infection and to use measures to prevent the HI virus from entering the bloodstream.



Assessment Criteria:

1. Report on how to minimise the risk of HIV/AIDS infection;
2. Report on precautions that can be taken to prevent HIV/AIDS infection;
3. Explain or demonstrate how to use a male and female condom;
4. List the factors that could jeopardize the safety of condoms provided against HIV/AIDS Transmission.

#### 4.2.3.4 UNIT 4: Voluntary HIV/AIDS counselling and testing

After studying and understanding this unit, the Worker will be able to recognise methods of testing for HIV/AIDS infection. The Worker will be able to understand the purpose of voluntary HIV/AIDS testing and pre- and post-test counseling.

Assessment Criteria:

1. Describe methods of testing for HIV/AIDS infection;
2. Report on why voluntary testing is important;
3. Report on why pre- and post-test counselling is important.

#### 4.2.3.5 UNIT 5: Living with HIV/AIDS

After studying and understanding this unit, the Worker will be able to recognise the importance of caring for people living with HIV/AIDS and be able to manage HIV/AIDS.

Assessment Criteria:

1. List and describe ways to manage HIV/AIDS;
2. Describe nutritional needs of people living with HIV/AIDS;
3. Describe ways to embrace a healthy lifestyle as a person living with HIV/AIDS;
4. Explain the need for counselling and support to people living with HIV/AIDS.

#### 4.2.3.6 UNIT 6: Treatment options for people with HIV/AIDS

After studying and understanding this unit, the Worker will be familiar with the various treatments available to HIV/AIDS infected or potentially HIV/AIDS infected people.

Assessment Criteria:

1. Discuss anti-retroviral therapy;
2. List methods of treatment to prevent HIV/AIDS transmission from mother-to-child;
3. Describe the need for treatment of opportunistic diseases for people living with HIV/AIDS;
4. Describe post exposure prophylactics.

#### 4.2.3.7 UNIT 7: The rights and responsibilities of Workers in the workplace with regard to HIV/AIDS

After studying and understanding this unit, the Worker will be able to identify the rights and responsibilities of the Worker living with HIV/AIDS in the workplace. The Worker will recognise the importance of accepting colleagues living with HIV/AIDS and treating them in a non-discriminative way.

Assessment Criteria:

1. Discuss the rights of a person living with HIV/AIDS in the workplace;
2. Discuss the responsibilities of a person living with HIV/AIDS in the workplace;
3. Report on why acceptance and non-discrimination of colleagues living with HIV/AIDS is important.

#### **4.3 Displaying of plastic laminated posters and distribution of information booklets**

The Contractor shall obtain a set of four laminated posters conveying different key messages and information booklets. The contractor should include the costs of posters and information booklets in his/her tender price.

The above-mentioned posters and information booklets have been prepared to raise awareness and to share information about HIV/AIDS and STI's.

Posters or display stands shall be displayed on site as soon as possible, but not later than 14 days after the date of site handover.

Posters shall be displayed in areas highly trafficked by Workers, including toilets, rest areas, the site office and compounds.

The posters on display must always be intact, clear and readable.

Information booklets must be distributed to all Workers as soon as possible, but not later than 14 days after site handover, or as soon as the Worker joins the site.

### **5 PROVIDING WORKERS WITH ACCESS TO CONDOMS**

The Contractor shall provide and maintain condom dispensers and make both male and female condoms, complying with the requirements of SABS ISO 4074, available at all times to all Workers at readily accessible points on site, for the duration of the contract. The Contractor may obtain condom dispensers from the Department of Health and condoms may be obtained from the Local Clinic or the Department of Health.

At least one male and one female condom dispenser and a sufficient supply of condoms, all to the approval of the Representative/Agent, shall be made available on site within 14 days of site hand over. Contractors should note that arrangements to obtain condoms from the Department of Health Clinics prior to site hand over may be necessary, to ensure that condoms are available within 14 days of site handover.

Condoms shall be made available in areas highly trafficked by Workers, including toilets, the site office and compounds.

### **6 ENSURING ACCESS TO HIV/AIDS TESTING AND COUNSELLING FACILITIES AND TREATMENT OF SEXUALLY TRANSMITTED INFECTIONS (STI)**

The Contractor shall provide Workers with the names of the closest Service Providers that provide HIV/AIDS testing and counselling and Clinics providing Sexually Transmitted Infection (STI) diagnosis and treatment. Information on these Service Providers and Clinics must be displayed on a poster of a size not smaller than A1 in an area highly trafficked by Workers.

### **7 APPOINTMENT OF AN HIV/AIDS AWARENESS CHAMPION**

- 7.1 Within 14 days of site handover the Contractor shall appoint an Awareness Champion from amongst the Workers, who speaks, reads and writes English, who speaks and understands all the local languages spoken by the Workers and who shall be on site during all stages of the construction period. The Contractor shall ensure that the Awareness Champion has been trained by the Service Provider on basic HIV/AIDS information, the support services available and the necessary skills to handle questions regarding the HIV/AIDS programme in a sensitive and confidential manner.

7.2 The Awareness Champion shall be responsible for:

7.2.1 Liaising with the Service Provider on organising awareness workshops;

7.2.2 Filling condom dispensers and monitoring condom distribution;

7.2.3 Handing out information booklets;

7.2.4 Placing and maintaining posters.

## **8 MONITORING**

The Contractor shall grant to the Representative/Agent reasonable access to the construction site, in order to establish that the Contractor complies with his obligations regarding HIV/AIDS awareness under this contract.

The Contractor must report problems experienced in implementing the HIV/AIDS requirements to the Representative/Agent.

The attached SITE CHECKLIST (SCHEDULE A) shall be completed and submitted at every construction progress inspection to the Representative/Agent.

The attached SERVICE PROVIDER REPORT (SCHEDULE B) shall be completed and submitted on a monthly basis to the Department's Project Manager, through the Representative/Agent.

The attached CONTRACTOR HIV/AIDS PROGRAMME REPORT (SCHEDULE C), a close out programme report, shall be completed by the Contractor at the end of the contract.

## SCHEDULE A

### HIV/AIDS PROGRAMME: SITE CHECKLIST

When did construction commence: \_\_\_\_\_

Name of Departmental Project Manager: \_\_\_\_\_

*Please refer to HIV/AIDS Programme activities during the reporting period*

| Tick the block if Contractor satisfactorily complied with specifications |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
|--|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|---|---|---|---|
| DATE   | PI |   |   |   | PI |   |   |   | PI |   |   |   | PI |   |   |   | PI |   |   |   | PI |   |   |   |   |   |   |   |
|  | D  | D | M | M | D  | D | M | M | D  | D | M | M | D  | D | M | M | D  | D | M | M | D  | D | M | M | D | D | M | M |
| Programme implemented within 14 days of site handover                    |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Awareness champion on site   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| HIV/AIDS awareness service provider report                               |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Male condom dispenser  |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Sufficient male condoms available  |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Male condom dispenser in a highly trafficked area                        |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Female condom dispenser  |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Sufficient female condoms available                                      |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Female condom dispenser in a highly trafficked area                      |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| All four types of posters displayed                                      |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Posters in a good condition  |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Posters in a highly trafficked area                                      |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Posters displayed on local support services: clinic & VCT centre         |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Support service poster/s in highly trafficked area                       |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |
| Support service poster/s in a good condition                             |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |

| <i>Please indicate the applicable number for the reporting period</i> |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
| Workers on payroll (at PI)  |  |  |  |  |  |  |  |
| Sub-Contractors who will be on site for longer than 30 days (at PI)   |  |  |  |  |  |  |  |
| Workshop attendees  |  |  |  |  |  |  |  |
| Number of workshops held  |  |  |  |  |  |  |  |
| Scheduled workshops according to approved workshop plan               |  |  |  |  |  |  |  |
| Booklets distributed  |  |  |  |  |  |  |  |
| Male condoms distributed  |  |  |  |  |  |  |  |
| Female condoms distributed  |  |  |  |  |  |  |  |

\_\_\_\_\_  
Representative/Agent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Date

Date of progress inspection: (ccyy/mm/dd)

Reporting period: (ccyy/mm/dd) \_\_\_\_\_ to (ccyy/mm/dd) \_\_\_\_\_

Deviations from HIV/AIDS awareness programme plan:

Corrective actions:

\_\_\_\_\_  
Representative/Agent

\_\_\_\_\_  
Departmental Project Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

**SCHEDULE B**

**HIV/AIDS AWARENESS PROGRAMME: SERVICE PROVIDER REPORT**

Reporting period: (ccyy/mm/dd) \_\_\_\_\_ to (ccyy/mm/dd) \_\_\_\_\_

Number of workshops conducted in reporting period: \_\_\_\_\_

Number of scheduled workshops according to approved workshop plan: \_\_\_\_\_

Deviations from workshop plan:

State reasons for deviating from workshop plan:

Corrective actions:

\_\_\_\_\_  
Service Provider

\_\_\_\_\_

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

## HIV/AIDS AWARENESS PROGRAMME : WORKSHOP CONTENT ADDRESSED

| Fill in the applicable information with regard to each workshop conducted |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
|---|-----|---|---|---|-----|---|---|---|-----|---|---|---|-----|---|---|---|-----|---|---|---|-----|---|---|---|-----|---|---|---|
| DATE  | W/S |   |   |   | W/S |   |   |   | W/S |   |   |   | W/S |   |   |   | W/S |   |   |   | W/S |   |   |   | W/S |   |   |   |
|   | D   | D | M | M | D   | D | M | M | D   | D | M | M | D   | D | M | M | D   | D | M | M | D   | D | M | M | D   | D | M | M |
| <b>Content of workshop:</b><br>(Mark the content included)                |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| SLO1  |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| SLO2  |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| SLO3  |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| SLO4  |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| SLO5  |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| SLO6  |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| SLO7  |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| HIV/AIDS in<br>construction video   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| Indicate the duration of the<br>workshop in hours                         |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| Total number of Workers   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
| Indicate workshop venue   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
|   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
|   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |
|   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |     |   |   |   |



## HIV/AIDS AWARENESS PROGRAMME: ATTENDANCE REGISTER

[illegible]

## SCHEDULE C

### CONTRACTOR HIV/AIDS PROGRAMME REPORT

Project name: \_\_\_\_\_

Project Location: \_\_\_\_\_

Contract value of project: R\_\_\_\_\_

Department of Public Works Project Manager: \_\_\_\_\_

HIV/AIDS Programme duration: (ccyy/mm/dd) \_\_\_\_\_ to (ccyy/mm/dd) \_\_\_\_\_

#### AWARENESS MATERIAL

Describe location of posters displayed during the programme: \_\_\_\_\_

\_\_\_\_\_

Comments on posters: \_\_\_\_\_

Indicate total number of booklets distributed: \_\_\_\_\_

Comments on booklets: \_\_\_\_\_

\_\_\_\_\_

#### CONDOMS

Indicate total number of male condoms distributed: \_\_\_\_\_

Indicate total number of female condoms distributed: \_\_\_\_\_

Describe where male condom dispenser was placed: \_\_\_\_\_

Describe where female condom dispenser was placed: \_\_\_\_\_

#### HIV/AIDS WORKSHOPS

Indicate the total number of HIV/AIDS workshops conducted: \_\_\_\_\_

Indicate the duration of workshops: \_\_\_\_\_

Indicate the total number of Workers that participated in the HIV/AIDS workshops: \_\_\_\_\_

Indicate the total number of Workers that were exposed to the video on HIV/AIDS in the Construction Industry:

\_\_\_\_\_

Comments on HIV/AIDS workshops on site: \_\_\_\_\_

\_\_\_\_\_

**GENERAL**

Briefly describe programme activities and satisfaction with outcome: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Additional comments, suggestions or needs with regard to the HIV/AIDS awareness programmes on site:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Please indicate if your company has a formal HIV/AIDS policy focussing on HIV/AIDS awareness raising and care and support of HIV/AIDS Workers:

|     |    |                          |
|-----|----|--------------------------|
| Yes | No | Currently developing one |
|-----|----|--------------------------|

Please indicate if, to your knowledge, you have lost any workers during the duration of the project to HIV/AIDS related sicknesses. One or more of the following might indicate an HIV/AIDS related death:

Excessive weight loss  
Reactive TB  
Hair loss  
Severe tiredness

Coughing or chest pain  
Pain when swallowing  
Persistent fever  
Diarrhoea

Vomiting  
Meningitis  
Memory loss  
Pneumonia

Number of HIV/AIDS-related deaths: \_\_\_\_\_

\_\_\_\_\_  
**Contractor**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Departmental Project Manager**

\_\_\_\_\_  
**Date**

---

# **Occupational Health and Safety Specifications**

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**public works**

Department:  
Public Works  
REPUBLIC OF SOUTH AFRICA

# **OCCUPATIONAL HEALTH AND SAFETY**

**IN**

**CONSTRUCTION PROJECTS, REPAIRS,  
RENOVATIONS & MAINTENANCE**

**MANAGED BY  
THE DEPARTMENT OF  
PUBLIC WORKS**

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## **1. PREAMBLE**

In terms of Construction Regulation 4(1)(a) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), and 5(1) construction regulation of 2014, the Department of Public Works, as the Client and/or its Agent on its behalf, shall be responsible to prepare Health & Safety Specifications for any intended construction project and provide any Principal Contractor who is making a bid or appointed to perform construction work for the Client and/or its Agent on its behalf with the same.

The Client's further duties are as described in The Act and the Regulations made thereunder. The Principal Contractor shall be responsible for the Health & Safety Policy for the site in terms of Section 7 of the Act and in line with Construction Regulation 5 as well as the Health and Safety Plan for the project.

This 'Health and Safety Specifications' document is governed by the "Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), hereinafter referred to as 'The Act'. Notwithstanding this, cognizance should be taken of the fact that no single Act or its set of Regulations can be read in isolation. Furthermore, although the definition of Health and Safety Specifications stipulates 'a documented specification of all health and safety requirements pertaining to associated works on a construction site, so as to ensure the health and safety of persons', it is required that the entire scope of the Labour legislation, including the Basic Conditions of Employment Act be considered as part of the legal compliance system. With reference to this specification document this requirement is limited to all health, safety and environmental issues pertaining to the site of the project as referred to here-in. Despite the foregoing it is reiterated that environmental management shall receive due attention.

Due to the wide scope and definition of construction work, every construction activity and site will be different, and circumstances and conditions may change even on a daily basis. Therefore, due caution is to be taken by the Principal Contractor when drafting the Health and Safety Plan based on these Health and Safety Specifications. Prior to drafting the Health and Safety Plan, and in consideration of the information contained here-in, the contractor shall set up a Risk Assessment Program to identify and determine the scope

and details of any risk associated with any hazard at the construction site, in order to identify the steps needed to be taken to remove, reduce or control such hazard. *This Risk Assessment and the steps identified will be the basis or point of departure for the Health and Safety Plan.* The Health and Safety Plan shall include documented 'Methods of Statement' (see definitions under Construction Regulations) detailing the key activities to be performed in order to reduce as far as practicable, the hazards identified in the Risk Assessment.

The Department of Public Works is tasked to provide accommodation and operational facilities to a very large proportion of the approximate 35 National Departments responsible for the governance of the Department of Public Works. A very large number of State employees and public users of the facilities and the services provided there-in directly interacts with the facilities provided by the well-being, health and safety of a great number of people. This Department thus has directly or indirectly, an impact on the Republic of South Africa as well as the National Parliament.

In this a high premium is to be placed on the health and safety of the most valuable assets of the Department of Public Works. These are its personnel, the personnel of its Clients and the physical assets of which it is the custodian and may also include the public as well. The responsibilities the Department and relevant stakeholders have toward its employees and other people present in the facilities or on the sites are captured further in this specification document. These responsibilities stem from both moral, civil and a variety of legal obligations. The Principal Contractor is to take due cognisance of the above statement.

Every effort has been made to ensure that this specification document is accurate and adequate in all respects. Should it however, contain any errors or omissions they may not be considered as grounds for claims under the contract for additional reimbursement or extension of time, or relieve the Principal Contractor from his responsibilities and accountability in respect of the project to which this specification document pertains. Any such inaccuracies, inconsistencies and/or inadequacies must immediately be brought to the attention of the Agent and/or Client.



## **2. SCOPE OF HEALTH AND SAFETY SPECIFICATION DOCUMENT**

These Specifications should be read in conjunction with the Act, the Construction Regulations and all other Regulations and Safety Standards which were or will be promulgated under the Act or incorporated into the Act and be in force or come into force during the effective duration of the project. The stipulations in this specification, as well as those contained in all other documentation pertaining to the project, including contract documentation and technical specifications shall not be interpreted, in any way whatsoever, to countermand or nullify any stipulation of the Act, Regulations and Safety Standards which are promulgated under, or incorporated into the Act.

## **3. PURPOSE**

The Department is obligated to implement measures to ensure the health and safety of all people and properties affected under its custodianship or contractual commitments, and is further obligated to monitor that these measures are structured and applied according to the requirements of these Health and Safety Specifications.

The purpose of this specification document is to provide the relevant Principal Contractor (and his /her contractor) with any information other than the standard conditions pertaining to construction sites which might affect the health and safety of persons at work and the health and safety of persons in connection with the use of plant and machinery; and to protect persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work during the carrying out of construction work for the Department of Public Works. The Principal Contractor (and his /her contractor) is to be briefed on the significant health and safety aspects of the project and to be provided with information and requirements on inter alia:

- a) Safety considerations affecting the site of the project and its environment;
- b) Health and safety aspects of the associated structures and equipment;
- c) submissions on health and safety matters required from the Principal Contractor (and his /her contractor); and
- d) the Principal Contractor's (and his /her contractor) health & safety plan.

To serve to ensure that the Principal Contractor (and his /her contractor) is fully aware of what is expected from him/her with regard to the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the Regulations made there-under including the applicable safety standards, and in particular in terms of Section 6,7 and 8 of the construction regulation (2014).

To inform the Principal Contractor that the Occupational Health and Safety Act, 1993 (Act 85 of 1993) in its entirety shall apply to the contract to which this specification document applies. The Construction Regulations promulgated on 07 February 2014.

#### **4. DEFINITIONS - The most important definitions in the Act and Regulations pertaining to this specification document are hereby extracted.**

**“Purpose of the Act”** – To provide for the health and safety of persons at work and the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.

**“Health & Safety Specification”** – means a document that includes information required under the construction regulation and obtained from the clients & designers during the early planning & design stage for a specific project on a specific site for use by the contractors when preparing their tenders or bids to clients.

**“Health & Safety Plan”** – means a document which is site specific and includes all identified hazards, safe work procedures to mitigate, reduce & control the hazards identified in a project.;

**“Agent”** – means any person who acts as a representative for a client;

**“Client”** – means any person for whom construction work is performed;

**“ Construction Health & Safety Agent (SACPCMP)”** – The person or entity appointed by the client through the Agent and who has a full authority and obligation to act on the clients behalf in terms of the construction regulations;

**“Construction Work”** is defined as any work in connection with –

- (a) the erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure;
- (b) the installation, erection, dismantling or maintenance of a fixed plant where such work includes the risk of a person falling;
- (c) the construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure; or
- (d) the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work;

**“Contractor”** – means an employer, as defined in Section 1 of the Act, who performs construction work and includes Principal Contractors;

**“Contract Amount”** Financial value of the contract at the time of the award of the contract, exclusive of all allowance and any value added tax or sales tax which the law requires the employer to pay to the contractor.

**“Practical Completion Certificates”** A certificates issued in terms of a contract by the employer, signifying that the whole of the construction works have reached a state of readiness for occupation or use for the purposes intended, although some minor work may be outstanding.

**“Accident”** – means unplanned occurrence that happens due to the unsafe condition and may cause injury to a person, damage to the property, material, plant, equipment and the environment;

**“Hazard”** – means anything including work activities and practices with the potential to cause harm;

**“Risk”** – means the likelihood that harm will occur and the subsequent consequences.

**“Risk assessment”** – means a process to determine any risk associated with any hazard at a construction site in order to identify the steps needed to be taken to mitigate, reduce or control such hazards.

**Health and Safety File”** – means a file, or other record in permanent form, containing the information required a contemplated in the regulations;

## **5. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT**

### **5.1 Structure and Organization of OH&S Responsibilities**

#### **5.1.1. *Overall Supervision and Responsibility for OH&S***

- a) The Client and/or its Agent on its behalf to ensure that the Principal Contractor, appointed in terms of Construction Regulation 4(1)(c), implements and maintains the agreed and approved H&S Plan. Failure on the part of the Client or Agent to comply with this requirement will not relieve the Principal Contractor from any one or more of his/her duties under the Act and Regulations.
- b) The Chief Executive Officer of the Principal Contractor in terms of Section 16 (1) of the Act to ensure that the Employer (as defined in the Act) complies with the Act. The pro forma Legal Compliance Audit may be used for this purpose by the Principal Contractor or his/her appointed contractor.
- c) All OH&S Act (85 /1993), Section 16 (2) appointee/s as detailed in his/her/their respective appointment forms to regularly, in writing, report to their principals on matters of health and safety per routine and ad hoc inspections and on any deviations as soon as observed, regardless of whether the observation was made during any routine or ad hoc inspection and to ensure that the reports are made

available to the principal Contractor to become part of site records (Health & Safety File).

- d) The Construction Supervisor and Assistant Construction Supervisor/s appointed in terms of Construction Regulation 6 to regularly, in writing, report to their principals on matters of health and safety per routine and ad hoc inspections and on any deviations as soon as observed, regardless of whether the observation was made during any routine or ad hoc inspection and to ensure that the reports are made available to the principal Contractor to become part of site records (Health & Safety File).
- e) All Health and Safety Representatives (SHE-Reps) shall act and report as per Section 18 of the Act.

## 5.12 Required appointments as per the Construction Regulations:-

| Item | Regulation | Appointment  | Responsible Person   |
|------|------------|--|----------------------|
| 1.   | 3.         | Application Construction work permit   | Client               |
| 2.   | 5(1)(k)    | Principal contractor for each phase or project                                     | Client               |
| 3.   | 5(6)       | Construction Health & Safety Agent   | Client               |
| 4.   | 7.(1)(c)   | Contractor   | Principal Contractor |
| 5.   | 7(3)       | Contractor   | Contractor           |
| 6.   | 8(1)       | Construction manager   | Contractor           |
| 7.   | 8(2)       | Assistance Construction manager  | Contractor           |
| 8.   | 6(1)       | Construction supervisor  | Contractor           |
| 9.   | 6(2)       | Construction supervisor sub-ordinates  | Contractor           |
| 10.  | 8(5)       | Construction Safety Officer  | Contractor           |
| 11.  | 8(8)       | Responsible employee   |                      |
| 12.  | 9(1)       | Person to carry out risk assessment  | Contractor           |
| 13.  | 10(1)      | Fall protection planner  | Contractor           |
| 14.  | 12(1)      | Temporal work designer   |                      |
| 15.  | 12(2)      | Supervisor of temporal work operation  |                      |
| 16.  | 13(1)      | Excavation supervisor  | Contractor           |
| 17.  | 13(2)(k)   | Competent person in the use of explosive for excavations                           | Contractor           |
| 18.  | 14(11)     | Explosives expert  | Contractor           |
| 19.  | 14(1)      | Supervisor demolition work   | Contractor           |
| 20.  | 14(2)      | Scaffold supervisor  | Contractor           |
| 21.  | 16(1)      | Suspended platform supervisor  | Contractor           |
| 22.  | 18(1)a     | Rope access  | Contractor           |
| 23.  | 19(8)(a)   | Material hoist inspector   | Contractor           |
| 24.  | 20(1)      | Bulk mixing plant supervisor   | Contractor           |
| 25.  | 21(2)      | Explosive actuated fastening device inspector                                      | Contractor           |
| 26.  | 21(2)(g)   | Explosive actuated fastening device cartridge, nails and studs: issuer & collector | Contractor           |
| 27.  | 23 (1)     | Operator : construction vehicle and mobile plant                                   | Contractor           |
| 28.  | 28 (a)     | Stacking and storage supervisor  | Contractor           |
| 29.  | 29 (h)     | Fire equipment inspector   | Contractor           |

## **5.2    *Communication, Participation & Consultation***

- 5.2.1 Occupational Health & Safety matters/issues shall be communicated between the Employer, the Principal Contractor, the other Contractors, the Designer and other concerned parties shall be through the H&S Committee or other means determined by the client.
- 5.2.2 In addition to the above, communication may be directly to the Client or his appointed Agent, verbally or in writing, as and when the need arises.
- 5.2.3 Consultation with the workforce on OH&S matters will be through their Supervisors and H&S Representatives ('SHE – Reps')
- 5.2.4 The Principal Contractor will be responsible for the dissemination of all relevant OH&S information to the other Contractors e.g. design changes agreed with the Client and/or its Agent on its behalf and the Designer, instructions by the Client and/or his/her agent, exchange of information between Contractors, the reporting of hazardous/dangerous conditions/situations etc.

## **6.    *INTERPRETATION***

- a) The Occupational Health and Safety Act and all its Regulations, with the exception of the Construction Regulations, distinguish between the roles, responsibilities and functions of employers and employees respectively. It views consultants and contractors as employees of the "owner" of a construction or operational project, the "owner" being regarded as the employer.
- b) (The position taken by the Construction Regulations is that the "owner", in terms of its instructions, operates (has to operate) in the role of client as per relevant definition. The contractors working for the "client" are seen to be in two categories, i.e. the Principal Contractor and Contractors.

- c) The Principal Contractor has to take full responsibility for the health and safety on the site of the relevant project / contract. This includes monitoring health and safety conditions and overseeing administrative measures required by the Construction Regulations from all contractors on the project site.

## **7. RESPONSIBILITIES**

### **7.1 Client**

- a) The Client or his appointed Agent on his behalf will appoint each Principal Contractor for this project or phase/section of the project in writing for assuming the role of Principal Contractor as intended by the Construction Regulations.
- b) The Client or his appointed Agent on his behalf shall discuss and negotiate with the Principal Contractor the contents of the health and safety plan of the both Principal Contractor and Contractor for approval.
- c) The Client or his appointed Agent on his behalf will take reasonable steps to ensure that the health and safety plan of both the Principal Contractor and Contractor is implemented and maintained. The steps taken will include periodic audits at intervals of at least once every month.
- d) The Client or his appointed Agent on his behalf, will prevent the Principal Contractor and/or the Contractor from commencing or continuing with construction work should the Principal Contractor and/or the Contractor at any stage in the execution of the works be found to:
- have failed to have complied with any of the administrative measures required by the Construction Regulations in preparation for the construction project or any physical preparations necessary in terms of the Act;
  - have failed to implement or maintain their health and safety plan;
  - have executed construction work which is not in accordance with their health and safety plan; or



- act in any way which may pose a threat to the health and safety of any person(s) present on the site of the works or in its vicinity, irrespective of him/them being employed or legitimately on the site of the works or in its vicinity.

## **7.2 Principal Contractor**

- a) The Principal Contractor shall accept the appointment under the terms and Conditions of Contract. The Principal Contractor shall sign and agree to those terms and conditions and shall, before commencing work, notify the Department of Labour of the intended construction. Annexure 2 of this construction regulation contains a “Notification of Construction Work” form. The Principal Contractor shall submit the notification in writing prior to commencement of work and inform the Client or his Agent accordingly.
- b) The Principal Contractor shall ensure that he is fully conversant with the requirements of this Specification and all relevant health and safety legislation.
- c) The Principal Contractor will in no manner or means be absolved from the responsibility to comply with all applicable sections of the Act, the Construction Regulations or any Regulations proclaimed under the Act or which may perceivable be applicable to this contract.
- d) The Principal Contractor shall provide and demonstrate to the Client a suitable and sufficiently documented health and safety plan based on this Specification, the Act and the Construction Regulations, which shall be applied from the date of commencement of and for the duration of execution of the works. This plan shall, as appendices, include the health and safety plans of all Sub-contractors for which he has to take responsibility in terms of this contract.
- e) The Principal Contractor shall provide proof of his registration and good standing with the Compensation Fund or with a licensed compensation insurer prior to commencement with the works.
- f) The Potential Principal Contractor shall, in submitting his tender, demonstrate that he has made provision for the cost of compliance with the specified health and

safety requirements, the Act and Construction Regulations. (Note: This shall have to be contained in the conditions of tender upon which a tenderer's offer is based.)

- g) The Principal Contractor shall consistently demonstrate his competence and the adequacy of his resources to perform the duties imposed on the Principal Contractor in terms of this Specification, the Act and the Construction Regulations.
- h) The Principal Contractor shall ensure that a copy of his health and safety plan is available on site and is presented upon request to the Client, an Inspector, Employee or Sub-contractor.
- i) The Principal Contractor shall ensure that a health and safety file, which shall include all documentation required in terms of the provisions of this Specification, the Act and the Construction Regulations, is opened and kept on site and made available to the Client or Inspector upon request. Upon completion of the works, the Principal Contractor shall hand over a consolidated health and safety file to the Client.
- j) The Principal Contractor shall, throughout execution of the contract, ensure that all conditions imposed on his Sub-contractors in terms of the Act and the Construction Regulations are complied with as if they were the Principal Contractor.
- k) The Principal Contractor shall from time to time evaluate the relevance of the Health and Safety Plan and revise the same as required, following which revised plan shall be submitted to the Client and/or his/her Agent for approval.

### **7.3 Contractor**

The contractor must demonstrate to the Principal Contractor that he has the Necessary competencies and resources to perform the construction work safely.

## 7.4 Responsibilities of **Construction Health & Safety Agent (SACPCMP)**

The construction Health & Safety Agent act as a link between the client, Principal Contractor and the project team members with respect to health & Safety, They are Required to ensure that the client carry out its H&S responsibilities in terms of Legislation as well as to co-ordinate and ensure good H&S practices are maintained Throughout the duration of the project. In many cases this role starts from project Initiation to project close-out.

- a) **H&S competence:** In the event that the client is unable to satisfy the requirements of the Construction Regulations for whatever reasons, the construction H&S agent may be appointed to perform these functions on behalf of the client. Given the need to appoint a registered construction H&S agent that is competent and adequately resourced with respect to H&S matters.
- b) **H&S goals:** It is important that the construction H&S agents demonstrate clearly to clients how they are going to contribute to the achievement of any client H&S goals and objectives. They should also set their own H&S goals.
- c) **H&S responsibilities:** Prior to accepting the H&S agent appointment from clients, H&S agents need to ensure that they brief clients fully on the client's particular responsibilities in terms of the OH&SA of 1993 and Construction Regulations as amended from time to time. In the absence of acceptance by clients of these responsibilities, H&S agents will not be able to adequately meet their own H&S responsibilities and duties.
- d) **H&S information:** H&S agents must provide the designer or design team with all H&S information to enable them to conduct a design HIRA to identify the significant hazards that need to be included in the H&S specification. This information may be gathered from multiple sources such as, for example, discussion with the client, previous historical use of the site or facility, previous surveys and investigations and past H&S files.

## **8. SCOPE OF WORK**

These specifications are applicable to the specific scope of work pertaining to the above-mentioned project as detailed in the tender documents, this amongst all includes for example:

- a) Construction, erecting, alteration, renovations, refurbishment, repairs, demolishing or dismantling of building and structures.
  - Site clearance
  - Site hoarding, demarcation and demolition works
  - excavations, filling, compaction, evening surface
  - Piling (by drilling, excavating,)
  - Temporal works
- b) Construction, erecting, alteration, renovations, refurbishment, repairs, demolishing or dismantling of any bridge, dam, canal, road, railway, runaway, sewer, or water reticulation system or any civil engineering structure or type of work
- c) Construction of a new two storied Administration building.
  - Preparation of site by leveling, compaction etc.
  - Excavations for parking areas/services

## **9. PREPARING A HEALTH & SAFETY PLAN**

- (a) The level of detail required for a H&S plan will depend on how complex the workplace is (in particular, the number of contractors at the workplace at any one time) and the risks involved in the work. The plan must be easily accessible in a construction site and it must be clearly understood by management, supervisors & workers on construction site.
- (b) The plan must be implemented, maintained and kept up to date during the construction of the project.
- (c) The principal contractor should prepare a H&S plan that includes
  - project information;

- client requirements for H&S management on the project; Environmental restrictions and existing on-site risks arrangements, imposed by others or developed by the principal contractor, to control significant site H&S risks; H&S file & project H&S review.

(d) The H&S plan should include the following information:

- details of the client, that is the person commissioning the construction work, for example their name, representative and contact details; details of the principal contractor;
- details of the construction project, for example address of the workplace, anticipated start and end date and a brief description of the type of construction work that the H&S plan will cover;
- details on how subcontractors will be managed and monitored, including how the principal contractor intends to implement and ensure compliance with the H&S plan such as checking on the performance of subcontractors and how non-compliance will be handled; and
- details on how the risks associated with falls, falling objects, moving plant, electrical work and all high risk construction work that will take place on a construction project will be managed.

(e) The H&S plan should also include information on:

- the provision and maintenance of a hazardous chemicals register, safety data sheets and hazardous chemicals storage;
- the safe use and storage of plant;
- the development of a construction project traffic management plan;
- obtaining and providing essential services information – electrical, gas, telecom, water and similar services;
- workplace security and public safety; and
- ensuring workers have appropriate licences and training to undertake the construction work.

(f) The H&S plan must contain:

- a general description of the type of work activities involved in the project and not just a description of the facility to be constructed;
- the project program or schedule details, including start and finish dates, showing principal activities;
- details of client, design team, principal contractor, subcontractors, and major suppliers; and
- extent and location of relevant existing records, surveys, site investigation and geotechnical reports, 'as-built' plans, H&S files.

## **10. HEALTH AND SAFETY FILE**

- a) The H&S file is a document prepared by the principal contractor containing important project H&S information for use by the owner of the completed structure after construction has been completed.
- b) The principal contractor is responsible for producing an H&S file. It contains important project H&S information for use by the owner of the completed structure after construction has been completed. It is essential that the process of compiling the file commences as early as possible to ensure sufficient time to gather the required information.
- c) The Principal Contractor must, in terms of Construction Regulation 7(7), keep a Health & Safety File on site at all times that must include all documentation required in terms of the Act and Regulations and must also include a list of all Contractors on site that are accountable to the Principal Contractor and the agreements between the parties and details of work being done. A more detailed list of documents and other legal requirements that must be kept in the Health & Safety File.
- d) The contractor must ensure that the client's format and layout of the H&S file is adhered to. The contractor must identify the responsible person that will prepare the H&S file and who will be responsible for the drafting of as-built drawings. The contractor must establish procedures:
- e) The Health and Safety File will remain the property of the Client and/or its Agent on its behalf throughout the period of the project and shall be consolidated and handed over to the Client and/or its Agent on its behalf at the time of completion of the project.

## **11. OH&S GOALS AND OBJECTIVES AND ARRANGEMENTS FOR MONITORING AND REVIEWING OH&S PERFORMANCE**

The Principal Contractor is required to maintain an acceptable disabling incident frequency rate (DIFR) and report on this to the Client and/or its Agent on its behalf on a monthly basis.

## **11.1 IDENTIFICATION OF HAZARDS AND DEVELOPMENT OF RISK ASSESSMENTS, STANDARD WORKING PROCEDURES (SWP) AND METHOD STATEMENTS**

The Principal Contractor is required to develop Risk Assessments, Standard Working Procedures (SWP) and Method Statements for each activity executed in the contract or project.

The identification of hazards is over and above the hazards identification programme and those hazards identified during the drafting of the Health and Safety Plan.

### **11.1.1 Monthly Audit by Client and/or its Agent.**

The Client and/or its Agent on its behalf will be conducting Periodic Audits at times agreed with the Principal Contractor Audit to comply with Construction Regulation 4(1)(d) to ensure that the principal Contractor has implemented, is adhering to and is maintaining the agreed and approved OH&S Plan.

- a) A representative of the Principal Contractor and the relevant Health and Safety Representative(s) (SHE-Reps) must accompany the Client and/or its Agent on its behalf on all Audits and Inspections and may conduct their own audit/inspection at the same time. Each party will, however, take responsibility for the results of his/her own audit/inspection results. The Client and/or its Agent on its behalf may require to be handed a copy of the minutes of the previous Health and Safety Committee meeting reflecting possible recommendations made by that committee to the Employer for reference purposes.

### **11.1.2 Health & Safety incident/accident reporting & investigations**

- a) The Principal Contractor shall report all incidents where an employee is injured on duty to the extent that he/she:

- i. dies
- ii. becomes unconscious
- iii. loses a limb or part of a limb
- iv. is injured or becomes ill to such a degree that he/she is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or continue with the activity for which he/she was usually employed

OR where:

- i. a major incident occurred
  - ii. the health or safety of any person was endangered
  - iii. where a dangerous substance was spilled
  - iv. the uncontrolled release of any substance under pressure took place
  - v. machinery or any part of machinery fractured or failed resulting in flying, falling or uncontrolled moving objects
  - vi. Machinery ran out of control, to the Provincial Director of the Department of Labour within seven days and at the same time to the Client and/or its Agent on its behalf.
- b) The Principal Contractor is required to provide the Client and/or its Agent on its behalf with copies of all statutory reports required in terms of the Act and the Regulations.
- c) The Principal Contractor is required to provide the Client and/or its Agent on its behalf with a monthly "SHE Risk Management Report".
- d) The Principal Contractor is required to provide a.s.a.p. the Client and/or its Agent on its behalf with copies of all internal and external accident/incident investigation reports.

The Principal Contractor is responsible to oversee the investigation of all accidents/incidents where employees and non-employees were injured to the extent that he/she/they had to receive first aid or be referred for medical treatment by a doctor, hospital or clinic. (General Administrative Regulation 9)



- (e) The results of the investigation to be entered into the Accident/Incident Register listed above. (General Administrative Regulation 9)
- (f) The Principal Contractor is responsible for the investigation of all non-injury incidents as described in Section 24 (1) (b) & (c) of the Act and keeping a record of the results of such investigations including the steps taken to prevent similar incidents in future.
- (g) The Principal Contractor is responsible for the investigation of all accidents relating to the construction site and keeping a record of the results of such investigations including the steps taken to prevent similar accidents in future.
- (h) Notwithstanding the requirements of Section 24 of the Act, ALL incidents shall be investigated and reported on in writing, irrespective of whether such incident gave rise to injury or damage.
- Determine the underlying H&S deficiencies and other contributory factors
  - Identification of corrective/preventative actions and continual improvement
  - Communicating the outcome/results and documenting the events of the investigation.
- (i) **Reporting Of Near-Misses**
- Department of Public Works views the reporting of near misses as a critical component in creating a positive health and safety awareness culture on site.
  - Department of Public Works retains the right to enforce the reporting of near misses within 24 hours of occurrence.

## **12. Review**

The Principal Contractor is to review the Hazard Identification, Risk Assessments and Standard Work Processes at each Production Planning and Progress Report meeting as the construction work develops and progresses and each time changes are made to the designs, plans and construction methods and processes.

The Principal Contractor must provide the Client and/or its Agent on its behalf, other Contractors and all other concerned parties with copies of any changes, alterations or amendments as contemplated in the above paragraph.

## **12.1 Site Rules and other Restrictions**

### **a) *Site OH&S Rules***

The Principal Contractor must develop a set of site-specific OH&S rules that will be applied to regulate the Health and Safety Plan and associated aspects of the construction. When required for a site by law, visitors and non-employees upon entering the site shall be issued with the proper Personal Protective Equipment (PPE) as and when necessary.

### **b) *Security Arrangements***

The Principal Contractor must establish site access rules and implement and maintain these throughout the construction period. Access control must include the rule that non-employees shall at all times be provided with fulltime supervision while on site. The Principal Contractor must develop a set of Security rules and procedures and maintain these throughout the construction period.

If not already tasked to the H&S Officer appointed in terms of Construction Regulation, the Principal Contractor must appoint a competent person who must develop contingency plans for any emergency that may arise on site as indicated by the risk assessments.

### **12.1.1 Appointment of Health & Safety Representatives**

#### ***a) H&S Representatives('SHE – Reps')***

Where the Principal Contractor employs more than 20 persons (including the employees of other Contractors (sub-contractors) he has to appoint one H&S Representatives for every 50 employees or part thereof. (Section 17 of the Act and General Administrative Regulation 6. & 7.)

H&S Representatives must be appointed in writing and the designation shall be in accordance with the Collective Agreement as concluded between the parties as is required in terms of General Administration Regulation 6.

### **12.1.2 Duties and Functions of the H&S Representatives**

- The Principal Contractor must ensure that the designated H&S Representatives conduct at least a weekly inspection of their respective areas of responsibility using a checklist developed by a Principal Contractor.
- The report must be consolidated and submitted to the Health & Safety Committee.
- H&S Representatives must form part of the incident/accident investigating team.

### **12.1.3 Establishment of H&S Committee(s)**

- The Principal Contractor must establish H&S Committees consisting of designated H&S Representatives together with a number of Employers Representatives appointed as per Section 19(3) that are not allowed to exceed the number of H&S Representatives on the committee.
- The persons nominated by the employer on a H&S Committee must be designated in writing for such period as may be determined by him. The H&S Committee shall co-opt advisory (temporary) members and determine the procedures of the meetings including the chairmanship.

- The H&S Committee must meet minimum monthly and consider, at least, an agreed Agenda for the first meeting. Thereafter the H&S Committee shall determine its own procedures.

#### **12.1.4 Training & Awareness**

The contents and syllabi of all training required by the Act and Regulations including any other related or relevant training as required must be included in the Principal Contractor's Health and Safety Plan and Health and Safety File.

##### **a) *Training & Induction***

All employees performing work or task on site that potentially impact on H&S must be competent & have the necessary appropriate education, training & experience.

All the training must be closely aligned with the risk profile of the project; procedures must be put in place to ensure that all workers are aware of the consequences of their work activities & benefits of improved H&S performance.

All employees of the Principal and other Contractors must be in possession of proof of General Induction training

##### **b) *Site Specific Induction Training***

All employees of the Principal and other Contractors must be in possession of Site Specific Occupational Health and Safety Induction or other qualifying training.

##### **c) *Other Training***

All operators, drivers and users of construction vehicles, mobile plant and other equipment must be in possession of valid proof of training.

### **13. PROJECT/SITE SPECIFIC REQUIREMENTS**

The following is a list of specific activities and considerations that have been identified for the project and site and for which Risk Assessments, Standard Working Procedures (SWP), management and control measures and Method Statements (where necessary) have to be developed by the Principal Contractor:

- a) Clearing & grabbing the area/site
- b) Site establishment
- c) Dealing with existing structures
- d) Location of existing services
- e) Boundary & Access control/Public liability exposures
- f) Protection against heat exhaustion, dehydration, wet & cold conditions
- g) Dealing with HIV & aids other related diseases
- h) Use of portable electrical & explosive tools
- i) Any Excavation work
- j) Any welding work
- k) Loading & offloading of trucks
- l) Driving & operations of Construction vehicles & mobile plant
- m) Temporal works and
- n) Construction work as defined in the construction regulation 2014

#### 14. OUTLINED DATA, REFERENCES AND INFORMATION ON CERTAIN AND/OR SPECIFIC OBLIGATORY REQUIREMENTS TO ENSURE COMPLIANCE

##### Administrative & Legal Requirements

| OHS Act Section/<br>Regulation                              | Subject   | Requirements  |
|---|---|---|
| Construction. Regulation                                    | <b>Notice of carrying out Construction work</b>           | <ul style="list-style-type: none"> <li>Department of Labour notified</li> <li>Copy of Notice available on Site</li> </ul>   |
| General Admin. Regulation 4                                 | <b>Copy of OH&amp;S Act (Act 85 of 1993)</b>              | <ul style="list-style-type: none"> <li>Updated copy of Act &amp; Regulations on site.</li> <li>Readily available for perusal by employees.</li> </ul>   |
| COID Act Section 80   | <b>Registration with Compensation Insurer.</b>            | <ul style="list-style-type: none"> <li>Written proof of registration/Letter of good standing available on Site</li> </ul>   |
| Construction. Regulation 4 & 5(1)                           | <b>H&amp;S Specification &amp; Programme</b>              | <ul style="list-style-type: none"> <li>H&amp;S Spec received from Client and/or its Agent on its behalf</li> <li>OH&amp;S programme developed &amp; Updated regularly</li> </ul>  |
| Section 8(2)(d)<br>Construction. Regulation 7               | <b>Hazard Identification &amp; Risk Assessment</b>        | <ul style="list-style-type: none"> <li>Hazard Identification carried out/Recorded</li> <li>Risk Assessment and – Plan drawn up/Updated</li> <li>RA Plan available on Site</li> <li>Employees/Sub-Contractors informed/trained</li> </ul>  |
| Section 16(2)   | <b>Assigned duties (Managers)</b>                         | <ul style="list-style-type: none"> <li>Responsibility of complying with the OH&amp;S Act assigned to other person/s by CEO.</li> </ul>  |
| Construction. Regulation 6(1)                               | <b>Designation of Person Responsible on Site</b>          | <ul style="list-style-type: none"> <li>Competent person appointed in writing as</li> <li>Construction Supervisor with job description</li> </ul>  |
| Construction. Regulation 6(2)                               | <b>Designation of Assistant for above</b>                 | <ul style="list-style-type: none"> <li>Competent person appointed in writing as</li> <li>Assistant Construction Supervisor with job description</li> </ul>  |
| Section 17 & 18<br>General Administrative Regulations 6 & 7 | <b>Designation of Health &amp; Safety Representatives</b> | <ul style="list-style-type: none"> <li>More than 20 employees - one H&amp;S Representative, one additional H&amp;S Rep. for each 50 employees or part thereof.</li> <li>Designation in writing, period and area of responsibility specified in terms of GAR 6 &amp; 7</li> <li>Meaningful H&amp;S Rep. reports.</li> <li>Reports actioned by Management.</li> </ul> |

|   |  |   |
|---|--|---|
| Section 19 & 20<br>General Administrative<br>Regulations 5                  | <b>Health &amp; Safety Committee/s</b>                   | <ul style="list-style-type: none"> <li>• H&amp;S Committee/s established.</li> <li>• All H&amp;S Reps shall be members of H&amp;S Committees</li> <li>• Additional members are appointed in writing.</li> <li>• Meetings held monthly, Minutes kept.</li> <li>• Actioned by Management.</li> </ul>  |
| Section 37(1) & (2)   | <b>Agreement with Mandatories/<br/>(Sub-)Contractors</b> | <ul style="list-style-type: none"> <li>• Written agreement with (Sub-)Contractors</li> <li>• List of SubContractors displayed.</li> <li>• Proof of Registration with Compensation Insurer/Letter of Good Standing</li> <li>• Construction Supervisor designated</li> <li>• Written arrangements re.</li> <li>• H&amp;S Reps &amp; H&amp;S Committee</li> <li>• Written arrangements re. First Aid</li> </ul>                                |
| Section 24 &<br>General Admin.<br>Regulation 8<br>COLD Act Sect.38, 39 & 41 | <b>Reporting of Incidents<br/>(Dept. of Labour)</b>      | <ul style="list-style-type: none"> <li>• Incident Reporting Procedure displayed.</li> <li>• All incidents in terms of Sect. 24 reported to the Provincial Director, Department of Labour, within 3 days. (Annexure 1)(WCL 1 or 2) and to the Client and/or its Agent on its behalf</li> <li>• Cases of Occupational Disease Reported</li> <li>• Copies of Reports available on Site</li> <li>• Record of First Aid injuries kept</li> </ul> |
| General Admin.<br>Regulation 9  | <b>Investigation and Recording of<br/>Incidents</b>      | <ul style="list-style-type: none"> <li>• All injuries which resulted in the person receiving medical treatment other than first aid, recorded and investigated by investigator designated in writing.</li> <li>• Copies of Reports (Annexure 1) available on Site</li> <li>• Tabled at H&amp;S Committee meeting</li> <li>• Action taken by Site Management.</li> </ul>   |
| Construction. Regulation 8  | <b>Fall Prevention &amp; Protection</b>                  | <ul style="list-style-type: none"> <li>• Competent person appointed to draw up the Fall Protection Plan</li> <li>• Proof of appointees competence available on Site</li> <li>• Risk Assessment carried out for work at heights</li> <li>• Fall Protection Plan drawn up/updated</li> <li>• Available on Site</li> </ul>   |
| Construction. Regulation<br>Driven Machinery<br>Regulations 18 & 19         | <b>Cranes &amp; Lifting Machines Equipment</b>           | <ul style="list-style-type: none"> <li>• Competent person appointed in writing to inspect Cranes, Lifting Machines &amp; Equipment</li> <li>• Written Proof of Competence of above appointee available on Site.</li> <li>• Cranes &amp; Lifting tackle identified/numbered</li> </ul>   |

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|---|--|---|
|   |  | <ul style="list-style-type: none"> <li>• Register kept for Lifting Tackle</li> <li>• Log Book kept for each individual Crane</li> <li>• Inspection: - All cranes - <b>daily by operator</b> <ul style="list-style-type: none"> <li>- Tower Crane/s - <b>after erection/6monthly</b></li> <li>- Other cranes - <b>annually by comp. person</b></li> </ul> </li> <li>• - Lifting tackle(slings/ropes/chain slings etc.) - daily or before every new application</li> </ul>  |
| General Safety Regulation 8(1)(a)                   | <b>Designation of Stacking &amp; Storage Supervisor.</b>                             | <ul style="list-style-type: none"> <li>• Competent Person/s with specific knowledge and experience designated to supervise all Stacking &amp; Storage</li> <li>• Written Proof of Competence of above appointee available on Site</li> </ul>  |
| Construction. Regulation Environmental Regulation 9 | <b>Designation of a Person to Co-ordinate Emergency Planning And Fire Protection</b> | <ul style="list-style-type: none"> <li>• Person/s with specific knowledge and experience designated to co-ordinate emergency contingency planning and execution and fire prevention measures</li> <li>• Emergency Evacuation Plan developed:</li> <li>• Drilled/Practiced</li> <li>• Plan &amp; Records of Drills/Practices available on Site</li> <li>• Fire Risk Assessment carried out</li> <li>• All Fire Extinguishing Equipment identified and on <b>register</b>.</li> <li>• Inspected weekly. Inspection Register kept</li> <li>• Serviced annually</li> </ul>  |
| General Safety Regulation 3                         | <b>First Aid</b>   | <ul style="list-style-type: none"> <li>• Every workplace provided with sufficient number of First Aid boxes. (Required where 5 persons or more are employed)</li> <li>• First Aid freely available</li> <li>• Equipment as per the list in the OH&amp;S Act.</li> <li>• One qualified First Aider appointed for every 50 employees. (Required where more than 10 persons are employed)</li> <li>• List of First Aid Officials and Certificates</li> <li>• Name of person/s in charge of First Aid box/es displayed.</li> <li>• Location of First Aid box/es clearly indicated.</li> <li>• Signs instructing employees to report all</li> <li>• Injuries/illness including first aid injuries</li> </ul> |
| General Safety Regulation 2                         | <b>Personal Safety Equipment (PSE)</b>   | <ul style="list-style-type: none"> <li>• PSE Risk Assessment carried out</li> <li>• Items of PSE prescribed/use enforced</li> </ul>   |



|                               |  |   |
|-------------------------------|--|---|
|                               |  | <ul style="list-style-type: none"> <li>Records of Issue kept</li> <li>Undertaking by Employee to use/wear PSE</li> <li>PSE remain property of Employer, not to be removed from premises GSR 2(4)</li> </ul>   |
| General Safety Regulation 9   | <b>Inspection &amp; Use of Welding/Flame Cutting Equipment</b> | <ul style="list-style-type: none"> <li>Competent Person/s with specific knowledge and experience designated to Inspect Electric Arc, Gas Welding and Flame Cutting Equipment</li> <li>Written Proof of Competence of above appointee available on Site</li> <li>All new vessels checked for leaks, leaking vessels NOT taken into stock but returned to supplier immediately</li> <li>Equipment identified/numbered and entered into a register</li> <li>Equipment inspected weekly. Inspection Register kept</li> <li>Separate, purpose made storage available for full and empty vessels</li> </ul> |
| General Safety Regulation 13A | <b>Inspection of Ladders</b>                                   | <ul style="list-style-type: none"> <li>Competent person appointed in writing to inspect Ladders</li> <li>Ladders inspected at arrival on site and weekly thereafter. Inspections register kept</li> <li>Application of the types of ladders (wooden, aluminium etc.) regulated by training and inspections and noted in register</li> </ul>   |
| General Safety regulation 13B | <b>Ramps</b>   | <ul style="list-style-type: none"> <li>Competent person appointed in writing to supervise the erection &amp; inspection of Ramps. Inspection register kept.</li> <li>Daily inspected and noted in register</li> </ul>   |

## **15. THE PRINCIPAL CONTRACTOR'S GENERAL DUTIES**

- The Principal Contractor shall at all times ensure his status of an “employer” as referred to in the Act, and will abide by his/her responsibilities, duties and functions as per the requirements of the Act and Regulations with specific reference to Section 8 of the Act.
- The Principal Contractor shall keep, and on demand make available, a copy of the Act on site at all times and in addition to that he/she will introduce and maintain a file titled “Health and Safety File”, or other record in permanent form, which shall contain all relevant aspects and information as contemplated in the Construction Regulations. He/she will make this file available to the client or his representative whenever necessary or on request to an interested party.
- The project under control of the Principal Contractor shall be subject to periodic health and safety audits that will be conducted by the client at intervals agreed upon between the Principal Contractor and the client, provided such intervals will not exceed periods of one month.
- The Principal Contractor is to ensure that he/she and all persons under his control on the construction site shall adhere to the above specifications.
- The Principal Contractor should note that he/she shall be held liable for any anomalies including costs and resulting deficiencies due to delays caused by non-conformance and/or non-compliance to the above Health and Safety Specifications and the Health and Safety Plan based on these specifications.

## **16. THE PRINCIPAL CONTRACTOR'S SPECIFIC DUTIES**

The Principal Contractor's specific duties in terms of these specifications are detailed in the Construction Regulations as published under government notice 07 August 2014, stipulated in Section 7.

## **17. THE PRINCIPAL CONTRACTOR'S SPECIFIC RESPONSIBILITIES WITH REGARD TO HAZARDOUS ACTIVITIES**

The following examples of activities are identifiable as hazardous in terms of the Construction Regulations. The contractor shall execute the activities in accordance with the following Construction Regulations and other applicable regulations of the Act:

- Fall protection
- Structures
- Excavation work
- Demolition work
- Scaffolding
- Construction vehicles & mobile plant.
- Water environments
- Housekeeping on construction sites
- Fire precautions on construction sites.

This list must not be taken to be exclusive or exhaustive! All of the above requirements will be read in conjunction with the relevant regulations and health and safety standards as required by the Act. All documents and records required by the Construction Regulations will be kept in the Health and Safety File and will be made available at any time when required by the client or his representative, or on request to an interested party.

## **18. GENERAL NOTES TO THE PRINCIPAL CONTRACTOR**

### **Legal Framework**

Part of legal obligations

The more important Acts and relevant subordinate/secondary legislation as well as other (inter alia Local Government) legislation that also apply to the State as well as to State owned buildings and premises: -

- a. The latest issue of SABS 0142: "Code of Practice for the Wiring of Premises"
- b. The Local Government Ordinance 1939 (Ordinance 17 of 1939) as amended and the municipal by-laws and any special requirements of the local supply authority
- c. The Fire Brigade Services Act 1987, Act 99 of 1987 as amended
- d. The National Building Regulations and Building Standards Act 1977 (Act 103 of 1977) as amended and relevant proclaimed Regulations (SABS 0400)
- e. The Post Office Act 1958 (Act 44 of 1958) as amended
- f. The Electricity Act 1984, Act 41 of 1984
- g. The Regulations of Local Gas Board(s), including Publications of the SABS Standards and Codes of Practice, with specific reference to GNR 17468 dated 4<sup>th</sup> October 1997
- h. Legislation pertaining to water usage and the environment
- i. Legislation governing the use of equipment, which may emit radiation (e.g. X-Rays etc.)
- j. Common Law

## **19. HOUSE KEEPING**

Good housekeeping will be maintained at all times as per Construction Regulation No. 25. Poor housekeeping contributes to three major problems, namely, costly or increased accidents, fire or fire hazards and reduction in production. Good housekeeping will enhance production time.

In promotion of environmental control all waste, rubble, scrap etc, will be disposed of at a registered dump site and records will be maintained. Where it is found to be impractical to use a registered dump site or it is not available, the Principal Contractor will ensure that the matter is brought to record with the client or his representative, after which suitable, acceptable alternatives will be sought and applied.

Dross and refuse from metals, and waste matters or by-products whose nature is such that they are poisonous or capable of fermentation, putrefaction or constituting a nuisance shall be treated or disposed of by methods approved of by an inspector.

NOTE: No employer (Principal Contractor) shall require or permit any person to work at night or after hours unless there is adequate, suitable artificial lighting including support services in respect of Health and Safety.

### **a) Facilities**

The site establishment plan shall make provision for:

### **b) Dining room facilities**

The contractor shall make provision for adequate dining room facilities for his employees on site.

### **c) Change rooms**

The contractor shall make provision for adequate change rooms for his employees on site.

**d) Ablution facilities**

The contractor shall make provision for adequate ablution facilities for his employees on site.

These facilities shall be maintained by the contractor.

**e) Smoking Areas**

Designated smoking areas shall be established by Department of Public Works.

**f) Drinking Water Facilities**

The provision of drinking water facilities shall be negotiated between the Contractor and Department of Public Works.

**g) Equipment Compliance Certificates**

Before equipment is brought on site valid certificates of compliance issued by a competent person shall be presented. The equipment includes but shall not be limited to:

- i. lifting equipment and lifting tackle
- ii. power driven machinery
- iii. electrical equipment
- iv. testing and monitoring equipment

**h) Barricading**

All barricading shall be of the rigid type unless the use of non-rigid barricading has been approved in writing by the Department of Public Works Project Manager. The contractors' barricading standard shall be included in the Health and Safety Plan.

Where more than one contractor is working on a site, the fixed barricading shall be clearly marked with the company's name, site contact person as well as the contact number/s.

#### **i) Erection of Structures for Logistic Support**

Prior to site establishment Department of Public Works shall approve the contractor's site plan.

Department of Public Works shall approve all structures erected for logistical support by the contractor. These structures include fences, workshops, tool sheds, offices, ablution facilities, etc.

#### **j) Salvage Yard Management**

Depending on the site specific arrangements and procedures, Department of Public Works may provide the salvage yard and the resources to manage it.

The salvage yard management shall conform to safety, health and environmental requirements. The contractors are required to move the equipment from the place of work to the salvage yard.

#### **k) Fall Arrest and Prevention Equipment**

Approved fall prevention equipment shall be used at heights of less than 2.0 metres. Above heights of 2.0 metres fall prevention equipment shall include fall arrest Equipment. Users of fall arrest equipment shall, amongst other things be trained in what an appropriate load bearing point is for connecting fall prevention equipment. Any deviation from this requirement shall be negotiated and agreed with Department of Public Works in writing.

#### **l) Hazardous Chemical Substances Waste Removal**

Department of Public Works shall provide a facility to collect all hazardous chemical waste material.

The contractor shall provide adequately marked and sealable containers to transport The hazardous chemical waste from the source to the approved Department of Public Works disposal point.

#### **m) Personal Protective Equipment (PPE)**

Personal protective equipment issued shall be specific to the risks associated with the work to be performed and specific to conditions on site and shall comply with South African National Standards (SANS) or similar.

## **20. LOCKOUT SYSTEMS**

A system of control shall be established in order that no unauthorized person can energize a circuit, open a valve, or activate a machine on which people are working or doing maintenance, even if equipment, plant or machinery is out of commission for any period, thus eliminating injuries and damage to people and equipment as far as is reasonably practicable.

Physical/mechanical lock-out systems shall be part of the safety system and included in training. Lockouts shall be tagged and the system tested before commencing with any work or repairs.

## **21. IMPORTANT LISTS AND RECORDS TO BE KEPT**

The following are lists of several records that are to be kept in terms of the Construction Regulations. The lists are:

- i. List of appointments
- ii. List of record keeping responsibilities
- iii. Inspection checklist

### **a) Contractor Risk Assessment Process**

The risk assessment process shall include:

- 1) an evaluation of the method of the work to be conducted
- 2) the method statement on the procedure to be followed in performing the task shall be developed
- 3) the risk assessment will also include activities like:
  - i. Transportation of passengers and goods to and from site
  - ii. Site establishment
  - iii. Physical and mental capabilities of employees
  - iv. Others as may be specified.
- 4) the hazards as listed in the paragraph – Site Specific Health and Safety Hazards



- 5) a review plan for risk assessments shall provide for:
- i. the quarterly review of all applicable risk assessments
  - ii. the review of an assessment if there is reason to believe that the previous assessment is no longer valid, or there has been a change in a process, work methods, equipment or procedures and working conditions
  - iii. Risk assessment/s to be reviewed if the outcome of incident investigations and audits etc. requires such action.

A pre - task risk assessment shall be conducted in writing on every task and be facilitated by the team leader. All risk assessments and pre-task risk assessments shall be filed and be available on site.

**b) Risk Profile**

All contractors shall submit a risk profile of the work to be conducted with their Health and Safety Plan.

**c) Risk Based Inspection Program**

The inspection programme shall be risk based. The inspection plan shall form part of the Health and Safety Plan.

# IMPORTANT CONTACT DETIALS

(FOR HEALTH & SAFETY ASPECTS ONLY)

The contractor is to add all the important contact information about essentials services, support and assistance.



| SERVICE  | NUMBER | CONTACT PERSON |
|----------|--------|----------------|
| Hospital |        |                |
|          |        |                |



|           |  |  |
|-----------|--|--|
| Ambulance |  |  |
|           |  |  |



|             |  |  |
|-------------|--|--|
| Water       |  |  |
| Electricity |  |  |



|        |  |  |
|--------|--|--|
| Police |  |  |
|        |  |  |



|              |  |  |
|--------------|--|--|
| Fire Brigade |  |  |
|              |  |  |



|          |  |  |
|----------|--|--|
| Engineer |  |  |
|          |  |  |

**ADD OTHER IMPORTANT HEALTH & SAFETY CONTACT DETAILS AS MAY BE FOUND NECESSARY.**

**SECTION 37(2) AGREEMENTS**

**CONCLUDED BETWEEN**

**DEPARTMENT OF PUBLIC WORKS**

(Hereinafter referred to as Department of Public Works)

**AND**

.....

**(Name of contractor/supplier/Agent/)**

I, .....[  
(name)representing ..... *[Insert name of contractor/supplier]*, do hereby acknowledge that .....  
*[insert name of contractor/supplier]* is an employer in his/her own right, with duties as prescribed in the Occupational Health and Safety Act No. 85 of 1993 ("the Act"), as amended, and agree to ensure that all work will be performed and/or machinery or plant used in accordance with the provisions of the Act.

I undertake that ..... *[insert name of contractor/supplier]* shall strictly adhere to, and ensure that his/her employees adhere to, the provisions of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).

I have been provided with SHE specifications for project/service .....*[insert brief details of project/service, for example, name, contract/project number]* .....and will comply with the requirements set out in these.

I accept and agree that the SHE specifications constitute arrangements and procedures between ..... *[Insert name of contractor/supplier/Agent Safety Manager/Safety Officer]* and Department of Public Works, which will ensure compliance by ..... *[Insert name of contractor/supplier]* with the provisions of the Act, as contemplated in section 37(2) of the Act.

This agreement constitutes the sole agreement between the parties, and no variation, modification, or waiver of any of the provisions of this agreement or consent to any departure from these shall, in any manner, be of any force or effect, unless confirmed in writing and signed by both parties, and such variation, modification, waiver, or consent shall be effective only in the specific instance and for the specific purpose and to the extent for which it was made or given.

This agreement is signed on behalf of the parties, each signatory to this warranting that he/she has the requisite authority to do so.

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

..... (Place)

(Full name)..... (Signature) .....on

behalf of ..... **(Supplier/contractor/Agent)**

**Contractor Responsible Manager** (*responsible for signing the Department of Public Works' contract on behalf of the contractor*)

Witnesses

1. ....

2. ....

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

at ..... (Place)

(Full name)..... (Signature).....on

Behalf of **Department of Public Works.**

**(Contracts and/or Project Manager or Department of Public Works representative)**

Witnesses

1. ....

2. ....

**PROJECT:** \_\_\_\_\_  
(full name AND site address of project)  
(and full or proper description of project)

**WCS NO:** \_\_\_\_\_ (works control system number)

**SUPERVISION BY THE DEPARTMENT OF PUBLIC WORKS:**

**Mr /Ms/Me** - **CONSTRUCTION PROJECT MANAGER**  
(add full details of the project manager)

.....  
.....

**Mr /Ms/Me** - **CONSTRUCTION MANAGER**  
(add full details )

.....  
.....

**Mr /Ms/Me** **AGENT:**  
(full particulars of agent)

.....  
.....

**SUPERVISION BY THE PRINCIPAL CONTRACTOR:**

**PRINCIPAL CONTRACTOR:** (full particulars of principle contractor / contractor)

**Mr /Ms/Me** - **CONSTRUCTION HEALTH & SAFETY OFFICER**  
(add full details and contact of this officer)

.....  
.....

**Mr /Ms/Me** - **CONSTRUCTION HEALTH & SAFETY MANAGER**  
(add full details of this officer)

.....  
.....

**Mr /Ms/Me**

.....  
.....

- **CONSTRUCTION HEALTH & SAFETY AGENT**  
**(add full details of this officer)**

**Mr /Ms/Me**

.....  
.....

- **CONSTRUCTION MANAGER**  
**(add full details of the head of the project)**

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# **Construction Works: Specifications (PW371B) Edition 2.2**

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**PW 371-B**

**EDITION 2.2**



**Department:  
Public Works**  
REPUBLIC OF SOUTH AFRICA

# **CONSTRUCTION WORKS: SPECIFICATIONS**

**PARTICULAR SPECIFICATION**

First Edition October 1983  
Second Edition January 2013  
Edition 2.2 December 2015

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# Particular Specification

(read with PW371-A)

This specification falls under the Scope of Work as defined in *Standard for Uniformity in Construction Procurement*, published by the Construction Industry Development Board (CIDB), and is based on national or international standards, where such exist.

Works: .....Ref no: .....

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- > Make an office print-out of this part of PW371 for marking up during documentation.
- > Delete irrelevant clauses and add variations or additional requirements where necessary. Do not change heading numbers – they should correlate with PW371-A.
- > Choose the desired attribute or value where choices are separated with a double space-slash-double space. Delete unwanted attribute(s) or value(s). Asterisk (\*) denotes the preferred attribute or value.
- > The specification data for SANS 2001 standards as listed in this publication is for guidance only. See Annex A of the relevant standard for the full list of specification data, and follow instructions when required.
- > Where the reader is directed to <see drawings>, ensure the relevant item is shown in the drawings.
- > Dimensions presented are preferred dimensions according to the relevant SANS standard. Check availability or other dimensions with manufacturers/suppliers.
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# 1 Earthworks

## 1.1 Site clearance

*Applicable standard:* SANS 2001 – Construction Works Part BS1: Site clearance

Specification data<sup>1</sup>:

SANS 2001 standard specifications are deemed to satisfy the provisions of SANS 10400.

SANS 2001-BS1 covers removal of vegetation, fences, guard rails and posts, litter and building rubble, boulders of size up to 0,15 m<sup>3</sup>, and surface and subsurface obstructions, and demolition and removal of structures (including their basements, if any), not directly associated with or incidental to any excavation.

- ☐ designated area/site in which work is to be carried out: see drawings
- ☐ level of finished earthworks: see drawings
- ☐ site clearing activity numbers: ...

1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 / 11 / 12

1 removal and disposal of vegetation; 2 removal and disposal of structures by means of bulldozing; 3 demolition, breaking up and removal of buildings to ground level; 4 demolition, breaking up and removal of underground structures; 5 ditto septic tanks, soak pits; 6 ditto litter, rubble, rocks on surface; 7 removal and stacking of re-useable materials; 8 removal of asphalt layers; 9 removal of paving; 10 removal of kerbs, channels, haunching; 11 scarifying, ripping to blocks <200 mm; 12 removal of disused foulwater and stormwater drains and watermains

- ☐ description of materials to be reused: ...

Activity 7 requires description of reuseable materials

- ☐ depth of underground structures to be demolished: see drawings

Activity 4 requires depth of demolition of underground structures to be specified.

- ☐ depth for ripping or excavation: see drawings

Activity 11 requires depth for ripping or excavation to be specified

- ☐ designated sites for disposal of materials: see drawings
- ☐ designated sites for disposal of reusable materials: see drawings
- ☐ trees, turf, plants, bushes, shrubs and flora to be preserved and/or replanted: see drawings

Look up tree distance guidelines in SANS 10400-H Annex E.

- ☐ topsoil: select and stockpile

Topsoil is mostly a precious commodity.

## 1.2 Earthworks (general)

*Applicable standard:* SANS 2001-Construction works Part BE1: Earthworks (general).

Specification data:

SANS 2001-BE1 covers: excavation, filling, compaction and finishing of general excavations for buildings, bridges and structures, terracing, landscaping and private railway sidings, carried out with heavy construction equipment or light construction equipment, or by hand.

- ☐ topsoil: select and stockpile
- ☐ areas where surplus and unsuitable materials shall be disposed of: see drawings
- ☐ areas to be topsoiled: see drawings

<sup>1</sup> The specification data for SANS 2001 standards as listed in this publication is a selection of importance mainly for buildings. See Annex A of the relevant standard for the full list of specification data, and follow instructions when required for civil works.

- ☐ areas to be grassed or vegetated: see drawings
- ☐ degree of accuracy required : II

Relevant standards:

SANS 10400-F Site Operations.

SANS 10400-G Excavations.

To be published: SANS 2001- Construction works Part BE2: Earthworks (small works).

## 2 Concrete works

### 2.1 Structural works (SANS 2001-CC1)

Omit this part if not relevant, or SANS 2001-CC2 Concrete Works (Minor Works) is specified.

SANS 2001-CC1 covers: structural concrete in buildings and structures where the design and supervision of reinforced, prestressed and precast concrete are under the direct control of appropriately qualified engineers and technologists. Does not cover piles, harbour and marine works, and underground works in mines.

Specification data:

#### materials

- ☐ strength concrete grade: see drawings

10 / 15 / 20 / 25 / 30 / 40

Omit if prescribed mix concrete is specified.

Contractor is responsible for design of strength concrete.

Strength concrete is designated by its characteristic strength followed by the size of stone used in its manufacture, for example, grade 30/19 refers to a 30 MPa mix made with 19 mm stone. Stone size has little influence on strength but does affect workability and water demand.

Grades for typical applications are

10 (plain [unreinforced] concrete strip foundations, or surface beds where the slab does not serve as the final wearing surface);

15 (plain concrete strip foundations, floors on the ground that will serve as the final wearing surface);

20 (reinforced concrete subject to non-aggressive (dry) conditions; base courses of lightly loaded floors (no trucking) and one-course domestic and office floors on the ground that will serve as the final wearing surface; landscape footpaths);

25 (general reinforced concrete construction in buildings, bridges, culverts, silos, machine foundations, slab-on-the-ground foundations, unplastered walls above ground);

30 (machine foundations subject to vibration and shock; concrete roads; paving and floors on the ground to carry fork-lift trucks), precast concrete;

40 (specially watertight walls and tanks; highly stressed rc members; precast structural units; concrete subject to severe vibration and shock, abrasion and wear).

- ☐ prescribed mix concrete: SANS 2001-CC2 table 5 / ...

Omit if strength concrete is specified. SANS 2001-CC2 table 5 (19 mm aggregate) and table 6 (13 mm aggregate) contains generic prescribed concrete mixes for strength grade 10, 15, 20, 25, 30, or specify bespoke requirements.

- ☐ characteristic strength of tendon steel for prestressing: ...
- ☐ joint fillers, sealants, waterstops, bearings and accessories: ... / see Section 6
- ☐ steel joint cover plate finish: not galvanized / galvanized

#### off-form surfaces

- ☐ concrete off-form surface finish (smooth-special): steel forms, uniform texture, appearance and colour

Specify special off-form and exposed aggregate surfaces only with permission: timber boards, special patterned finish (hardboard, rubber, plastic), brushed, tooled, sand-blasted or aggregate transfer. See SANS 2001-CC1 table 1.

#### construction joints

- ☐ type: see drawings

construction joint / movement joint / contraction joint / expansion joint

In general, in off-form surfaces, construction joints should be shown where a day's casting starts and ends, e.g. bottom and top of slab/column.

- ☐ joint sealing requirements: see Section 6

SANS 2001-CC1 specifies the finishing of exposed horizontal cast in situ concrete surfaces excluding industrial floors. Public ramps must have a safe gradient and frequent landings for disabled persons. Check with SANS 10400-S. See note on stairways at end of section.

- ☐ parts of the structure which need to be watertight: see drawings
- ☐ degree of accuracy required: II

### **precast/prestressed concrete**

- ☐ surface finish required to precast units: special off-form / exposed aggregate / mosaic / ...
- ☐ prestressing particulars: ...
- ☐ order of loading and magnitude of load for each component of prestressing tendon: ...
- ☐ prestressing test requirements: ...
- ☐ position of lifting and supporting points, method of lifting, type of equipment and transport used in handling and erection of precast units: ...
- ☐ method of assembly and erection of precast units: ...
- ☐ design requirements for structural connections of precast units: ...
- ☐ degree of accuracy required: II

### **additional requirements**

- ☐ low-density concrete if not breeze (clinker) concrete at 800-960 kg/m<sup>3</sup>

60-160 (vermiculite) / 120-240 (perlite) / 450-720 (foamed slag) kg/m<sup>3</sup>

- ☐ form drip joint or downstand under all exposed off-form slab edges; chamfer exposed edges of off-form columns, slabs, joints etc.; use standard plastic joint formers

## **2.2 Minor works (SANS 2001-CC2)**

Omit this part if SANS 2001-CC1 is specified.

SANS 2001-CC2 covers concrete works in foundations, slabs, stairways, masonry walls, pipelines, manholes, latrines, conservancy tanks, septic tanks and the like where the design and supervision of plain, reinforced and precast concrete are not necessarily under the direct supervision of approved, qualified engineers and technologists and no special finishes to the concrete are required. Use SANS 2001-CC1 when special finishes are required.

Specification data:

- ☐ horizontal surfaces that need to be non-skid: see drawings

## **2.3 Foundations (SANS 2001-CM2)**

SANS 2001-CM2 covers construction requirements for strip footings, pad footings and slab-on-the-ground foundations to receive masonry walling, and the construction of lightly loaded concrete surface beds.

Specification data:

- ☐ site class designation: see drawings

R / H / C / S / P / H1 / C1 / S1 / H2 / C2 / S2 / H3

R rock; H heaving (expansive) soils; C collapsible soils; S compressible sand; P fill, dolomite, marshy areas, mine waste, very soft clays. Site class designations R, H, C, S indicate that the expected range of total soil movements arising from ground movements is such that no special precautionary measures are required to minimize the effects of differential ground movements on buildings. Number denotes higher range of movement. Behaviour of P is variable and the reason for such classification should be given in brackets, e.g. P (fill).

- ☐ foundations: in accordance with the requirements of SANS 10400-H for strip footings, slab-on-the-ground foundations or modified normal construction for category of expected damage 1 or 2 / rational design by competent person

See SANS 10400-H for geotechnical and/or structural solutions for foundations on problem soils.

- ☐ construction of steps in foundations in excess of 400 mm: see drawings
- ☐ minimum founding depth: see drawings



Required where the geotechnical report indicates a deeper requirement than that provided for in SANS 10400-H.

### **additional requirements**

- ☐ protection against termites: SANS 10124.

## **2.4 Concrete floors and paving on the ground**

- ☐ industrial floors: direct-finished one course slab as designed and constructed to SANS 10109 under direction of a competent person

Direct-finished one-course concrete floors on the ground are superior to concrete bases with screed or topping, and should be used if floor is to be left as is, or if to be covered with resilient floor finishes like thermoplastic tiles or carpet.

### **concrete**

- ☐ concrete grade: see drawings

20 / 30

Show grades on drawings.

Default: (grade 20 for base courses of lightly loaded floors [no trucking] and one-course domestic and office floors on the ground that will serve as the final wearing surface, or grade 30 for paving and floors on the ground to carry fork-lift trucks) is acceptable.

### **damp-proof under-surface membrane**

- ☐ DPM under floor area: required / not required

Dpm normally not required under external floors.

### **fabric reinforcement**

- ☐ fabric reinforcement ref. no. 100 / ... / not required
- ☐ floor/paving thickness: see drawings

Floor thickness ranges between 120 and 360 mm, depending on loading, use

### **placing**

- ☐ levels and gradients: see drawings

### **joints**

- ☐ joint sealing: left open / sealed

Joints should be sealed when the floor is used under wet conditions, or where hygiene or dust has to be controlled.

## **2.5 Strongrooms**

- ☐ fire rating, burglar resistance and wall thickness class: see drawings

1 / 2 / 3 / 4

Class: 1 (4h, no burglar resistance, 200 mm wall, 125 mm floor/ceiling); 2 (4h, limited burglar resistance, 300 mm); 3 (4h, medium burglar resistance, 450 mm); 4 (4h, high burglar resistance, 525 mm)

### **NOTE ON STAIRWAYS**

The rule in SANS 10400 – M of a minimum going of 250 mm and a maximum rise of 200 mm often leads to a disregard for two other rules, i.e. “*the dimension of each step of the stairway shall be such that the sum of the going and twice the riser is not less than 570 mm and not more than 650 mm*”, and “*any stairway ... shall have dimensions appropriate to its use*” (NBR part M Stairways). A maximum rise of 180 and a minimum going of 280 is a more comfortable and safer proportion, and should be used in most public buildings.

The full range of a more comfortable and safer proportion would be (rise/going):

180/280 mm; 170/280 – 320 mm; 150/280 – 350 mm; 120/280



## 3 Masonry

### 3.1 Masonry Walling (SANS 2001-CM1)

SANS 2001-CM1 Masonry Walling covers requirements for masonry walls, materials, the laying of masonry units in unreinforced and reinforced applications, the building in of door and window frames, holes and chases, the securing of timber roof structures and the fixing of slips.

Specification data:

#### masonry units

Bricks and blocks are collectively termed *masonry units*, whether solid or hollow. A block has dimensions which satisfy any one of the following conditions: a length of 300–650 mm, width of 130–300 mm, or height of 120–300 mm.

- ☐ type: burnt clay / concrete
- ☐ masonry units: SANS 2001-CM1 clause 4.1.1.3

Omit if masonry units to SANS 227 and SANS 1215 are specified.

SANS 2001 CM1 clause 4.1.1.1 states “Masonry units shall comply with the requirements of either 4.1.1.2 (SANS 227 and SANS 1215) or 4.1.1.3”. Clause 4.1.1.3 is a generic description, which may be more practical in areas where bricks to SANS 227 are unobtainable. Specify to clause 4.1.1.3 only with permission.

#### burnt clay masonry units (SANS 227\*<sup>2</sup>)

Omit if requirements of SANS 2001-CM1 clause 4.1.1.3 are acceptable.

- ☐ nature of face unit: hollow / solid / contractor’s choice
- ☐ class of face units: FBS / FBX / FBA

Class E bricks are any class of masonry unit produced for structural or load-bearing purposes in face or non-face work, and is supplied to an agreed compressive strength e.g. FBSE2, where the number equals the nominal compressive strength in megapascals.

- ☐ nominal dimensions: 222 x 103 x 76 mm

See SANS 227 for modular sizes, e.g. 190 x 90 x 90 mm.

- ☐ colour of face units: ...

#### concrete masonry units (SANS 1215\*)

Omit if requirements of SANS 2001-CM1 clause 4.1.1.3 are acceptable.

- ☐ nature of unit: hollow / solid
- ☐ colour of face units: ...
- ☐ nominal dimensions: 190 x 90 x 90 / 290 x 90 x 90 / 390 x 90 x 190 / 390 x 190 x 190 mm

#### mortar

- ☐ sand: SANS 1090\*

Omit if default (clause 4.1.4.1) is acceptable.

Clause 4.1.4.1 states that “Sand shall either comply with all of the following requirements or, if required in terms of the *specification data*, the requirements of SANS 1090 for mortar sand (natural or manufactured)”

- ☐ mortar class: II

<sup>2</sup> Asterisk (\*) denotes the preferred attribute or value.

Class I mortar is *suitable* for highly stressed masonry, e.g. multi-storey loadbearing buildings; class II is *suitable* for normal loadbearing applications, including parapets, balustrades, retaining structures, freestanding and garden walls, and walls exposed to severe dampness; class III mortar (not mentioned in SANS 2001-CM1) is *suitable* for lightly stressed bearing walls where exposure to dampness is not severe, or for renovation to unburnt clay masonry walling.

- ☐ pigments for mortar: ... ; colour: ... ; other requirement(s) : ...

### **reinforcement**

- ☐ prestressing steel (hot-rolled bars or high tensile steel wire and strand) : ...

Provide particulars or omit if not required.

NOTE on metal wall ties: SANS 204 requires masonry walls enveloping habitable portions of the building fabric in all climatic zones to be cavity or insulated cavity walls. Note that existing wire tie types may not be able to be centred centrally and conform to the minimum embedment rule of 50 mm. Note that crimp wire ties are not for use on cavity walls.

### **work**

- ☐ face work jointing: struck\* / flush / recessed / drip

Struck (half-round) joints are denser with better resistance to water penetration. Flush joints require careful cleaning of face work. Face work includes fair face work.

- ☐ face work pointing shape, colour: ...

Pointing is the raking out of brickwork joints 20 mm deep, then filling with mortar, usually coloured. Joint faces can be left flush, projecting, or shaped in the same way as jointing.

- ☐ multi-leaf wall bond: stretcher and brickforce / English bond (header course every second course) / collar-jointed bond

SANS 2001-CM1 specifies collar-jointed walls as default. Collar-jointed walls have a narrow cavity (<25 mm) between the leaves (the collar joint) which is filled solid with mortar or grout as the work progresses (not to be confused with *grouted cavity* construction where the cavity is wider and filled with concrete). Collar-jointing is intended for walls that require an effective thickness equal to the actual overall thickness of the wall. The success of this construction depends heavily on proper supervision. Collar-jointing is not mentioned in SANS 10249 Masonry Walling.

- ☐ position of control and articulation joints: see drawings

### **additional requirements**

- ☐ wall type: see drawings

single leaf / multileaf / cavity / insulated cavity / grouted cavity / sealed multileaf

Sealed multileaf walls (outside face of inner leaf treated with a bitumen sealer) may be used in place of cavity walls in areas of prolonged, heavy, wind-driven rains, or where wall is faced with masonry-type facings (see *Masonry-type facings*)

- ☐ special shape face bricks: see drawings

single bullnose / double bullnose / single cant / double cant

- ☐ lintels in face work: see drawings

bed joint reinforced masonry / prestressed concrete lintels / galvanized steel / wood

For timber lintels see Section 4.

- ☐ cavity reveals around windows/doors: open / closed / see drawings

In energy rated buildings, at cavity reveals around openings, cavity insulation should continue up to window or door frames to prevent thermal bridging, therefore "open".

A bituminous damp-proofing type may be required where bituminous waterproofing is to be bonded to damp-proofing – see Section 8.

## **3.2 Glass blockwork**

### **glass blocks**

- ☐ nominal dimensions: ...

- ☐ surface pattern: ...
- ☐ opacity: ...
- ☐ colour: ...

### 3.3 Stone masonry

Loadbearing stone masonry. For stone cladding see *Masonry-type facings*.

- ☐ type: rubble / dimension stone

#### 3.3.1 Rubble

Rubble (koppieklip) is stone with irregular faces as found in nature on or near surface.

- ☐ bedding of stones: set in mortar / dry set, with smaller stones to achieve stability.

#### 3.3.2 Dimension stone

- ☐ stone type: freestone / granite / marble / slate / cast stone

Freestone (makklip) is building stone soft enough to be cut with tools and uniform enough to be carved in any direction, typically sandstone.

- ☐ face dressing: plain / polished / rusticated / vermiculated / boasted / drafted margin
- ☐ shape and size: square sawn in modular rectangular sizes / ...
- ☐ bond to homogenous pattern: random coursed / regular coursed
- ☐ jointing: flush / keyed
- ☐ pointing colour: ...

### 3.4 Masonry-type facings

SANS 10073 The Safe Application of Masonry-type Facings to Buildings was withdrawn in May 2011 and “replaced” by SANS 10400-K Walls which does not yet touch on this important subject.

Thin panel cladding, e.g. marble, should be rail-fixed, leaving a cavity between facing and backing. The advantages of this system are avoidance of staining of the stone face, more reliable support, faster erection, smaller joints and less dependency on skilled labour. Consult specialist stonework contractors.

Facings wholly dependent on fixing to the backing with proprietary adhesive only may lead to failure.

- ☐ facing type: precast concrete / natural stone / burnt clay units / concrete units of design, size, colour and finish: ...

Joints should be sealed to prevent ingress of water and to provide for thermal and structural movement.

#### Relevant standards

SANS 993 Modular co-ordination

SANS 10021 The waterproofing of buildings (in the case of facings this depends on climatic region, facing material and backing).

SANS 10073 The safe application of masonry-type facings to buildings (withdrawn).

SANS 10145 Concrete masonry construction.

SANS 10164 The structural use of masonry.

SANS 10249 Masonry walling.

SANS 10400-H Foundations.

SANS 10400-K Walls.

SANS 10400-M Stairways.

SANS 10400-P Drainage.

## 4 Structural timberwork

### 4.1 Structural timberwork (flooring) (SANS 2001-CT1)

SANS 2001-CT1 covers the installation of suspended timber floors in buildings to be constructed for occupancy class H3 (domestic residence) and H4 (dwelling house) buildings, as described in SANS 10400-J Floors, and that have a distance that does not exceed 7 m between supports, and a beam/joist spacing that does not exceed 600 mm. Modify to make this part of SANS 2001 applicable for the installation of suspended timber floors designed for other occupancies or for greater dimensions between beams or supports.

For wood floors on solid substrates see Section 13.

Specification data:

#### **softwood timber joists**

- ☐ type: solid / laminated
- ☐ cross section: see drawings

Omit if default description (to SANS 10400-J) is acceptable.

#### **hangers, masonry anchors**

- ☐ size/strength: ...

Omit if default description in SANS 2001-CT1 (hangers: 4,0 kN; masonry anchors: 10 dia x 45 mm length, 2,5 kN) is acceptable.

#### **softwood flooring boards**

Omit this part if default description in SANS 2001-CT1 is acceptable. NOTE SANS 629 withdrawn 2012 without replacement. Most req'd data kept except marking.

- ☐ softwood flooring boards:

- ☐ genus: Pinus / Cedrus / Podocarpus / Cupressus
- ☐ nature: solid / laminated
- ☐ grade: clear flooring / select flooring / flooring
- ☐ density group: light / heavy

Density group: light (400-550 kg/m<sup>3</sup>); heavy (550 kg/m<sup>3</sup>, for example squash court floor boards)

- ☐ cross section: see drawings

Omit if default (50 – 140 x ≥22 mm) is acceptable. Also 33 mm thickness.

- ☐ length: >1 800 mm when square sawn at ends, >600 mm when matched
- ☐ finger joints: not prominent

Omit if default (prominent) is acceptable.

#### **hardwood strip flooring**

NOTE SANS 281 Hardwood block and strip flooring withdrawn 2009 without replacement.

- ☐ species: ...
- ☐ dimensions: ≥460 x 57 – 90 x ≥20 mm

#### **additional requirements**

- ☐ hardwood species: ...
- ☐ hardwood prefinish: required / not required
- ☐ exposed faces of sawn structural timber: planed, sandpapered, and arris rounded to 3 mm radius.

## 4.2 Structural timberwork (roofing) (SANS 2001-CT2)

SANS 2001-CT2 covers the construction of timber roof assemblies in buildings. It includes the manufacture of bolted trusses that are designed in accordance with the requirements of SANS 10400, the erection of prefabricated timber trusses, the erection of rafters and purlin rafters, the fixing of purlins and battens, and the fixing of bracing to roofing members to support ceilings that comprise gypsum plasterboard, fibre-cement board or similar boards

Specification data:

### softwood roofing timber

- ☐ type: solid / laminated
- ☐ cross section, grade: see drawings / to SANS 10400-L Roofs / to standard ...

### roofing poles ("fence poles" SANS 457)

"fence" poles are normally used for roofs. See also "transmission" poles below

- ☐ roofing pole type: softwood SANS 457-2 / hardwood SANS 457-3 / to standard ...
- ☐ top diameter (thin end, colour-coded) : see drawings

50-79 (red), 80-99 (yellow), 100-119 (blue), 120-139 (white), 140-159 (orange), 160-179 (green), 180-199 (black) mm; ditto posts: 145-174, 175-199, 200-230 mm.

### hangers, clips, masonry anchors

- ☐ size/strength: ...

Omit if default requirements (hangers: 4,0 kN; hurricane clips: 1,2 kN; masonry anchors: 10 dia x 45 mm length, 2,5 kN) are suitable.

### additional clauses

- ☐ truss type: monoplanar prefabricated rational design to SANS 10243 or SANS 1900 / lapped and bolted within scope of SANS 10400-L/10243

In case of lapped and bolted trusses, show all member sizes and connection details on drawings. SANS 10243 provides guidance on the manufacture, erection and bracing of timber roof trusses. SANS 1900 covers a rational design prepared by a *Competent Person* and inspected by such a person during installation.

- ☐ "transmission" poles, diameter: softwood poles SANS 753 / hardwood poles SANS 754

Omit if "fence" poles to SANS 457 as required by SANS 2001-CT2 are acceptable. "Transmission" poles to SANS 753/754 should only be used when high strength is specifically required. See SANS 753 for lengths, minimum top diameter of poles.

- ☐ gang planks: two 150 x 38 mm softwood grade S5, nailed onto tie beams where shown on drawings / nailed onto tie beams of two adjoining trusses on both sides of geysers

Gang planks for walking/crawling in roof space, when required.

- ☐ timber lintels type and size: see drawings

softwood / hardwood / structural laminated timber / composite structural plywood web and solid timber flanges; grade: 5 / 7 / 10

## 4.3 Structural laminated timber (SANS 1460)

- ☐ material: see drawings

softwood (Pinus) / hardwood (Eucalyptus) / board (fibreboard, plywood, composite board)

- ☐ exposure class: 1 (exterior), 2 (semi-exterior), 3 (humid interior), 4 (dry interior)
- ☐ type: G (stocklam) / C (customlam)
- ☐ appearance and finish: rough-sawn (R), fine-sawn (F), planed (P), sanded (S), smoothed (G), coated (C), special (X)
- ☐ stress grade: 5 / 7 / 10 / 14
- ☐ fire retardant treatment: required / not required

□ cross section: see drawings.

Relevant standards:

SANS 1288 Preservative treated timber.

SANS 1900: Monoplanar prefabricated timber roof trusses (nail-plated).

SANS 10005: Preservative treatment of timber.

SANS 10043: The laying of wood floors.

SANS 10082: Timber buildings.

SANS 10096: Manufacturing of finger-jointed structural timber.

SANS 10163 The structural use of timber.

SANS 10243 The design, manufacture and erection of timber trusses.

SANS 10400-J Floors.

SANS 10400-L Roofs.

SANS 10400-M Stairways.

SANS 10400-T Fire Protection.



## 5 Structural steelwork

### 5.1 Structural steelwork (SANS 2001-CS1)

SANS 2001-CS1 covers structural steelwork for buildings and other structures, excluding bridges, offshore structures, mobile equipment (stackers, reclaimers, draglines, cranes, etc.), mine shaft steelwork (buntions and guides) and mining conveyances, but does not cover roof and side cladding, or the detailed aspects of sundry items such as handrails, ladders, steel flooring and the like, neither does it cover protection of steelwork against corrosion or fire.

Specification data:

- ☐ class and grade of fasteners: ...
- ☐ format of drawings: ...

State in which format and to which standards each category of drawings shall be prepared.

- ☐ hole sizes for holding-down bolts in excess of 36 mm diameter: ...
- ☐ connections to allow movement: ...
- ☐ requirements for machining: ...
- ☐ requirements for non-destructive tests on welds: ...

### 5.2 Sundry steelwork

#### 5.2.1 Material

##### **cold-formed structural steel (SANS 10162)**

- ☐ commercial quality steel: permitted if yield stress equals 200 MPa, tensile strength 365MPa; obtain proof.

Cold-formed profiles are often made from commercial quality steel of which the yield stress is seldom less than 210 MPa.

##### **structural steel tubes SANS 657-1**

- ☐ coating: uncoated / hot dip galvanized coating SANS 32 quality B
- ☐ size/profile: see drawings

Size/profile: 21, 27, 32, 34, 38, 42, 48, 51, 60, 76, 89, 102, 114, 127, 140, 152, 165, 178, 219 mm  $\varnothing$  (general purpose); 20 x 20, 25 x 25, 30 x 30, 40 x 40, 50 x 50, 60 x 60, 70 x 70, 80 x 80, 90 x 90, 100 x 100, 115 x 115, 120 x 120, 135 x 135, 140 x 140, 150 x 150, 160 x 160, 175 x 175, 180 x 180 mm (square); 40 x 20, 50 x 30, 60 x 40, 80 x 40, 90 x 50, 100 x 50, 100 x 60, 120 x 60, 120 x 80, 140 x 90, 150 x 100, 160 x 80, 180 x 100, 200 x 100, 200 x 120, 220 x 140, 250 x 150 mm (rectangular)

##### **corrosion resistant (weathering) steel**

Corrosion resistant steel also known as COR-TEN, a registered trademark of USX Corporation. Corrosion resistant steel is weldable. Available in sheet (<2,0 mm) and strip (2,5 – 6,0 mm). Consult Mittal Steel.

- ☐ grade: 1 / A

##### **steel wire rope (cables)**

- ☐ class: 6 x 7 / 6 x 24 / 6 x 37 / 8 x 19 mm
- ☐ diameter: 6 / 7 / 8 / 9 / 10 mm.

### 5.3 Coating

- ☐ type: hot dip galvanising / prepainting / hot dip galvanising and prepainting (duplex system)

Other coating types on steel are vitreous enamel, plastic or protective tape.

SANS 121 provides for one set of coating thickness only – see NOTES at end of Section. Thicker (25%) coatings may be requested without affecting specification conformity. The primary influencer on hot dip galvanized coating is the steel composition. See SANS 14713 for design guidelines.

### hot dip galvanising

The Hot Dip Galvanizers Association South Africa (HDGASA) is the industry representative body.

- ☐ significant (architectural) surfaces: see drawings

NOTE on appearance of galvanized coatings

SANS 121:

"The primary purpose of the galvanized coating is to protect the underlying iron or steelwork against corrosion. Considerations related to aesthetics or decorative features should be secondary. Where these secondary features are also of importance it is highly recommended that the galvanizer and customer agree the standard of finish that is achievable on the work [in total or in part], given the range of materials used to form the article. This is of particular importance where the required standard of finish is beyond that set out in this section. It should be noted that 'roughness' and 'smoothness' are relative terms and the roughness of coatings on articles galvanized after fabrication differs from mechanically wiped products, such as galvanized sheet, tube and wire. It is not possible to establish a definition of appearance and finish covering all requirements in practice.

The occurrence of darker or lighter area (e.g. cellular pattern or dark grey areas) or some surface unevenness shall not be cause for rejection: also wet storage stain (white or dark corrosion product – primarily basic zinc oxide – formed during storage in humid conditions after hot dip galvanising) shall not be cause for rejection, providing the coating thickness remains above the specified minimum value."

- ☐ sample: required / not required
- ☐ special pre-treatments: ...
- ☐ special coating thickness: ...
- ☐ any after treatments: ...
- ☐ method of site repair and maximum allowable size of repair: ...

Omit if default (repair by either zinc metal thermal spraying, zinc rich epoxy or a *suitable* zinc rich paint, provided that the repaired surface receive an additional 30 µm over and above that required in terms of the specification; HDGASA recommends a practical repair area of ± a R5 coin) is acceptable.

- ☐ architectural work to be packaged: required / not required

### paint or varnish

SANS 12944 covers the following suitable surfaces for painting: uncoated steel; thermally sprayed with zinc, aluminium or their alloys; hot dip galvanized; zinc-electroplated; sherardized; prefabrication primed; other painted surfaces. Part 2 deals with the principal environments and the corrosivity of these environments to which steel structures are exposed: atmospheric corrosivity category: C1 very low / C2 low / C3 medium / C4 high / C5-I very high (industrial) / C5-M (marine); immersed category for water and soil: Im1 (fresh water) / Im2 (sea or brackish water) / Im3 (soil). Part 5 deals with paint systems.

- ☐ paint system: alkyd / chlorinated rubber / PVC / acrylic / epoxy / ethyl silicate / polyurethane / bitumen

Protective paint systems not covered: powder coating; stoving enamel; heat-cured paints; linings of tanks; products for the chemical treatment of surfaces.

## 5.4 Fire protection

The yield strength of steel is halved at temperatures exceeding 550°C. Consider placing columns outside building.

- ☐ protection of structural steel against fire: see drawings

reinforced concrete grade 25 / solid masonry / sprayed vermiculite-cement/perlite-cement / metal lath and plaster

**Relevant standards:**

SANS 1921 Construction and management requirements for works contracts.

SANS 10094 The use of high-strength friction-grip bolts.

SANS 10162 The structural use of steel.

SANS 14713 Protection against corrosion of iron and steel in structures – zinc and aluminium coatings – guidelines.

HDGASA code of practice no 1-1990 The Surface Preparation and Application of Organic Coatings to New, Unweathered Hot Dip Galvanized Steel (Sheet and Section) Excluding In-line Coil Coatings.

HDGASA code of practice no 2-1990 Specification for the Performance Requirements of Coating Systems Applied to New Unweathered Hot Dip Galvanized Steel (Sheet and Section) excluding In-line Coil Coating (Duplex Systems).

**NOTES on hot dip zinc coating thickness and service life:**

Consult the Hot Dip Galvanizer's Association of South Africa (HDGASA) for determination of high corrosivity areas.

All hot dip galvanising specifications state the minimum *suitable* coating thickness and not average coating thickness. The thickness actually achieved varies with steel composition and thickness of steel, and can range from the minimum up to >50% greater. As life expectancy predictions are normally based on the minimum coating thickness, they are usually conservative.

Hot dip galvanized coating on structural steel should in most cases provide a service-free life of 40 – 50 years. This is determined by dividing the minimum achieved coating thickness taken on the thinnest steel component by the corrosion rate per year for the location in question (see table).

HDGASA uses SANS /ISO 9223 to determine corrosivity categories, based on three factors:

1) Time of wetness, being the period that the zinc surface is covered by liquid containing the corrosive elements (electrolyte); 2) Airborne pollution containing sulphur dioxide (SO<sub>2</sub>); 3) Airborne pollution containing salinity, usually in the form of chlorides carried on prevailing sea winds.

| Estimated service life of hot dip galvanized steel complying with SANS 121 |                          |                                 |                                |                             |
|--|--------------------------|---------------------------------|--------------------------------|-----------------------------|
| Corrosivity Category ISO 9223  | Zinc corrosion rate / yr | 55 µm for steel 1.5 – 3mm thick | 70 µm for steel 3 – 6 mm thick | 85 µm for steel >6 mm thick |
| C 1 very low   | <0.1 µm                  | >100 yrs                        | >100 yrs                       | >100 yrs                    |
| C 2 low  | 0.1 – 0.7                | <78.5 yrs                       | >100 yrs                       | >100 yrs                    |
| C 3 medium   | 0.7 – 2.1                | 26 – 78.5 yrs                   | 33 – 100 yrs                   | 40 – >100 yrs               |
| C 4 high   | 2.1 – 4.2                | 13 – 26 yrs                     | 16 – 33 yrs                    | 20 – 40 yrs                 |
| C 5 very high  | 4.2 – 8.4                | 6.5 – 13 yrs                    | 8.3 – 16 yrs                   | 10 – 20 yrs                 |

Source: HDGASA Information sheet No 8.

Coating thickness in µm can be converted to approximate coating mass per unit area in g/m<sup>2</sup> by multiplying by the nominal density of the coating (7,2 g/cm<sup>3</sup>): thus 55 µm = 395 g/m<sup>2</sup>; 70 µm = 505 g/m<sup>2</sup>; 85 µm = 610 g/m<sup>2</sup>

Source: SANS 121 / SANS 14713.

Z275 is the designation for 275 g/m<sup>2</sup> zinc/surface area on both sides of steel sheet (for sheet that would mean 137.5 g/side) which equals a mean coating thickness of 19 µm. Similarly, Z450 equals 22 µm, and Z600 equals 43 µm).

## 6 Insulation, sealants, seals

### 6.1 Thermal insulation

#### 6.1.1 Materials

Consider insulation materials with recycled content, e.g. polystyrene, glass fibre, cellulose and polyester fibre. Consult TIASA (Thermal Insulation Association of SA) or EPSASA (Expanded Polystyrene Ass. of SA).

- ☐ type: bulk (rigid board, fibre matts or batts) / reflective (foil) / composite bulk / loose fill / pipe / spray foam
- ☐ required R-value/thickness: SANS 204

Show all insulation thicknesses on drawings. Actual R-value test results may be obtained from the South African Fenestration and Insulation Energy Rating Association (SAFIERA).

- ☐ required fire performance classification of thermally insulated building envelope systems: SANS 428

- ☐ combustability: A / B

A (non combustible); B (combustible)

- ☐ surface fire spread properties: 1 / 2 / 3 / 4 / 5 / 6

1 (no flame spread) / 2 – 6 (rapid flame spread)

- ☐ application: vertical / horizontal / vertical and horizontal / see drawings

Consult SANS 10400-T for fire performance requirements.

#### rigid board

- ☐ material: EPS / XPS / EPU
- ☐ expanded polystyrene (EPS) grade: 16D-85 / 24D-170 / 32D-225

16D-85 (standard); 24D-170 (high); 32D-225 (extra high) (density kg/m<sup>3</sup>—compressive strength kPa)

EPS is combustible on its own but claimed to be fire-safe in a masonry cavity with closed reveals (see EPSASA leaflet *EPS Cavity Wall Insulation*). EPS will resist the passage of moisture. Panel width: 600 mm; thicknesses: 25, 30, 40, 50 (ex stock), 60, 70, 80 (to order)

- ☐ face: plain / foil / ...
- ☐ edge: square / shiplap / tongue and groove

#### fibre mats/batts

- ☐ form: mats (flexible) / batts (rigid)
- ☐ face: plain / foil / ...

Typical fibres are mineral (rock wool, glass wool), synthetic (polyester, polyethylene), and natural (wool). Fibre insulation is not recommended in partial masonry cavity construction – consult manufacturer.

#### reflective foil

- ☐ reflective foil class: A / B / C / D

A (reinforced, both surfaces reflective), B (reinforced, one surface reflective), C (unreinforced, both surfaces reflective), D (unreinforced, one surface reflective). Foil may double as an effective vapour barrier. See additional notes on foil at end of this section.

The thermal resistance of reflective insulation varies with the direction of heat flow through it, i.e. vertical, horizontal or sloped, and the number and defined thickness of air spaces it faces. It is important that bright surfaces facing air spaces remain untarnished on at least one surface.

The difference in direction of heat flow is generally marginal for bulk insulation but can be pronounced for reflective insulation. Reflective insulation is more effective at reducing summer heat gain than reducing winter heat loss.

Reflective foils are valuable when used in combination with bulk insulation for improved performance. Composite bulk and reflective materials are available that combine some features of both types. Examples include foil bonded to bulk insulation, whether blankets, batts or boards, i.e. foil faced blankets, foil faced batts and foil faced boards.

### **metal faced insulation panels**

For use in buildings, cold rooms and hot rooms, interior and exterior.

- ☐ corrosion comparison index of panel-facing coating: 1 / 2 / 3 / 4
- ☐ core insulation: calcium silicate / mineral fibre / polyisocyanurate / polyphen / polystyrene / polyurethane / rockwool
- ☐ facing: chromadek / galvanized steel / PVC laminated galvanized steel / stainless steel / zincalume

Metal faced insulation panels are typically used in cold storage systems. Consult TPMA (Thermal Panel Manufacturer's Association).

### **loose fill**

- ☐ loose fill: pellets or granules / cellulose.

## **6.1.2 Installation**

- ☐ system: SANS 204 / rational design

### **masonry cavity wall insulation**

- ☐ type: full fill cavity / partial fill cavity / loose fill / see drawings

Insulation can be installed full fill in cavities in most areas where cavity walls are not required to prevent moisture migration, or where walls are plastered and painted or protected by roof overhangs of >750 mm.

Insulation should be installed partial fill in cavities where the cavity also serves as a moisture barrier against wind-driven rain, mostly in winter rainfall areas, but also in cases of exposed face brick walls in general (e.g. gable walls, walls without roof overhangs, high buildings).

In exposed walls, filling cavities with loose fill insulation may result in insulation becoming wet, losing its insulation value and causing dampness on the inner leaf.

Filling of concrete block cores with any type of insulation offers little energy savings since the majority of heat is conducted through the webs and mortar joints.

### **masonry wall external face insulation**

- ☐ masonry wall external face insulation: ...

Omit if default (patent system of EPS external insulation bonded and mechanically fixed to dry, sound and flat surface, finished with reinforced polymeric plaster) is acceptable, or specify alternative.

Installing insulation against internal face of envelope wall would result in losing capacitive insulation of internal leaf (thermal mass).

### **pitched roof/ceiling insulation**

- ☐ system: reflective foil under roof covering / bulk insulation on ceiling / foil + bulk / see drawings

### **flat roof insulation**

- ☐ material: rigid EPS insulation density 32D
- ☐ flat roof insulation position: over waterproofing / under screed

Insulation on flat trafficable concrete roofs should be firm enough to support the waterproofing system and foreseeable loadings, i.e. under screed. See Section 8 for further particulars.

### **floor insulation**

- ☐ under floor slab insulation: required / not required

In case of in-slab heating as required by SANS 204.

## 6.2 Vapour barriers

- ☐ type: ...
- ☐ position: see drawings

Clay brick and concrete block masonry is able to accommodate moisture migration (damp open), normally rendering a vapour barrier unnecessary. SANS 204 advises that designers should consider that interstitial condensation occurs in walling systems which are not able to prevent or accommodate moisture migration. Also, that artificial cooling of buildings in some climates can cause condensation to form inside the layers of the building envelope. Such condensation can cause significant structural or cosmetic damage to the envelope before it is detected. Associated mould growth may also create health risks to the occupants. Effective control of condensation is a complex issue. In some locations a fully sealed vapour barrier may need to be installed on the more humid, or generally warmer, side of the insulation.

## 6.3 Sound absorption

### materials

- ☐ structure-borne sound insulation: mineral fibre mats SANS 1381 / cork
- ☐ airborne sound absorption: mineral fibre mats SANS 1381 + perforated 10 mm plywood / plasterboard / hardboard / metal / see drawings.

## 6.4 Joint fillers/sealants

- ☐ joint filler/sealant colour: ...

Industrial sealants compatible with bitumen may not be available in SA.

Two-part sealants are generally more effective and costly than one-part sealants.

See also SANS 2001-CC1 for specification of waterstops.

## 6.5 Architectural seals

- ☐ type: patent extruded aluminium carriers with flexible seal inserts of synthetic rubber, rigid PVC, nylon brush filaments, polypropylene pile, or silicone rubber / patent PVC, pile or neoprene door and window frame seals / patent silicone intumescent seals (fire and smoke) / patent external extruded aluminium threshold plate seals

Architectural seals need careful study by the designer – consult supplier.

- ☐ aluminium extrusion finish: mill / anodised / painted
- ☐ intended use of seal: energy (draughts, dust, insects) / intumescent (fire and smoke) / acoustic (noise) / finger-pinch protection (schools, day-care centres) / threshold plate / access (mobility, disabled persons)

Intumescent seals are designed to expand when subjected to heat.

- ☐ duty level: light / medium / heavy

Duty level: light (domestic); medium (commercial); heavy (hospitals, airports, shopping malls).

- ☐ mounting: fully morticed / semi morticed / surface mounted / grooved.

NOTE: Additional notes on reflective foil thermal insulation:

The difference in direction of heat flow is generally marginal for bulk insulation but can be pronounced for reflective insulation. Reflective insulation is more effective at reducing summer heat gain than reducing winter heat loss.

The thermal resistance of reflective insulation varies with the direction of heat flow through it, i.e. vertical, horizontal or sloped, the number of air spaces and defined thicknesses of the air spaces. Furthermore, that the bright surfaces facing the air space/spaces remains untarnished on at least one surface.

Reflective foils are valuable when used in combination with bulk insulation for improved performance.

Composite bulk and reflective materials are available that combine some features of both types. Examples include foil bonded to bulk insulation, whether blankets, batts or boards, i.e. foil faced blankets, foil faced batts and foil faced boards.

## 7 Roof coverings, cladding

To be published: SANS 2001-CR2 Tiled and sheeted roofs.

### 7.1 General

☐ type of cover, cladding: see drawings

tile / profiled sheet / fully-supported sheet / thatch

☐ roof pitch: see drawings

Check minimum roof pitches with SANS 10400-L. Roof pitches below that recommended by the manufacturer can be achieved by laying plywood boarding over the rafters and covering with waterproofing before tiling. Check with manufacturer.

#### underlay

☐ underlay type: reflective foil / polymer / the subject of an active Agrément Certificate

See Section 6 for reflective foil. Reflective foil doubles as thermal insulation and should be first choice in hot climates.

### 7.2 Tile roofing/cladding

#### 7.2.1 Materials

☐ type of tile: concrete / clay / slate / fibre-cement / metal

##### concrete roof tiles

Concrete roof tiles have a mass of  $\pm 55 \text{ kg/m}^2$  laid.

☐ pattern and colour: ...

☐ type: plain / interlocking

☐ body colour or surface coating category: 1 / 2 / 3 / 4

1 (none); 2 (surface coating only); 3 (body colour only); 4 (both).

☐ finish: throughcolour / granular / sanded

##### clay roof tiles

☐ type: Broseley (plain) / Marseilles (interlocking) / ...

☐ colour: ...

##### natural slate tiles

☐ size, colour: ...

##### fibre-cement slates

☐ texture, colour: plain / textured / natural / ...

Mass of fibre-cement tiles is  $25 \text{ kg/m}^2$  laid.

##### metal roofing tiles

☐ material, finish: hot dip galvanized steel / aluminium alloy / stainless steel / coated / uncoated

##### fixing materials

☐ fixing materials: galvanized steel / stainless steel or aluminium

Galvanized steel in inland regions. Stainless steel or aluminium in *coastal regions* or corrosive atmospheres, except for clay tiles where all fixings shall be stainless steel.



## 7.2.2 Roof tiling

### preparation

- ☐ terrain category: 1 / 2 / 3 / 4

Terrain category 1: exposed open/ *coastal areas* (generally the area within 5km from the coast-line unless otherwise defined locally); 2: exposed with scattered obstructions; 3 : well-wooded areas and suburbs, town and industrial areas; 4: large city centres.

- ☐ design wind speed: 40 / 45 / 50 / 55 m/s
- ☐ height above ground / number of storeys: ...
- ☐ eaves: open / boarded

Eaves should be boarded in exposed terrains.

### laying

- ☐ tile: concrete / clay / slate / fibre-cement / metal
- ☐ valley gutter: open / concealed
- ☐ verge tiles: required / not required

### roof underlay

- ☐ roof underlay: required / not required

Underlays are strongly recommended in any area, and are mandatory in exposed and coastal terrains, depending on pitch. Not required for metal roof tiles.

SANS 204 states "all tile roofs in climatic zones 1, 2, 4 and 6 shall have a tile underlay or radiant barrier and the joints shall be sealed to prevent air infiltration and leakage".

## 7.3 Profiled sheet roofing/cladding

### 7.3.1 Metal sheet

Mass of metal sheet roofing is  $\pm 11$  kg/m<sup>2</sup>.

#### metal

- ☐ metal and coating: zinc-coated (galvanized) steel / AZ-coated steel / prepainted zinc coated steel / weathering steel / natural aluminium alloy / prepainted aluminium alloy / stainless steel / copper

Copper, aluminium, stainless steel or weathering steel should be used in environments where atmospheric corrosion is aggressive. Check availability, thickness and finish of these metals with manufacturer/ supplier.

#### profile

- ☐ profile: corrugated / box rib (IBR) / interlocking box rib / rib-trough/standing seam
- ☐ sheet length: single lengths per roof slope / standard lengths with overlap / single length standing seam over-ridge (see ridging)

Standard lengths (1,8 – 14 m) – check with manufacturer/ supplier.

Corrugated and IBR sheets in standard lengths with overlap causes less thermal movement stress on exposed fixings than long lengths.

#### steel

- ☐ nominal sheet thickness: 0,5 / 0,6 mm

Check availability of 0,8 mm sheets. 0,6 mm thick sheet costs  $\pm 16\%$  more than 0,5 mm.

- ☐ coating grade: Z275 / Z600 / AZ150 / AZ200

Z275 and AZ150 for inland regions, Z600 and AZ200 for coastal regions and aggressive atmospheres. Coiled sheeting with hot dip zinc coating (galvanising) class Z275 has an average zinc coating thickness of about 19µm; Z600 - 42µm. AZ coatings have increased corrosion resistance over zinc coating by 3 or 4. See notes on hot dip galvanising under Section 5 Structural Steel. Get expert advice from HDGASA or ARTF - SCRACE.

### **aluminium alloy**

- ☐ aluminium roofing sheet thickness: 0,6 (cladding only) / 0,7 / 0,8 / 0,9 mm

### **stainless steel**

- ☐ stainless steel thickness: 0,5 / 0,6 mm

### **copper**

- ☐ copper: 0,6 mm thick

### **prepainted metal**

- ☐ prepainted metal sheet type: 3 / 4 / 5a / 5b / 6a / 6b

Type 3 (mild to moderate rural, urban, tropical and industrial environments) / 4 (marine and industrial) / 5a (severe marine) / 5b (heavy industrial and industrial marine) / 6a very severe marine) / 6b (very severe industrial).

Coil coated and prepainted products are e.g. Chromadek or Chromadek Plus (Mittal Steel) for marine and industrial environments; there are several others. Paint coating more than doubles the life of sheets with metal coating only.

### **weathering steel (Cor-ten)**

- ☐ weathering steel: 0,8 mm

### **bullnosing**

- ☐ bullnosing radius: ...

Minimum radius about 500 mm (inside radius), depending on material, profile and sheet thickness.

### **roof ventilators**

- ☐ roof ventilator type, material, dimensions: ...

## **7.3.2 Fibre-cement sheet**

Mass of 5 mm thick fibre-cement sheets is 15 kg/m<sup>2</sup>. Purlins must be 50 x 76 mm at 1 200 max spacing on trusses/beams at 1 200 max spacing (SANS 10243). Finish fibre-cement sheets in *coastal areas* with an anti-fungicidal paint – see section 14 Painting.

- ☐ bullnosing radius: ...

## **7.3.3 Glass-reinforced polyester sheet**

See also SANS 141 GRP laminates.

- ☐ type: 1 / 2

1 (with weathering protection both sides) / 2 (ditto one side)

- ☐ class: W / WF

W (without fire-retardant properties) / WF (with fire-retardant properties)

SANS 10400-L: "skylights shall have a maximum opening area of 0,6 m<sup>2</sup> or, if in the form of a translucent roof sheet, an installed width of 700 mm".

- ☐ mass: 1,0 – 1,4 kg/m<sup>2</sup> (domestic) / 1,4 / 1,8 / 2,4 kg/m<sup>2</sup> (industrial)
- ☐ opacity: clear / opaque
- ☐ colour: ...
- ☐ profile: see drawings / to match roofing/cladding sheet / corrugated / IBR / ...

### 7.3.4 Polycarbonate sheet

- ☐ colour: ...
- ☐ thickness: 1,0 mm / 1,2 mm

1,0 mm (domestic) / 1,2 mm (industrial)

- ☐ profile: see drawings / to match roofing/cladding sheet / corrugated / IBR / ...

### 7.3.5 Fasteners and washers

- ☐ corrosion resistance class: 1 / 2 / 3 / 4

1 (general internal / 2 (general internal with significant condensation) / 3 external, mild to moderate industrial or marine) / 4 (external severe marine)

Identification of corrosive characteristics of the environment is essential.

Corrosion resistance class 2, 3 and 4 correspond with class C2, C3 and C4 of ISO 9223.

Some coating information for zinc and tin-zinc coated fasteners (corrosion resistance class, coating type, coating thickness in µm):

1, electroplated zinc (EZ), 4

2, EZ, 12

2, mech. plated zinc (MPZ), 17

3, EZ, 30

3, hot dip galv (HDG), 30

3, MPZ, 40

4, HDG, 50

4, MPZ, 45.

For full list see SANS 1273.

- ☐ type and size: hook-bolt / U-bolt / J-bolt / drive screw / self-tapping screw / *according to roofing material manufacturer's instruction*
- ☐ material: zinc-coated carbon steel / stainless steel.

### 7.3.6 Installation

#### exposed fixing

- ☐ box rib cladding: with rib against girt / with rib away from girt

#### lapping

Sealing of laps in sheeted roofs in climate zone 1, 2, 4 and 6 is mandatory (SANS 204)

## 7.4 Fully-supported metal sheet roofing and cladding

Flat metal sheet with standing seams on continuous solid boarding can follow any shape within limits of the boarding. The specification presented in PW371-A is for copper. Other materials are zinc, lead, aluminium or hot dip galvanized steel. Check material and fixing with specialists.

Boarding must be able to absorb condensation under roof sheet - use of chipboard or other dense boarding material will cause corrosion. Board thickness depends on span.

## 7.5 Thatch roofing

To be published: SANS 2001- Construction Works Part CR3: Thatch Roofing.

Cost of a thatch roof is 15 – 20 % higher than a conventional roof. Check insurance requirements.

Consider requesting that the work be done by a member of the South African Thatcher's Association.

Avoid penetrations of the roof area – place chimneys preferably at the ridge, ventilation pipes outside the exterior wall faces.

Thatch can be shaped and moulded.

- ☐ thatch type: grass / Cape reed (dekriet) / water reed

Local grass will weather better in the same climate from which it originates. Hyparrhenia and Hyparphilia species should last for 35 years. Thamnochortis species (Cape reed/dekriet) could last for 75 years. Also Phragmites Communis reed. 175 mm thick thatch weighs 35 kg/m<sup>2</sup>, about 40 bundles of grass per m<sup>2</sup>.

Roof pitch in general should not be less than 45 degrees, 40 degrees at dormers (SANS 10400-L).

After the maintenance period the roof should be serviced every 10 – 12 years, and a new layer of 70 – 100 mm thatch added after 35 years. The life of thatch will be prolonged by brushing with a thatch spade at 4 – 5 year intervals.

☐ wire sways: prohibited / allowed

Wire sways should not be used in roof construction in areas where lightning is a problem unless provided with a lightning protection system (See SANS 10400-T).

☐ ridding: thatch / sand-cement / fibreglass

☐ fire retardant treatment: none / pre-treatment / during construction / after installation

## **7.6 Flashings, trim**

Flashings to metal roofs should be similar to roof material to ensure same life to first maintenance and avoid electrolytic corrosion.

Counter flashings with an anti-capillary fold avoid electrolytic corrosion.

## **7.7 Fascias and barge boards**

☐ size: see drawings.

Relevant standards:

SANS 10062: The fixing of concrete roof tiles.

SANS 10237: Roof and side cladding.

SANS 1200 HB-Cladding and sheeting.

SANS10400-L Roofs.

SANS 10400-T Fire protection.

Concrete Roof Tiles – Technical Manual. Concrete Manufacturer's Association.

Guide to good thatching practice. Thatcher's Ass of SA.

## 8 Waterproofing

To be published: SANS 2001-EW Waterproofing.

### 8.1 Materials

This section covers the conventional system of waterproofing with membranes only. Damp proofing in masonry is covered in SANS 2001-CM1. Consult The Concrete Institute for the waterproofing of concrete with additives.

The Waterproofing Federation of South Africa is the industry representative body.

SANS 10021 is outdated but useful and hopefully to be revised.

Bituminous felt (SANS 92), mastic asphalt (SANS 297/298) and elastomeric membranes like butyl rubber (polyisobutylene, SANS 187), chloroprene rubber (SANS 580) and EPDM (Ethylene Propylene Diene Monomer) have been used in the past but have largely been replaced by polymer modified bitumen membranes. No national standard exists for polymer-modified bitumen membranes, but most systems are Agrément certified.

#### **reinforced bitumen membrane (RBM)**

- ☐ finish: plain / slate granular / metal foil: aluminium or copper

#### **self-adhesive plastic membrane (APM)**

- ☐ finish: plain / foil / granular / polyester fabric

Self-adhesive membranes are thin (1,5 mm), normally laid as single layer systems to be covered (not UV resistant, except with foil, granular or fabric finishes).

#### **reinforced liquid membrane (RLM)**

- ☐ in situ reinforced liquid system: acrylic emulsion / bitumen emulsion / cementitious

Acrylic or bitumen emulsion is suitable only for exposed roofs and parapet walls. Cementitious systems can only be applied to cementitious backgrounds and can be tiled directly.

#### **cavity drainage membrane**

Studded polypropylene or HDPE cavity drainage membranes allow damp or running water to travel behind the membrane to a controlled drainage system. They are lighter than conventional stone and geotextile, provide continuous drainage and act as slip/separation layer.

#### **slip/protection layers, geomembranes**

Check requirements for bituminous felt or HDPE slip/protection layers and thermoplastics geomembranes.

#### **outlets**

- ☐ outlet type: roof / small balcony / shower
- ☐ size: >75 mm.

### 8.2 Preparation

#### **falls**

SANS 10400-L: Slope of a (cast in situ) concrete roof should be achieved by casting the concrete to the required fall, eliminating the need for a screed which may be susceptible to cracking and resultant spreading of leaks.

Falls in flat timber roofs should be created in the rafter/beam design and not by raising purlins.

Show ridges, valleys and falls clearly in drawings.

SANS 10400-L Roofs stipulates a design fall of 1:50, allowing for construction inaccuracies and deflection under dead or imposed loads.

## balconies

Ensure balconies are at a sufficiently lower level than door thresholds to allow for the screed or topping to be minimum 50 mm thick, and have sufficient fall to outlet(s).

Balustrades are best fixed to front of upstands.

Balcony door thresholds exposed to rain: waterproofing should be continued up against threshold and finished under door frame

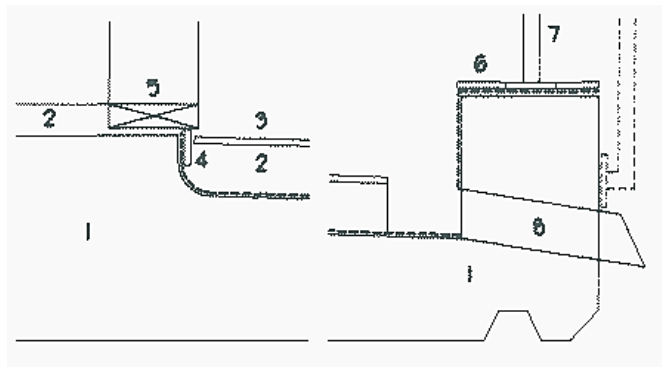


Diagram: Section through a balcony

1 concrete slab; 2 screed (optional); 3 tiles in adhesive on screed or bonded to waterproofing; 4 soft joint/sealant; 5 sliding door frame; 6 tiles bonded to waterproofing; 7 balustrade; 8 outlet.

## outlets

Outlets set lower than their surroundings to prevent ponding: SANS 10400-L 4.3.2.4

SANS 10400-L: "attention should be given to the provision of ventilation to allow moist air, which might accumulate below the waterproofing layer, to be vented to the outside air". Check with manufacturer/supplier.

## 8.3 Application

For basement construction see SANS 10021. Basement floors and walls may be tanked, or formed with a cavity construction combined with drainage or pumping, or both, or may be constructed with cavity drainage membranes.

### 8.3.2 Termination

Bonding waterproofing with DPC's should be considered in winter rainfall areas. DPC's should be the same material as the waterproofing and have sufficient overhang to facilitate overlapping and bonding.

Balcony door thresholds exposed to rain are a common cause of leakage. Waterproofing should be taken up against thresholds and finished under the door frame and sealed.

## 1.5 Waterproofing surface finishes/protection

Protection against UV degradation, traffic and hail prolongs life expectancy of membranes. No protection required to exposed bitumen membranes with slate granular or metal foil finishes.

### 8.5.1 Exposed non-trafficable areas

□ type finish/protection: see drawings

paint / crushed stone / crushed stone on insulation panels / tiled insulation panels

#### paint

Acrylic does not adhere well to new bituminous-based systems.

#### crushed stone

A layer of gravel protects waterproofing and acts as anchor, but makes leaks difficult to trace. Thermal insulation value of gravel layer on its own is slight.

**tiled insulation panels**

Thermal insulation should be placed over the waterproofing ("inverted roof"), protecting it from high temperature fluctuation, ultraviolet degradation and mechanical damage, while allowing easy visual inspection of the waterproofing when laid loose.

Depending on tile mass, loose-laid tiled insulation panels should be installed only on flat roofs protected against wind by perimeter upstands. Tiles should be fully vitrified to withstand freeze-thaw cycles and should be sturdy enough to withstand handling and maintenance foot traffic. Panel size depends on multiples of tile size. Panels could float during heavy downfalls. Panels are easily removed for inspection and maintenance.

**8.5.2 Pedestrian traffic areas**

- ☐ type finish/protection: see drawings

topping / topping on insulation panels / tiles on screed / tiles on waterproofing / paving slabs on insulation panels / paving slabs on adjustable pads

Paving units are suitable for trafficable roofs, and for roof gardens and planters where waterproofing may be damaged by garden tools.

Paving on adjustable pads can be easily removed for inspection/repair, and the air space provides considerable thermal downward insulation. Paving slabs need to be sturdy, depending on traffic.

**thermal insulation panels**

- ☐ lay finish on thermal insulation panels: required / not required

**tiles on waterproofing**

- ☐ tile type, size: ...

See Section 12 Tiling.

**paving slabs on adjustable pads**

- ☐ paving surface levels: see drawings

**8.5.3 Vehicular traffic areas**

- ☐ type finish/protection: see drawings

50 mm premix laid directly onto waterproofing / brick or concrete pavers laid on 25 – 30 mm sand bed (see Section 21 External works) / 75 mm concrete paving on protection/slip layer (see Section 2 Concrete works)

**8.5.4 Basement, retaining walls**

- ☐ before backfilling, protect waterproofing with: softboard / hardboard / cavity drainage membrane / masonry leaf
- ☐ drainage system behind wall: ...

Omit if not agricultural drain encased in stone as specified.

**8.5.5 Planters, roof gardens**

- ☐ type finish/protection: 100–150 mm layer stone with geocomposite drainage layer with minimum mass of 210 g/m<sup>2</sup> laid on top / cavity drainage membrane laid directly on waterproofing.

Relevant standards:

SANS 10021 Waterproofing of buildings (including damp-proofing and vapour barrier installation).

SANS 10400-L Roofs.

BS.8102:2009 - Protection of Below Ground Structures against Water from the Ground.

GP Koning. *The Waterproofing of Buildings*. PO Box 26153 Hout Bay 76872.



## 9 Ceilings, linings, partitions, access flooring

To be published: SANS 2001- Construction Works Part EC1: Ceilings, partitions, access flooring.

### 9.1 Brandered ceilings

#### 9.1.1 Branders, grounds

- ☐ type: timber / steel

##### timber branders/grounds

SANS 2001-CT2 (and SANS 10400-L) covers the fixing of timber brandering to roofing members to support ceilings that comprise gypsum plasterboard, fibre-cement board or similar boards only: "Brandering of size 38 mm x 38 mm required to support gypsum plasterboard, fibre-cement board or similar board shall be securely spiked to the supporting timbers with 75 mm wire nails. Cross brandering shall be cut in between the longitudinal brandering and skew nailed to the same, using 75 mm wire nails at centres that do not exceed 900 mm".

Grounds for wall linings: depth of 25 mm may be influenced by thickness of required insulation, services.

##### steel branders

Steel brandering is ideal for bulkhead construction.

- ☐ perimeter trim: standard / shadowline.

#### 9.1.2 Fibre cement and gypsum board brandered ceilings

- ☐ type: fibre-cement / gypsum

##### fibre-cement board

Flat fibre-cement boards are made with organic fibres, plain or textured, and are water and fire resistant.

##### gypsum board

Gypsum board is non-comustible. Standard board should not be exposed to contact with water – do not use in industrial bathrooms or kitchens, or in exterior applications. For high moisture conditions use moisture resistant board. For fire resistance use X-rated board. Use double layers where acoustic insulation is required.

- ☐ type: standard / moisture resistant / fire rated
- ☐ edge: square / tapered

Use tapered edge board for scrim and plaster joints when full ceiling surface is not to be plastered.

##### cornices

- ☐ material, size: coved gypsum 75 mm wide / ditto 125 mm wide / coved polystyrene cornice / foam moulded / hardwood / softwood, profile ...

##### cover strips

- ☐ joint cover strips: H-profile: prepainted galvanized steel, aluzinc or plastic / gypsum board / hardwood: specie ...; profile, size: see drawings

Omit if ceiling is plastered.

##### fixing

- ☐ board pattern: see drawings

Omit if not visible or default (symmetrical about room) is acceptable.

- ☐ position of movement/control joints: see drawings

movement/control joints should be a clean break of 15 mm through the complete ceiling structure and finish.

### **finish**

- ☐ finish to plaster board ceiling: plain with cover strips / plain with plastered joints / entire ceiling plastered

### **9.1.3 Wood board brandered ceilings, linings**

- ☐ type of board: tongue and groove / strip / plywood / perforated plywood

#### **tongue and groove board (SANS 1039)**

- ☐ species: softwood / hardwood / species ...
- ☐ grade: clear / select / knotty
- ☐ profile: see drawings

See SANS 1039 for various profiles.

- ☐ face width: 50 / 65 / 75 / 102 / 140 mm
- ☐ thickness: ceiling board: 12 / 16; panelling 12 / 16 / 22 mm

#### **wood strip, trim**

- ☐ strip spacing: see drawings

#### **plywood**

- ☐ exposure class: 1 / 2 / 3 / 4

1 (exterior); 2 (semi-exterior); 3 (humid interior); 4 (dry interior).

- ☐ veneer species: ...
- ☐ cut: rotary / sliced
- ☐ grade: S / A / B

S (select, for decorative applications), A (furniture, for joinery where it may be reworked), B (standard, to be covered, coated or painted).

- ☐ perforations: size, spacing: ...

For effect and/or acoustic control.

### **fixing**

- ☐ position of ceiling: see drawings

above / in between / below roof beams

- ☐ strip spacing: ...
- ☐ cornice, trim size and profile: ...

### **9.1.4 Hatches**

- ☐ position of ceiling hatches: see drawings

See note on geyser position under Section 18.

- ☐ trap door: hinged / laid loose

## **9.2 Suspended ceilings**

Consult SABISA (South African Building Interior Systems Association, part of the AAAMSA group).

- ☐ type: board / fabric / louvre / grid / bulkhead
- ☐ material: mineral fibre / metal / ...

### **performance**

- ☐ required fire resistance in minutes: see drawings

20 / 30 / 60 / 90 / 120 / 180 / 240

See also note under 9.3.

- ☐ required airborne sound insulation grading dB: see drawings

30 / 35 / 40 / 45 / 50

For noise measurement and rating consult SANS 10103.

See also note under 9.3.

### **board**

- ☐ type: plain / perforated / smoke-tight / impact-proof (e.g. ball) / removable / fold-down / drop-and-slide
- ☐ material: mineral fibre / gypsum / fibre cement / metal / vinyl clad / grid / flush plaster
- ☐ mineral fibre edge: square / revealed square / bevelled concealed / concealed



- ☐ size: see drawings
- ☐ colour: ...
- ☐ texture: plain / fissured / perforated
- ☐ finish: ...
- ☐ ceiling panels: removable and replaceable from below / fixed / as required for maintenance

### **suspension fittings**

- ☐ suspension system: patent / rational design

### **installation**

- ☐ grid pattern: see drawings

### **access**

- ☐ access: see drawings

Access depends on hold-down system, panel removability, access requirements to above-ceiling services, weight of ceiling panels. Discuss with manufacturer/supplier.

## **9.3 Partitions, linings**

- ☐ type: see drawings

drywall / light weight internal wall / demountable / cubicle / operable

### **performance**

- ☐ required fire resistance in minutes: see drawings

20 / 30 / 60 / 90 / 120 / 180 / 240

Fire resistance: SANS 10400 Part T classifies the performance of materials in respect of fire resistance in categories of 20, 30, 60, 90, 120, 180 and 240 minutes. Architect/*Competent Person* to specify. Fire resistance is achieved by increasing layers of board. Deflection requirements are achieved by multiple studs reinforced with layers of board. Check with SABISA.

- ☐ required sound insulation grading dB: see drawings

30 / 35 / 40 / 45 / 50

30 (normal speech audible, but unintelligible), 35 (loud speech understood), 40 (loud speech audible, but unintelligible), 45 (loud speech barely audible), 50 (shouting barely audible)

Comparable constructions: 26 (solid wood door without seals), 32 (6 mm laminated glass), 42 (100 mm brick wall), 48 (230 mm hollow concrete wall).

For noise measurement consult SANS 10103.

### 9.3.1 Materials

#### **gypsum plasterboard**

- ☐ type: wallboard / moisture resistant wallboard / high-temperature wallboard

Moisture resistant board for use in all wet areas such as bathroom showers as well as locations with high humidity levels.

- ☐ thickness: 12 / 15 mm
- ☐ type of edge: square / tapered / bevelled / rounded
- ☐ covering: paper backed vinyl of weight in g/m<sup>2</sup> : ...

fibre cement board

- ☐ type: MD / HD

flat unpressed (MD), flat pressed (HD).

- ☐ thickness: 9 mm

#### **studs and tracks**

- ☐ material: metal / wood

#### **aluminium extrusions**

- ☐ abrasion resistance: required / not required
- ☐ colour: natural / anodized

#### **anodising**

- ☐ anodising grade SANS 1407: AG10 / AG15 / AG20 / AG25

grade AG10 (0,1 mm thick), for interior use only; AG15 and 20 for mild atmospheric conditions; AG25 where little or no deterioration is permitted. According to ASFA (Aluminium Surface Finishers Association), SANS 1407 is suitable for internal use only.

- ☐ abrasion resistance when relevant: required / not required
- ☐ colour: ...

#### **powder coating**

- ☐ SANS 1274 type: 1 / 2

1 (heavy duty interior), 2 (interior and non-corrosive conditions).

- ☐ colour: ...
- ☐ finish: matt / satin / high gloss / hammertone / textured

#### **glass**

- ☐ type: see drawings

float glass / wired / patterned / safety

See GLAZING

- ☐ thickness: see drawings

### 9.3.2 Drywall partitions, light weight internal walls

- ☐ framing: timber / steel
- ☐ cladding: gypsum board / fibre cement board
- ☐ gypsum board cladding finish: vinyl / paint / tile

For cladding finish of appropriate type to suit expected traffic in designated areas, refer to manufacturer for recommendations.

- ☐ door/window frame finish: anodising / powder coating
- ☐ glazing: clear / opaque / patterned / safety

### 9.3.3 Demountable partitions

- ☐ framing: steel / aluminium
- ☐ exposed frame finish: anodized aluminium / powder coating
- ☐ cladding: gypsum plasterboard / melamine-faced board / ...
- ☐ cladding finish: vinyl / paint
- ☐ glazing: clear / opaque / patterned / safety

### 9.3.4 Cubicle partitions

- ☐ mounting: flush floor / raised on stainless steel stiles
- ☐ panels: vitreous enamel / melamine faced
- ☐ hinge type: normal butt / rising butt
- ☐ accessories: indicator bolt / coat hook / ...

### 9.3.5 Operable partitions

- ☐ operation: individual panels / hinged paired panels
- ☐ accessories: pass doors / work surfaces (chalkboard, dry marker board, tackboard) / pocket doors (to hide stacked panels).

## 9.4 Raised access flooring

Annex B and C of SANS 1549 gives information on quality verification of components; electrical properties; fire protection and safety; special panels; surface of completed installation; moving and placing of safes and other heavy equipment.

NOTE: this standard has been withdrawn but is regarded by industry as superior to the new (European) standard (SANS 52825). Check with supplier.

- ☐ required fire resistance in minutes: see drawings

20 / 30 / 60 / 90 / 120 / 180 / 240

See note under Section 9.3.

- ☐ required sound insulation grading in dB: see drawings

30 / 35 / 40 / 45 / 50

See note under Section 9.3.

- ☐ class: A / B / C

Class: A, B or C depending on static or dynamic loads. Check with manufacturer.

- ☐ floor panel covering: heavy duty high pressure laminate on particle board P6 / textile / ...
- ☐ degree of corrosion resistance if other than default : ...
- ☐ clear height to underside of floor: see drawings
- ☐ required life of covering: ...
- ☐ details of special floor panels: see drawings
- ☐ whether floor assembly forms part of a plenum system: ...
- ☐ lifting devices: required / not required.

Relevant standards: SANS 10400-L Roofs.

SANS 10218 Acoustical properties of buildings.

SANS 10103 The measurement and rating of environmental noise with respect to annoyance and to speech communication.

SANS 52825 / EN 12825 Raised access floors.

# 10 Windows, doors, curtain walls, skylights, solar control

## 10.1 Performance

### mechanical performance

- ☐ site category: 1 / 2 / 3 / 4

Design wind pressure must be specified in terms of SANS 10160. It is derived from the site category and height above ground. Site categories are: 1: open sea, lake shores, flat treeless plains; 2: airfields, parklands, farmlands, outskirts of towns and suburbs; 3 and 4: built-up areas or city centres.

- ☐ height above ground: ...  
☐ plastic, shrinkage and creep deflection of floor slabs: ...

Omit if not relevant. If relevant (curtain walling/ window walling), deflection of floor slabs MUST be specified by a structural engineer.

### thermal performance

- ☐ fenestration unit conductance: see drawings  
☐ fenestration unit SHGC: see drawings

Actual Conductance and SHGF-value test results for fenestration units may be obtained from the South African Fenestration and Insulation Energy Rating Association (SAFIERA), representative of the National Fenestration Rating Council (NFRC) in the USA.

### fire resistance

- ☐ fire resistance: ...

### sound insulation

- ☐ sound insulation: ...

## General requirements

- ☐ type: see drawings

residential / industrial / stock / purpose made

- ☐ type opening section: see drawings

casement / sliding / sash / tilt-and-turn / pivot

- ☐ handing, whether viewed from inside or outside, including proportion of vertically pivoted casements that opens outwards: see drawings  
☐ frame material: see drawings

hot-rolled steel / cold-rolled steel / pressed steel / aluminium / wood / polymer / polymer concrete / composite

Aluminium is durable with low maintenance but highly heat conductive – frames with thermal breaks are acceptable. Wood has good insulating values and strength, but needs regular maintenance. Polymer frames are maintenance free with good insulation value.

- ☐ glazing from inside: see drawings

For windows not accessible from outside.

- ☐ shape and size: see drawings  
☐ glazing bars: see drawings  
☐ burglar bars: ...

to all opening sections / to complete window

Ensure extent to which openable sections can open is acceptable.

- ☐ pattern: see drawings

- ☐ insect screens: see drawings
- ☐ glazing: see drawings

See Section 17.

- ☐ sealants and seals: ...

see Section 6.

- ☐ hardware and fixings: see drawings

Hinges (ordinary or projecting), handles, stays, catches, bolts etc.: see also Section 16.

- ☐ additional security devices: ...

### **building in**

Best way to fit single aluminium frame units is to build in steel or timber subframes, finish all wet trades, and fit window or door at last possible stage. If built in early, protection of frames against damage is required. Another good method is to build and finish openings and make and fit frames to measure – thus also making it possible to fit at last possible moment. Screw fitting of frames can only be done before glazing. Discuss with supplier/installer.

## **10.3 Steel frame units**

- ☐ factory finish: primed / hot dip galvanized

See notes on zinc coating under Structural Steelwork.

### **10.3.1 Hot-rolled steel framed units (SANS 727)**

Hot-rolled steel frames are not thermal performance rated and will not meet air leakage requirements as specified in SANS 10400 XA or SANS 613 without weather seals. See also cold-rolled steel framed units.

### **10.3.2 Cell windows**

All manganese bars shall display the trade mark TISAT3030tm visible for identification on site.

### **10.3.3 Pressed steel clisco type window frames (SANS 1311)**

- ☐ type: A / B

A (single rebate surround) / B (double rebate surround)

### **10.3.4 Pressed steel door frames (SANS 1129)**

- ☐ type: see drawings

single leaf door without fanlight / ditto with fanlight / double door without fanlight / ditto with fanlight / door and frame combination

- ☐ material of lock strike plate: chromium/cadmium plated steel / brass
- ☐ hinges: steel / brass
- ☐ handing: see drawings
- ☐ size: see drawings
- ☐ type of profile: see drawings

single rebate / double rebate / half wall width / full wall width

- ☐ fanlight: see drawings

fixed, with glazing beads / opening hinged bottom / opening hinged top

- ☐ type of lock/latch: see drawings

### **additional clauses**

Frames for power floated floors need to be shorter, and temporary bracing has to be removed after fixing.

## 10.4 Cold-rolled steel frame units

Cold rolled steel frames may meet air leakage requirements as specified in SANS 10400 XA or SANS 613. Check with manufacturer/supplier.

## 10.5 Aluminium frame units

- ☐ performance class: A1 / A2 / A3

A1 (residential and light commercial); A2 (commercial); A3 (monumental).

Aluminium framed windows, doors and shopfronts manufactured according to the minimum requirements of the Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA) are mark-bearing with the mark and number of the test certificate issued by AAAMSA. Consult AAAMSA General Specification for Glazed Architectural Products (Including Energy Efficiency Design for Fenestration).

- ☐ frame surface finish: anodised / powder coated / liquid organic coated

Anodising is a harder and more abrasion-resistant finish than powder coating, but has a limited choice of six colours (natural through four shades of metallic bronze to black). Colours are light fast but never identical and virtually impossible to match with older or other finishes. Anodising is susceptible to mortar and lime attack during construction. Consult AAAMSA or the Aluminium Surface Finishers Association (ASFA) for the selection of anodized and powder coating thicknesses.

- ☐ anodising grade: AA15 / AA25

Grade: AA15 (0,015 mm thick, for mild atmospheric conditions in rural environments), AA25 (0,025 mm thick, for polluted atmosphere, sites within 5 km from chemical plants, coastal regions within 25 km from the sea, marine conditions, windy areas where sand causes abrasion). See AAAMSA Surface Finishes.

- ☐ powder coating colour: ... ; gloss category/finish: mat / satin / high gloss / hammertone / textured.

### 10.5.1 Windows and glazed doors

- ☐ colour of gaskets and weatherstrips: black
- ☐ weatherstrips: renewable.

### 10.5.2 Skylights

No national standard on skylights exists. The Skylight Association of Southern Africa (SASA, part of the AAAMSA group) is the industry representative body. Consider heat transmission, glare, UV radiation and ventilation carefully. Provide *drawings* at time of tender, if available.

- ☐ type, shape: see drawings

sloped / pitched / arched / domed / single / composite / openable

- ☐ size: see drawings

SANS 10400-L: "skylights shall have a maximum opening area of 0,6 m<sup>2</sup> or, if in the form of a translucent roof sheet, an installed width of 700 mm".

- ☐ slope: see drawings

To ensure proper condensation and water infiltration control, and to minimize the accumulation of dirt, inclination of glazing materials should be 15° minimum. Sloping glazing to have sufficient overhang to shed rainwater from significant vertical surfaces.

- ☐ frame: powder-coated steel / natural aluminium / anodized aluminium / powder-coated aluminium / painted wood / varnished wood
- ☐ glazing: glass / polycarbonate / acrylic
- ☐ mounting: flush / curb / integral
- ☐ fixed or operable: ...

### 10.5.3 Curtain walling

- ☐ curtain walling type: ...



site assembled continuous mullions with discontinuous transoms with infill glazing and panels / prefabricated units of framework, glazing and panels / rational design / submit proposals

☐ curtain walling panel construction: ...

external finish / internal finish / core insulation / combustability / surface fire spread.

## **10.6 Adjustable glass louvre windows**

☐ operation: manual / remote control.

## **10.7 Wood frame units**

No national standard exists on wood frame doors and windows, but check compliance with SANS 613. Wood frames should be protected from rain by adequate roof overhangs or extended lintels with drips.

☐ wood species: ...

☐ profile and dimensions: see drawings

## **10.8 PVC-U frame units (SANS 1553)**

☐ profile and dimensions: see drawings

☐ surface finish: matt / glossy.

## **10.9 Polymer concrete frame units**

☐ profile and dimensions: see drawings

☐ surface finish: ...

☐ sub- and opening frame material: aluminium / cold rolled steel.

## **10.10 Wood doors (SANS 545)**

☐ type of door: see drawings

balanced / batten / flush / casement / prehung / security-view / louvre / patterned / screen / sliding / special / stable / cupboard / X-ray / single / paired single swing / paired double swing

☐ dimensions: see drawings

610 / 762 / 813 / 864 mm x 457 / 2032 x 40/44 mm

457 mm high doors for cupboards. Entry doors for disabled persons in wheelchairs must be at least 813 mm wide.

☐ handing: see drawings

Hand refers to position of hinge when door opens towards viewer. Show first opening leaf of paired doors when important.

☐ exposure class: see drawings

2 / 3 / 4

2 (semi-exterior, partly or wholly exposed at infrequent intervals to unprotected open air conditions); 3 (humid interior); 4 (dry interior). Note there is no exposure class 1. Hardwood framed and braced batten doors are heavy duty doors, suitable for exposure class 2.

### **flush panel doors**

☐ performance class: see drawings

LD / MD / HD

LD (light duty, hollow core) / MD (medium duty, semi-solid core) / HD (heavy duty, solid core)

Solid core flush panel doors are heavy duty doors suitable for dry interior use only – specify for frequent use and abuse, e.g. schools, public places, hospitals.

Semi-solid flush panel doors are medium duty doors suitable for dry interior use only - specify for general use in office blocks, dwellings, barracks and single quarters, including cupboard doors.

Hollow core flush panel doors are light duty doors suitable for dry interior use only – specify for dwellings or cupboard doors in dwellings only.

☐ any special properties: ...

- ☐ finish, and wood species when relevant: see drawings

fibre board / sapele mahogany veneer / plywood / coating

Do not specify veneer when door is to be painted. Other commercial veneer species: maple, cherrywood, beech – check with suppliers.

### 10.11 Fire doors and fire shutters (SANS 1253)

- ☐ class (fire resistance in minutes) : see drawings

A / B / C / D / E / F

A (60 min) / B or C or D (120 min) / E or F (30 min)

- ☐ type door: see drawings

single / double / swing / sliding

Manually operated sliding fire doors are normally parked in open position, closing only in event of a fire by means of a fusible link or electric magnet.

- ☐ type of closing device: see drawings

fusible link / electric magnet

Electrical operation is recommended for larger doors that are frequently used.

- ☐ handing: see drawings

Doors forming part of fire escape routes must open in direction of route.

- ☐ size: see drawings

Maximum 4 x 4 m.

- ☐ finish: see drawings

hardboard / galvanized steel cladding

Galvanized steel for heavy duty and external doors or corrosive conditions.

### 10.12 Garage doors

- ☐ type: up-and-over / sectional overhead / sliding / swing
- ☐ size: single / double
- ☐ framework material: steel / wood
- ☐ cladding/boarding material: hardwood / aluminium / prepainted galvanised steel / primed steel
- ☐ operation: manual / electric / chain drive / hand crank
- ☐ finish: varnish/sealer / paint / powder coated / anodised / epoxy coated
- ☐ locking devices: chrome plated centre lock with spring loaded side catches, interior/exterior padlock bolt and keep / automated (no locking device required)

#### sectional overhead doors

- ☐ panels: aluminium / aluminium/zinc / galvanised mild steel / prepainted galvanised mild steel / hardwood / glass
- ☐ specialised applications for solid doors: fire-doors SANS 1253 class ... / with fusible link, permanently open / gas leak proof / tornado wind resistant / high-frequency / petrol bomb resistant / acoustic control.

### 10.13 Roller shutter doors

Roller shutter doors are *suitable* for from counter closures to aircraft hangars, and may be used for security, fire, smoke, gas, wind and bomb control.

Push-up operation is limited to 7,5 m<sup>2</sup>; chain 8 – 30 m<sup>2</sup>; crank to 25 m<sup>2</sup>; electrical to any size.

- ☐ size: see drawings
- ☐ operation: push-up / chain / crank / electric

- ☐ slats: steel / aluminium / solid / see-through/ventilated / double wall / grille / with end-locks
- ☐ grill pattern: ...
- ☐ finish: mill / hot dip galvanised / wet spray / anodised / powder coated
- ☐ canopy enclosing rolling mechanism: required / not required
- ☐ bottom bar in case of sloping floor: sloping / with flexible weatherstrip
- ☐ locking devices: side bolt at waste height / external pad bolt / centre lift lock with external key and internal knob operation / floor level four point slide bolts
- ☐ wicket door 685 x 1830 mm: opening in / opening out
- ☐ additional features required: card readers / inductive loop circuits / automation
- ☐ specialised applications for solid doors: not required / fire-door SANS 1253 class ... / with fusible link, permanently open / gas leak proof / tornado wind resistant / high-frequency / petrol bomb resistant / floor shutter / acoustic control .

## 10.14 Strongroom/record room doors, ventilators

- ☐ type: see drawings

strongroom / vault / record room

### strongroom and vault doors (SANS 949)

- ☐ category strongroom doors: 1 / 2 / 2 ADM

Category: 1 (fire resistance 30 minutes, entry resistance 15 minutes), 2 (30 minutes, 1 h), 2 ADM (anti-disc cutter material)

- ☐ category vault doors: 1 / 2 / 2 ADM / 3 / 4 / 5

Category 3, 4 and 5 resist increasing levels of attack.

- ☐ dimensions: see drawings
- ☐ fittings: see drawings
- ☐ handing: see drawings
- ☐ type and number of locks if other than specified: ...
- ☐ factory finish: primer only / baked enamel / hammertone

### fire-resisting record room doors (SANS 1015)

- ☐ type of lock if other than specified: ...
- ☐ finish: baked enamel / hammertone.

## 10.15 Solar control

- ☐ type: internal / external / fixed / retractable / awning / canopy / blind / louvre
- ☐ material: fabric / metal / concrete / glass
- ☐ fabric: UV-resistant, washable, rot-proof

- ☐ visible transmission: ...
- ☐ solar transmission: ...

- ☐ metal: aluminium / prepainted hot dip galvanized steel
- ☐ louvre: fixed / adjustable
- ☐ operation when relevant: manual / automated / from inside.

Relevant standards:

SANS 10400-O Lighting and Ventilation.

SANS 204 Energy efficiency in buildings

# 11 Plaster, screeds, toppings, terrazzo

## 11.1 Plaster

□ type: see drawings

cement plaster / gypsum plaster / lime plaster / insulating plaster / barite plaster / waterproof plaster.

### 11.1.1 Cement plaster (SANS 2001 EM1)

SANS 2001- Construction Works Part EM1: Cement Plaster Admixtures are not permitted in cement plasters to improve workability or improve the properties of the finished plaster.

Specification data:

□ application: single coat / multicoat

□ finish to cement plaster: smooth / textured / roughcast / bagged / skimmed

Show in drawings: V-joints through full plaster thickness at dpc level and where different materials meet; metal lath strips over roof anchors on single leaf masonry walls, or across joints between different materials – see SANS 2001-EM1.

### 11.1.2 Gypsum plaster

Do not mix gypsum-based plaster with plaster made with common cement – the sulphate compound in gypsum attacks common cement paste.

### 11.1.4 Insulating plaster

□ low density aggregate density range: 60 – 160 / 120 – 240 / 450 – 720 kg/m<sup>3</sup>

60 – 160 (exfoliated vermiculite); 120 – 240 (perlite); 450 – 720 (foamed slag).

Omit if default (800 – 960 kg/m<sup>3</sup> (clinker) covered in SANS 2001-EM1) is acceptable.

Barite plaster for use in X-ray rooms. Thickness for general diagnostic X-ray work normally between 15 and 30 mm. Check mix and thickness with requirements.

### 11.1.6 Accessories

□ expanded metal, type: sheet/plate / angle bead / base bead / corner mesh / plaster lath / plaster stop / rib lath / strip mesh

□ angle rounded corner protection: 1 500 x 1,0 x 35 mm girth strip, position: see drawings.

## 11.2 Screeds, toppings, terrazzo

To be published: SANS 2001-EM2 Screeds and toppings.

Screed is a layer of a well-compacted mixture of cement and fine aggregate applied to a concrete base, *suitable* for receiving a floor finish.

Topping is a layer of high-strength concrete designed to provide a dense, abrasion-resistant surface on a concrete base.

Terrazzo is a hard-wearing decorative concrete finish in which crushed or uncrushed aggregate like marble and pigments is used, and of which the surface is generally ground and polished.

Specify screed or topping only where a direct-finished one-course concrete floor is impracticable.

### 11.2.1 Materials

#### proprietary surface treatments

Treatments to harden or seal the surface of toppings are not normally required, provided a sufficiently high grade of properly finished concrete is used. They may however be useful in dust sensitive areas or where oil spills or mildly acidic solutions may occur. Expert advice should be sought from the manufacturer/supplier.

- ☐ form: dry shake / coating / screed
- ☐ to improve: abrasion resistance / chemical impact resistance / slip resistance / density / UV resistance
- ☐ colour/finish: ...

### **mesh reinforcement**

- ☐ mesh reinforcement: ...

Mesh reinforcement may be required to restrain differential shrinkage stresses and control cracking on precast concrete elements – not normally required.

### **water**

- ☐ water: SANS 51008

Omit if default (drinking water) is acceptable.

## **11.2.2 Mix**

### **topping**

- ☐ concrete grade: see drawings

20 / 30 / 40 / 50

Topping: 1 part cement to 1½ parts sand to 1½ parts stone would produce a concrete strength of 25 – 30 MPa. Use concrete of at least grade 20 where abrasion resistance is not a consideration; grade 30 for floors for light duty industrial and commercial purposes; 40 for ditto medium duty; 50 for heavy duty industrial, workshops, special commercial; very heavy duty engineering workshops would require a proprietary topping. Consult The Concrete Institute for advice.

## **11.2.4 Laying**

Method of laying as described here is known as "separate bonded construction", where the topping or screed is laid on and bonded to a hardened base. For other methods, for example monolithic construction, and separate unbonded construction, consult SANS 10109 part 2.

Compaction of the mix is most important. Stiff semi-dry mixes not well compacted are a common cause of bond failure. Compact stiff mixes with power-operated equipment such as vibrating screed boards.

Joints in screeds should be minimal. Screeds laid in large areas may crack, but this is more acceptable than curling at edges of small panels.

- ☐ screed thickness: see drawings

25 – 50 mm

- ☐ topping thickness: see drawings

25 – 40 mm

- ☐ edge/feature/dividing strips: see drawings.

## **11.2.5 Finishing**

- ☐ type of finish: ordinary / hard / colour pigmented / dry shake / surface ground and polished

Ordinary finish is *suitable* for surfaces that are to be covered by flooring. Hard finish is *suitable* for surfaces that are not to be covered with flooring and for toppings that require high resistance to wear (grade 30 and higher).

Hardwearing surfaces like toppings and terrazzo may be ground and polished – not recommended for sand:cement screeds. Grinding tends to create lower slip resistance. Grinding will affect appearance and will remove surface treatments such as dry shakes.

- ☐ surface smoothness: smooth / non-slip

### **pigmentation**

- ☐ type: integral (mix with dry cement ) / add to freshly laid surface as a dry shake / not required.

### 11.2.6 Joints

- ☐ type: isolation joint / intermediate sawn contraction joint / patent movement joint
- ☐ pattern: see drawings
- ☐ seal joints: required / not required
- ☐ patent movement joint system with flexible inserts: aluminium / stainless steel / PVC

Material depends on nature and intensity of traffic. Joints should be sealed when floor is subjected to liquids, hygiene.

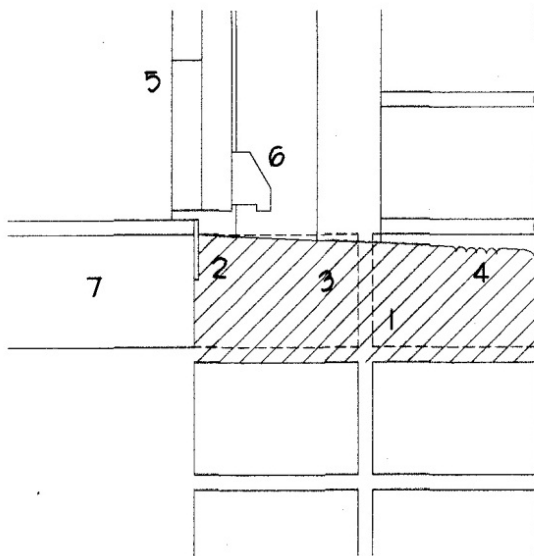
### 11.2.7 Surface regularity

- ☐ degree of surface regularity: I (3 mm) / III (10 mm over 3 m in any direction)

Omit if default (II) is acceptable. Check with SANS 10155. In small rooms deviation should be less.

### 11.2.8 External thresholds

Placing the door in line with the inside wall face allows the joint under the door and adds a measure of rain protection to the door.



- 1 break out bricks
- 2 metal edge strip
- 3 in situ or precast concrete threshold with slight fall
- 4 reeding
- 5 external door
- 6 weather bar
- 7 concrete surface bed

### 11.2.13 Surface sealing

- ☐ seal floor surface with: one coat non-slip wax polish / epoxy / not required.

Relevant standards:

SANS 10109 Part 2 Finishes to Concrete Floors.

Concrete Basics for Building. 2004. Cement and Concrete Institute.

## 12 Tiling

### 12.1 Materials

- ☐ type of tile: see drawings

ceramic / stone / concrete / terrazzo / mosaic

#### **ceramic wall and floor tiles (SANS 1449/13006)**

- ☐ group: A1 / A2 / A3 / A4 / B1 / B2 / B3 / B4 / C

Group A (extruded split /quarry tiles) and B (dust pressed tiles) are classified according to their water absorption properties. C=other. Group A1 and B1 have the lowest water absorption ( $\leq 3\%$ ). Fully vitrified porcelain tiles, covered by SANS 13006 only, are frost resistant and suitable for cold rooms etc.. Not all manufacturers produce to SANS 13006.

- ☐ surface: glazed / unglazed
- ☐ shape, pattern, colour: ...
- ☐ nominal dimensions: see drawings

200 x 200 / 300 x 300 / 400 x 400 / 500 x 500 mm

- ☐ grade: first grade / second grade

Second grade tiles have minor blemishes.

- ☐ glazed tile abrasion resistance class: 1 / 2 / 3 / 4 / 5 / not required

Abrasion resistance class to SANS 13006: 1 for interior soft domestic footwear such as bathrooms and bedrooms; 2 for interior light domestic traffic such as living rooms; 3 for interior and exterior areas such as domestic kitchens, halls and terraces, and low-traffic commercial areas; 4 for frequent traffic such as public entrances, shops, hospitals, hotel kitchens and exhibition rooms; 5 for severe pedestrian traffic such as shopping malls, airport concourses, sports stadia and factories.

- ☐ slip resistance value (coefficient of friction) : dry ..., wet ... / on stairs and ramps only

For slip resistance, contact manufacturer. Slip resistance is important in public places and on ramps and a requirement for disabled people (SANS 10400-S). Several test methods exist. The Pendulum Test Value (PTV) to BS 7932 is acceptable. PTV 0–24 is high, 25–35 moderate, 36+ low slip potential. A calibrated tester is available in SA. Slipperiness is also affected by use, water, spills and floor care.

- ☐ acid and alkali resistance of glazed tiles: type of chemical ... / not required

#### **stone tiles**

No local standard exists on natural stone tiles. Consult supplier/installer.

- ☐ type: natural stone / cast stone
- ☐ natural stone: slate / quartzite / marble / granite
- ☐ slip resistance value (coefficient of friction) : dry ..., wet ... / on stairs and ramps only / not required

For slip resistance contact manufacturer.

- ☐ nominal dimensions: see drawings

300 x 300 / 450 x 450 / 600 x 600 x 50 / 65 mm

- ☐ shape: ...; colour: ...

#### **concrete tiles**

- ☐ type: concrete / terrazzo
- ☐ nominal size: see drawings

300 / 450 / 600 x 300 / 450/300 / 600/450 x 50 / 65 mm

#### **mosaic**

- ☐ material: ceramic / glass / stone

- ☐ appearance: glazed / unglazed
- ☐ colour: ...
- ☐ size of tesserae: ...

#### **grout**

- ☐ proprietary grout: cement-based / organic-based / reaction resin (epoxy)

Epoxy grout e.g. in food storage and preparation and processing areas, abattoirs, breweries, dairies, bottling plants, restaurants, industrial kitchens, hospitals and clinics.

#### **profiled and decorative tiles**

- ☐ profiled and decorative tiles: see drawings

skirting / dado / bullnose

#### **accessories**

- ☐ edging, trim, stair nosing and movement joint strip material: PVC / aluminium / brass / stainless steel

see also Section 16.

- ☐ profile, size, colour: ...

## **12.2 Tiling**

To be published: SANS 2001-ET Tiling.

#### **bedding**

- ☐ external angles: see drawings

mitred / lapped / strip edged / bullnose tile

- ☐ internal sills in bathrooms: see drawings / level / sloping

Sloping sill to prevent internal sills being used as a shelf.

External sills should be tucked in under all window frames - fixed in front of window frame will lead to moisture damage in exposed conditions. See also SANS 2001-CM1.

- ☐ field, border, pattern: see drawings.

## **12.3 Jointing**

Floor tiling joint width may be subject to manufacturer's recommendations, irregularities in the tiles, modular discipline or decorative effect.

Extruded tiles require a wider joint to cater for distortions.

In internal work, laser cut natural or cast stone of precise dimensions may be butt jointed with little or no grout.

- ☐ joint width: ...

Omit if default widths are acceptable.

## **12.4 Movement joints**

- ☐ type: formed in situ / preformed strip / isolation joint / intermediate joint / structural joint

#### **preformed compression joint strip**

- ☐ material, colour: PVC / aluminium / brass / stainless steel / ...

Preformed joint strip: PVC is suitable for light traffic, stainless steel for heavy traffic. Check whether chemical resistance is required.



### isolation (perimeter) joints

Isolation joint design depends on the wall finish, skirting, hygiene requirements and floor cleaning method, e.g. if regularly washed.

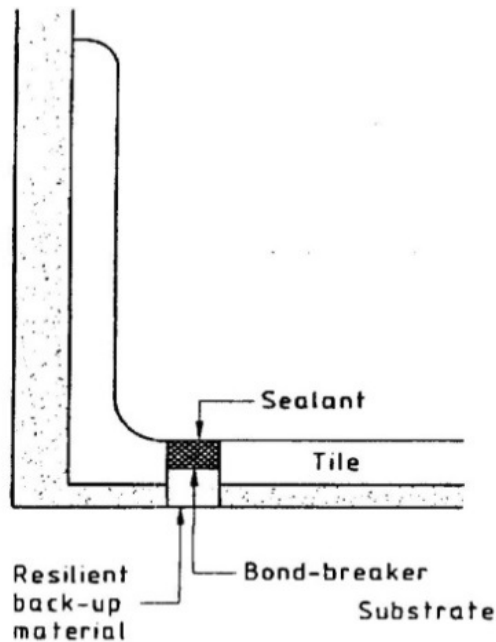


Diagram: Isolation joint where hygiene is important

(SANS 10107).

### structural joints

In practice structural substrate joints are often not true. Ignoring this fact will result in a tiling joint not uniformly coinciding with the base joint, leading to cracks. Possible solutions are:

- if the joint is out of line but straight, consider continuing the joint through the tiling (the joint will not be aligned to the tile joints, but will at least be straight), or
- if the joint is irregular within a narrow straight band, consider installing a prefabricated flexible metal joint capable of spanning the irregularity, or
- if the joint is out of line and irregular, consider leaving out the row(s) of tiles in which the troublesome joint occurs, and lay the row of tiles over an underlay or in a permanently flexible adhesive, or lay a different flooring material over the joint which is able to accommodate the expected movement, e.g. carpet, thermoplastic, wood or laminate. Reinforce the edges or, in the case of rigid materials, seal both sides of the strip covering the structural movement joint.

Relevant standard: SANS 10107 Design and Installation of Ceramic Tiling.

## 13 Floor coverings, wall linings

- ☐ type: see drawings

thermoplastic / wood / textile / epoxy.

### 13.3 Thermoplastic and similar flexible floor covering

To be published: SANS 2001-EF3 Resilient thermoplastic and similar flexible floor covering.

Consider slip-resistant and tactile floor finishes for disabled persons. See SANS 784 for guidance.

#### 13.3.1 Materials

- ☐ type: see drawings

vinyl / linoleum / rubber

##### semi-flexible vinyl floor tiles

- ☐ tile thickness: 2,0 / 2,5 / 3,2 mm

SANS 581: type of semi-flexible vinyl flooring: 120, 130, 160, 200 (domestic), 250 (heavy traffic), 320 (extra heavy traffic).

- ☐ pattern: none / marbled / mottled
- ☐ chemical resistance: ... ; type of chemical ...

##### flexible vinyl flooring

- ☐ tile thickness: 2,0 / 2,5 / 3,0 mm

SANS 786: type of flexible vinyl flooring: 125 (1,25 mm, domestic light), 160 (domestic), 200 (commercial, domestic heavy), 250 (industrial light, commercial heavy), 300 (industrial), 320, 360 (industrial heavy).

- ☐ form: sheet / tile
- ☐ pattern: none / marbled / mottled
- ☐ chemical resistance: ... ; type of chemical ...

##### linoleum sheeting or tiles

Linoleum is manufactured by mixing linseed oil with wood or cork powder, resins, ground limestone and mineral pigments, rolled out onto a jute backing and cured.

- ☐ thickness: 2,0 / 2,5 / 3,2 / 4,0 mm
- ☐ form: tile / sheet
- ☐ shape, size, of tile: ...
- ☐ colour: ...
- ☐ finish: unfinished / coated

##### rubber sheeting or tiles

Recycled and natural rubbers are "green". Recycled rubber lasts longer. Rubber floors are suitable for sport and industries. Interlocking tiles are interchangeable.

- ☐ form: tile / interlocking tile / sheet
- ☐ shape, size of tile: 300 x 300 to 500 x 500 mm
- ☐ texture: plain / studded / diamond
- ☐ colour: plain / patterned / speckled
- ☐ installation method: glued / interlock floating

##### accessories

- ☐ skirtings: extruded PVC , height: ...
- ☐ trim, movement joints: extruded PVC / aluminium / brass / stainless steel

- ☐ nosings: extruded PVC / rubber / extruded aluminium with non-metallic slip-resistant inlays / solid wood

### **13.3.2 Laying**

- ☐ pattern: see drawings / straight joints in both directions

#### **finishing**

- ☐ polymer floor dressing type: 1 / 2

Floor dressing type 1 produces hard coating; type 2 produces soft coating.

## **13.4 Wood flooring, solid and laminate, on solid substrates**

To be published: SANS 2001- EF1 Wood and Laminate Floor Covering.

For the installation of timber suspended floors see Section 4 Structural timber (flooring).

Solid wood floors may be sanded several times during their life span.

Wood and laminate flooring is laid directly on solid cementitious substrates. Solid wood floors are glued or nailed to battens. Laminate floors are floating floors assembled by using a patent click lock system. Wood and laminate floors expand and contract – do not use in wet areas.

SAWLFA South African Wood and Laminate Flooring Association is the industry representative body.

- ☐ traffic class: 21 / 22 / 23 / 31 / 32 / 33

See SANS 10043 table 1 for a traffic classification according to EN 13329: 21 (domestic moderate, e.g. bedrooms), 22 (domestic general, e.g. living rooms), 23 (domestic heavy); 31 (commercial moderate, e.g. conference rooms, offices), 32 (commercial general, e.g. offices, hotels, classrooms, 33 (commercial heavy, e.g. corridors, stores, schools, halls, open plan offices).

See SANS 10043 table 6 for traffic, hardness, density and shrinkage classification of flooring timbers in common use.

### **13.4.1 Materials**

Solid wood floors may be sanded several times during their life span.

- ☐ flooring type: see drawings

solid wood strip/block / solid wood parquet/mosaic / plywood / faced plywood or fibreboard / melamine laminates

#### **solid wood strip, block, parquet, mosaic**

SANS 281 *Hardwood block and strip flooring* and SANS 978 *Wood mosaic flooring* were withdrawn in May 2009 and not replaced.

- ☐ species: ...
- ☐ grade: clear / figured
- ☐ preservative treatment: ...

Note that some woods are naturally durable.

- ☐ second-hand blocks: allowed / prohibited
- ☐ prefinishing: required / not required

#### **faced plywood or fibreboard**

- ☐ facing: natural hardwood / cork / bamboo
- ☐ species: ...
- ☐ prefinishing: required / not required

#### **decorative melamine laminate**

- ☐ pattern, colour: ...
- ☐ built-in underlay: required / not required
- ☐ prefinishing: required / not required

**underlays**

- ☐ required insulating underlay function: acoustic / thermal / noise control / impact (sports)
- ☐ polyethylene elastic-adhesive underlay:

This is an imported underlay with several advantages, not requiring gluing, nailing or clipping of the floor boards. Check with supplier.

- ☐ density: 30 / 50 kg/m<sup>3</sup>
- ☐ thickness: 2 / 3 / 5 / 10 / 15 mm
- ☐ adhesive type: permanent / re-usable.

**13.4.2 Installation****installation in general**

- ☐ installation method: nail down / glue down / floating / stick down on elastic-adhesive underlay / sprung / as recommended by manufacturer

Underfloor heating has important repercussions for wood and laminate flooring. Check with supplier, SAWLFA.

- ☐ pattern: see drawings

**nail down**

Nail down is *suitable* for solid and engineered wood strip on new concrete floors or stairs, on existing rigid floors that are reasonably level, where a dpm is required, and where the total floor covering thickness of about 40 mm can be accommodated. Not to be installed over underfloor heating unless space between battens is filled with a cement:sand mix. Can be installed on walls as panelling.

Nail down floors can reduce impact noise transmission.

**13.5 Textile flooring**

To be published: SANS 2001- EF2 Textile flooring.

**13.5.1 Materials****textile flooring**

- ☐ type: pile construction / needle punched construction
- ☐ colour and design: ...
- ☐ fire index class: 1 / 2 / 3 / 4 / 5

Fire index: material to be used for floor covering (including underlays) or wall finish is tested in a standard manner and is classified on a scale of 1 to 5. These classifications are based on a "fire index" which in turn represents the effect of rate of burning and the amount of heat and smoke generated. Most good quality floor coverings have a fire index of 1 or 2. See SANS 10400-T table 9 and 10 for required classes for different occupancies.

- ☐ location grade: U1 / U2 / U3 / U4 / U5

Location grade: U1 (light domestic); U2 (medium domestic); U3 (heavy domestic, light commercial); U4 (medium commercial); U5 (heavy commercial).

**carpet underlays**

- ☐ type: fibrous / foam / contractor's choice

Underlays: needled fibre, foam rubber, latex bonded fibre or composites. A carpet should be fire tested with its underfelt, since no fire classification for underfelt is currently available. Underfelt makes an important contribution to impact sound insulation, and to airborne sound absorption provided the carpet has a porous backing.

### **13.5.2 Installation**

Seams should run parallel to length of area (so that traffic moves along rather than across the seam) and so that light from windows does not strike across the seam. Pile should face away from incident light and downwards on stairs.

## **13.6 Epoxy flooring**

Epoxy floors are hard-wearing and have excellent resistance to chemicals, oils etc.

- ☐ aggregate colour, size: ...

### **application**

- ☐ position of edge/dividing/feature strips: see drawings
- ☐ thickness: 1 – 6 mm
- ☐ finish: smooth / exposed aggregate finish.

Relevant standards:

SANS 10043 The installation of wood and laminate flooring

SANS 10070 The laying of thermoplastic and similar types of flooring.

SANS 10170 The cleaning and maintenance of floors.

SANS 10177 Fire testing of materials, components and elements used in buildings.

SANS 10186 The installation of textile floor coverings.

SANS 10245: The maintenance of textile floor coverings.

SANS 2424 Textile floor coverings – vocabulary.

SANS 10400-J Floors.

SANS 13746 Textile floor coverings – guidelines for installation and use on stairs.

## 14 Painting, paperhanging

To be published: SANS 2001-EP Painting.

### 14.1 Materials

#### primers

Standards for red lead or red lead/red oxide primers, zinc chromate primers, calcium plumbate primers, metallic lead primers have been withdrawn due to toxic lead content.

#### undercoats

Universal undercoats are *suitable* for interior and exterior use for subsequent application of solvent-borne finishes, especially gloss finishes.

☐ universal undercoat grade: 1 / 2 / as required

1 (high hiding), 2 (utility grade).

#### finishing paints

##### alkyd

Alkyd paint, also known as enamel paint, is solvent-borne.

☐ alkyd high gloss finishing paint (SANS 630) grade: 1 / 2 / as required

1 (high hiding), 2 (regular hiding).

☐ decorative paint for interior use (SANS 515) type: semi-gloss / flat

##### emulsion

☐ emulsion paint (SANS 1586)

☐ grade: 1 / 2 / 3 / 4

Grade: 1 (high hiding, scrub resistant), 2 (high hiding, washable), 3 (general purpose, washable), 4 (utility, interior only)

Emulsion paint is water-borne and suitable for application over plaster and masonry substrates. Grade 1, 2 and 3 is suitable for interior and exterior use, grade 4 for interior use only.

☐ gloss designation: matt / semi-matt / semi-gloss

☐ textured emulsion wall coating (SANS 1227)

☐ type: 1 / 2 / 3 / 4

1 (smooth aggregate-free), 2 (low-relief, sand-textured finish), 3 (high-relief, coarse-textured)

☐ fungus resistance: required / not required

Aluminium paint is typically an alkyd resin binder pigmented with flake aluminium.

Micaceous iron oxide paint is typically solvent-borne. Masonry paint may be solvent-borne or emulsion type.

#### varnishes, varnish stains, stains, sealers

Varnishes are transparent or semi-transparent.

Stains have no protective or preservative properties and are *suitable* for interior work only.

☐ varnish or varnish stains for interior use (SANS 887)

☐ type: 1 / 2

1 (general purpose), type 2 (heat and chemical resistant)

☐ gloss designation: glossy / eggshell

### **bituminous and tar-based coatings**

Bitumen-based coatings for interior and exterior use on primed metal, masonry, fibre cement, wood, roofing felt, creosoted timber, hard bituminous surfaces.

### **specialized coatings**

Epoxy and polyurethane coatings have superior resistance to abrasion and chemicals. One-pack materials usually do not have the same resistance as the two-pack types. They require a high standard of surface preparation.

## **14.2 Preparation of surfaces**

- ☐ hardware etc.: remove, mark, store and refix / mask.

## **14.3 Colours**

Specify colours on schedules. There is a marked difference in price for various colours, especially bright colours.

- ☐ identification colour marking (pipes etc.): required / not required.

## **14.8 Paint systems for on-site application**

- ☐ paint system: see drawings

alkyd / emulsion / textured emulsion / masonry / cement / lime / varnish / aluminium / heat-resistant / sealer / intumescent

- ☐ colour: see drawings.

### **14.8.1 Cement-based surfaces, brick and stone**

#### **alkyd paint**

Alkyd-based coatings are sensitive to alkali. Alkali-resistant sealers are required on cement plaster and off-shutter concrete.

### **14.8.3 Wood**

#### **transparent finish systems for wood (interior)**

In transparent finishes the darker colours are more durable because they absorb ultraviolet light more effectively, but increase solar heat gain so that the moisture content of the wood decreases more rapidly. Varnish is not recommended on exterior wood.

### **14.8.5 Plastics**

#### **paint on unplasticized polyvinyl chloride (PVC-U)**

A two-pack wash primer is no guarantee for proper adhesion of conventional paint systems. No general specification can be made with regard to the painting of plastic coatings. Seek expert advice.

### **14.8.6 Intumescent paint**

- ☐ surfaces requiring intumescent paint: ...

Intumescent paint enhances fire resistance by limiting spread of flame. Check compliance with fire regulations.

## **14.9 Paperhanging**

### **wallpaper**

- ☐ type, pattern, colour: ...

Relevant standards:

SANS 10064: Preparation of steel surfaces for coating.

SANS 10305: Painting of buildings:

Part 1: Paint and paint selection.

Part 2: Paint application and defects.

Part 3: Paint types.

Part 4: Painting of walls, ceilings and cladding.

Part 5: Painting of roofs and steel structures.

Part 6: Painting of wood.



## 15 Furniture, equipment, stairs, architectural metalwork

### 15.1 Joinery

For wood doors and windows see Section 10.

#### 15.1.1 Solid wood

##### wood

- ☐ type: hardwood / softwood / laminated wood

##### hardwood

- ☐ species: ...

SANS 1099 includes requirements for preservative treatment. Annex C gives properties of 29 hardwood species, local or exotic.

##### softwood

- ☐ species: ...

##### laminated timber

- ☐ exposure class: 1 / 2 / 3 / 4

1 (exterior); 2 (semi-exterior); 3 (humid interior); 4 (dry interior).

- ☐ type of wood: hardwood / softwood
- ☐ species: ...

#### 15.1.2 Wood board

- ☐ type: plywood / composite board / decorative melamine-faced boards (MFB) / fibreboard / particle board / oriented strand board (OSB)

##### plywood and composite board (SANS 929)

- ☐ exposure class: 1 / 2 / 3 / 4 / as required

1 (exterior); 2 (semi-exterior); 3 (humid interior); 4 (dry interior).

- ☐ type board: ply / composite
- ☐ type plywood: commercial / marine / structural
- ☐ type composite board: batten board / blockboard / laminated board / high-pressure decorative board / veneered particle board / veneered fibre board
- ☐ thickness plywood: 3 / 6 / 9 / 12 / 15 / 18 / 22 mm
- ☐ number of plies or laminae: 3 / 5 / 7

Number of plies are always odd.

- ☐ veneer: species..., rotary cut / sliced
- ☐ plywood grade: S / A / B

S (select, for decorative applications), A (furniture, for joinery where it may be reworked), B (standard, to be covered, coated or painted).

##### decorative melamine-faced boards (MFB) (SANS 1763)

MFB is low pressure melamine on particle board or MDF, suitable for medium duty vertical and light duty horizontal surfaces e.g. shelving – not for kitchen and office desktops.

- ☐ core: particle board / MDF
- ☐ thickness: 9 / 12 / 16 / 18 / 22 / 32 mm

Board size 3,6 x 1,8 m.

- ☐ shelving edge: sapele-print / melamine
- ☐ surface finish: smooth matt / textured / embossed wood grain
- ☐ moisture resistant board: required / not required

### **fibreboard (SANS 540)**

- ☐ type: insulation board / medium density fibreboard (MDF) / tempered hardboard

MDF has a fine structure allowing for traditional wood-working techniques like moulding, embossing, routing and edge profiling.

- ☐ thickness of tempered hardboard: 3,2 / 4,8 / 6,4 mm / as required

Hardboard can be bent by cold-dry, cold-moist and hot-moist bending techniques. Consult manufacturer. For full range of thicknesses see SANS 540.

- ☐ moisture content range: ...

### **particle board (SANS 50312)**

- ☐ type: P2 / P3 / P4 / P5 / P6 / P7 / as required

P2 (general purpose, dry conditions); P3 (interior fitments, dry conditions); P4 (load-bearing, dry conditions); P5 (load-bearing, humid conditions); P6 (heavy-duty, dry conditions); P7 (heavy-duty, humid conditions).

- ☐ thickness: 12 / 16 / 18 / 22 / 25 / 28 mm / as required

### **oriented strand board (OSB) (SANS 472)**

- ☐ type: OSB/1 / OSB/2 / OSB/3 / OSB/4 / as required

OSB/1 general purpose dry interior; OSB/2 load-bearing dry conditions; OSB/3 load bearing humid conditions; OSB/4 heavy-duty load-bearing humid conditions, e.g. walls, floors, roofing, I-beams.

- ☐ thickness: 6 / 9 / 12 / 15 / 18 mm / as required

## **15.1.3 Polymer laminate and solid surfaces**

### **high pressure decorative laminates (HPL) (SANS 4586)**

HPLs consist of layers of phenol formaldehyde impregnated sheets of Kraft paper with melamine formaldehyde (MF) impregnated décor and overlay paper, pressed together. Normally glued to suitable board with a backer laminate for balance, but can be self-supportive (solid core).

- ☐ material type: S / F / P / as required

S (standard) / F (flame-retardant) / P (postformable).

- ☐ grade/duty class (wear, impact and scratch resistance) : 1 / 2 / 3 / 4 / / as required

1 (light duty, post-forming), 2 (vertical surface), 3 (general purpose), 4 (heavy duty)

General Purpose grade, thickness 1,2 / 1,5 / 2,0 / 2,5 / 3,0 / 3,5 / 4,5 mm: for work surfaces on counters, vanities, desks and tables, and for vertical surfaces like wall panels and front panels of work stations in hospitals, airports and restaurants.

Vertical Surface grade: for cabinet walls, door and drawer panels, desks, restaurant booths, architectural cladding.

Light duty/post forming grade, thickness 0,35 / 0,6 / 0,8 / 1,0 mm: for rounded edges.

Heavy duty, thickness 6,0 mm

- ☐ thickness: light duty and post forming: 0,35 / 0,6 / 0,8 / 1,0; general purpose: 1,2 / 1,5 / 2,0 / 2,5 / 3,0 / 3,5 / 4,5 mm; heavy duty: 6,0 / as required

Omit if default (1,2 mm for grade 3 (general purpose) and 1,0 mm for grade 1 and 2 (vertical surfaces and post forming) is acceptable.

- ☐ surface finish, colour, texture: smooth matt / textured / embossed wood grain / writing
- ☐ solid core grade: interior grade / exterior grade
- ☐ thickness interior grade: 3 / 6 / 8 / 10 / 20 mm

- ☐ thickness exterior grade: 20 mm

Solid core for horizontal and vertical work surfaces; exterior grade for vertical surfaces only, e.g. cladding, balustrading and signage.

Check thickness and usage with manufacturer.

### **continuous pressed laminates (CPL)**

CPLs are supplied in 100 –150m rolls.

- ☐ grade/duty class, thickness: HGP / VGP / VLP / as required

HGP (horizontal, general purpose, postformable), thickness 0,6 mm, wear index number 3, impact index number 2, scratch index number 2; VGP (vertical, general purpose, postformable), 0,6 mm, 2, 2, 2; VLP (vertical, light duty, postformable), 0,35/0,5 mm, none, 2, 2.

- ☐ colour, pattern: ...

### **polymer solid surfacing material**

- ☐ colour: ...
- ☐ inlays: ...
- ☐ form: ...

## **15.1.4 Stone surfaces**

### **stone surfacing material**

- ☐ type: ...
- ☐ thickness: ...
- ☐ edge: ...
- ☐ form: ...

## **15.1.5 Steel tubes for furniture**

### **steel tubes for furniture SANS 657-4**

- ☐ material and grade: mild steel 230 / 250 / stainless steel class A type 1 or 2, grade 304
- ☐ size, profile: see drawings

Size, profile: 16, 20, 25, 32, 38, 40, 50, 60, 70 mm ø (round steel); 16, 20, 25, 32, 50 mm (round stainless steel); 30 x 16 mm (oval steel); 20 x 20, 25 x 25, 32 x 32, 40 x 40, 50 x 50, 65 x 65 mm (square steel); 25 x 25, 32 x 32 mm (square stainless steel); 50 x 20, 50 x 25 mm (rectangular steel and stainless steel)

- ☐ wall thickness: see drawings

0,9 / 1,2 / 1,6 / 1,8 / 2,0 mm, depending on material.

- ☐ stainless steel finish: mill / matt / polished / mirror.

## **15.1.6 Joinery**

### **general**

Climate zones: inland / coastal. Inland zones represent over 90% of South Africa's climate, made up of an average 8% moisture content, including air-conditioned indoor areas.

- ☐ wood sizes: see drawings

Wood sizes: show finished sizes of timber members on drawings to avoid arguments about tolerance: 25 mm nominal size reduces to 22 mm after planing, 38 to 32, 50 to 44, 76 to 68, 114 to 105, 150 to 140, 228 to 118 mm.

Check available board sizes to ensure optimum yield and to avoid unnecessary waste.

Marine ply is a superior choice to moisture resistant particle board in wet areas.

- ☐ exposed edges of veneered composite board: solid wood edging to match veneer and to full thickness of board

### **grain, pattern**

- ☐ direction of grain or pattern: see drawings

Omit if default (vertical on vertical surfaces, parallel to walls on horizontal surfaces) is acceptable.

### **backs**

- ☐ backs to fittings: 4,8 mm hardboard / 16 mm ply/composite board / contractor's choice / not required

### **drawers**

- ☐ drawer construction: see drawings

Omit if default construction is acceptable.

### **shop painting**

- ☐ delivery of joinery on site: knot and prime / knot and prime hidden faces only / brush apply one coat clear finish as specified under Section 14 / reaction lacquer spray paint

Omit if fully painted (default) is acceptable.

## **15.1.7 Fixing**

Consider tables, counters and shelves at a variety of heights to accommodate standing, sitting and a range of different tasks for disabled persons.

### **wood cornices, skirtings, quarter rounds, rails**

- ☐ material: solid hardwood / medium density fibreboard / ...
- ☐ size and profile: see drawings.

## **15.2 Commercial kitchen cupboards (SANS 1385)**

SANS 1385 covers 8 types of kitchen unit cupboards of steel sheet, composite wood board or solid timber. Kitchen Specialist Association (KSA) is the national trade association of kitchen fitting manufacturers. Consider specifying that the manufacturer/installer is a registered member.

- ☐ type of unit: see drawings

base / sink / was trough / wall / combination / corner / special / floor mounted tall cupboard

- ☐ colour: ...
- ☐ type of stainless steel for sinks, wash troughs, worktops: AISI-304 / AISI-430
- ☐ finish on mild steel fittings, handles, fasteners: electrodeposited nickel-chrome / zinc and cadmium
- ☐ type of wood: solid / laminated / hardboard / plywood / particle board / low pressure decorative board / laminated veneer board / as required
- ☐ material of work tops: composition board / stainless steel / ceramic / mosaic
- ☐ edging of worktops: hardwood / plastic moulding / extruded aluminium / self-edging (same material as top) / aminoplastic / high-pressure decorative laminate
- ☐ number and position of bowls: see drawings
- ☐ material of casings: sheet steel / solid timber / composite (particle board with laminates)
- ☐ material and construction of doors: steel butts / sliding / wood / composite board / glass panel
- ☐ locks: cylinder / lever
- ☐ region: inland / coastal region
- ☐ wood finish: raw linseed oil / lacquer varnish / bees wax and turpentine / epoxy resin
- ☐ dimensions: see drawings

Floor units: 300, 400, 450, 500, 600, 900, 1000, 1200, 1500, 1800, 2100 x 525, 600 x 900 mm; wall units: ditto length x 300 x 300, 600; tall units: 500, 900 x 525, 600; wash trough units: 450, 900, 1050, x 525, 600 x 900 mm / for non-modular dimensions, consult manufacturers.

- ☐ type door, arrangement of drawers, shelves: see drawings

#### **additional items**

- ☐ plinths or any other part of wood cupboards in contact with the floor or wet areas, e.g. sinks, food preparation: solid hardwood / marine plywood / moisture resistant particle board / moisture resistant medium density fibreboard.

Composite wood and softwood swells or rots in contact with moisture from floor cleaning operations.

### **15.3 Commercial steel furniture (SANS 757)**

- ☐ type of unit: see drawings

stationary cupboard / linen cupboard / pigeon-hole cupboard / locker / wardrobe / filing cabinet / card-index cabinet

- ☐ class, colour and texture of paint finishes: enamel or powder class 1 / 2

enamel or powder class 1 (minimum 0,06 mm thick) / 2 (minimum 0,03 mm thick)

- ☐ metal finishes: chromium / zinc / cadmium
- ☐ powder coated finishes SANS 1274: type 1 / 2 / high gloss / satin / matt
- ☐ number of drawers, adjustable shelves: ...
- ☐ type hinges: ...
- ☐ type of locking system: cylinder / latch rod / latch plate
- ☐ type of adjusting strip: ...
- ☐ mirrors in wardrobes: see drawings
- ☐ fire resistance rating of vertical plan filing cabinets: ...

### **15.4 Metal counters, balustrades, cladding, signs, street furniture**

- ☐ material: see drawings

stainless steel / aluminium / prefinished metal

#### **stainless steel**

Stainless steel is low carbon steel containing >11% chromium (Cr), providing the steel with a corrosion resisting passive film.

Stainless steel classes are austenitic (300 series) and ferritic (400 series). Each class has several grades. Austenitic stainless steel grade 304 (European Norm 1.4301) is normally used for street furniture, shop fronts, doorways, counters, balustrades, cladding, signs, roofing and street furniture. Use grade 316 in corrosive regions. Ferritic stainless steel is used only in interior applications of a non-aggressive nature.

Locally produced stainless steel is available in flat products, forgings and castings. Hot-rolled flat sheet is 3 – 50 mm thick, cold-rolled 0,4 – 3 mm thick. Sections like angles, channels, welded pipe and tubes are cold-rolled from flat sheet. Other grades and products are imported.

Stainless steel mill finishes can be annealed, pickled or polished. Processed finishes are achieved by grinding, polishing or buffing. Stainless steel can be coloured, acid-etched, mirrored, electro-polished, perforated, expanded, meshed or screened.

Choose the correct grade with consideration of the building's location, prevailing environment and climate.

Design stainless steel elements to avoid receiving run-off water from other metals, or concentrated flows of rainwater over parts of the element. Designs must cater for the facilitation of regular cleaning.

Consult the Southern African Stainless Steel Association (SASSDA).

- ☐ austenitic stainless steel grade: 304 or 304L / grade 316 in the coastal region 3 – 4km from the coast

- ☐ finish: annealed and pickled mill finish / polished / coloured / etched / mirrored / electro-polished
- ☐ form: see drawings

sheet / section / perforated / expanded / meshed / screened

### **aluminium**

- ☐ finish: mill / anodising / liquid organic coating / powder coating
- ☐ colour: ...
- ☐ finish: matt / satin / high gloss / hammertone / textured

### **prefinished sheet metal products**

Organic film coating on steel, aluminium, stainless steel for interior and exterior use.

- ☐ type: 1 / 2a / 2b / 3 / 4 / 5a / 5b / 6a / 6b / as required

1 (interior, requiring further application after fabrication); 2a (dry areas); 2b (wet corrosive areas); 3 (mild to moderate rural, urban, tropical and industrial environments); 4 (marine and industrial); 5a (severe marine); 5b (heavy industrial and industrial marine); 6a (very severe marine); 6b (very severe industrial)

- ☐ colour: ...
- ☐ finish: flat / semi-gloss / gloss
- ☐ dry film thickness: ...
- ☐ type of substrate: hot dip galvanized steel / aluminium / stainless steel

## **15.5 Stairs and ramps**

- ☐ type: see drawings

straight / spiral / dogleg / combination / helical / security/fire / enclosed

The rule in SANS 10400 – M of a minimum going of 250 mm and a maximum rise of 200 mm often leads to a disregard for another rule, i.e. “*any stairway ... shall have dimensions appropriate to its use*” (NBR part M Stairways). The full range of a more comfortable and safer proportion within the rule that “*the sum of the going and twice the riser is not less than 570 mm and not more than 650 mm*” would be: 180/280 mm; 170/280 – 310 mm; 150/280 – 350 mm and should be used in most public buildings.

Public ramps must have a safe gradient and frequent landings for disabled persons. Check with SANS 10400-S.

- ☐ structure: see drawings

painted mild steel / stainless steel / wood, species

- ☐ treads: see drawings

wood, species ... / stainless steel / steel / glass

- ☐ balustrade / handrail: see drawings

stainless steel / wood / glass / polymer concrete.

Relevant standards:

SANS 10400-M Stairways.

SANS 10400-S Facilities for Persons with disabilities.

SANS 10104 Handrailing and balustrading (safety aspects).

## 16 Hardware

Hardware information should appear on door, window or finishes schedules.

### 16.1 General

☐ type: see drawings

lock / latch / handle / plate / closer / hook and eye / bracket / hinge / bolt / door stop / door knob / door knocker / sanitary / furniture / curtain rail / edge or feature strip / sunken door mat / signage / drawer runner

☐ fire door hardware type: see drawings

escape hardware / panic bars / locksets with thumb turns / fire bolts

☐ material: see drawings

steel / stainless steel / aluminium / brass / nylon / ceramics / porcelain / wood

#### finish

For finishes on metal see SANS 1171 Annex C.

☐ finish: see drawings

natural / brass plated / copper plated / chrome plated / zinc plated / nickel plated / sherardised / cadmium plated / phosphated / passivated / antiqued / epoxy coated / powder coated / anodised

☐ sherardising coating thickness class: 15 / 30 / 45

15 µm normal indoor/outdoor / 30 µm severe outdoor / 45 µm highly severe outdoor/industrial/ marine.

☐ electroplating service condition: 1 / 2 / 3

1 (mild), 2 (moderate), 3 (severe)

Commercially plated fasteners are mostly sold with minimum corrosion protection, suitable only for dry interior conditions (corrosion resistance class C1). Thicker plating implies a special order (contact SAMFA – SA Metal Finishers Association – for details).

Rather specify solid brass, stainless steel or sherardized steel (30/45) for exterior or wet interior conditions, or ensure that plated products are protected by an appropriate paint system.

☐ appearance: bright / dull / satin.

### 16.2 Fasteners

☐ fastener type: bolt / screw / nut / washer / pin / rivet

☐ metal screws for wood, type: countersunk-head / round-head / raised countersunk-head / slotted or cross recess drive / hexagon-head / scant shank

☐ material and size: steel / brass / silicon-bronze / aluminium / stainless steel

☐ mild steel nails: type...; finish...

See SANS 1700 for full list of fastener types.

For roof/cladding fasteners see Section 7.

### 16.3 Locks, latches, catches, bolts

☐ type lock: see drawings

mortise / rim / cylinder / cupboard / drawer

☐ type handle: see drawings

lever / knob

☐ type latch: see drawings

mortise / cupboard / finger

☐ type catch: see drawings

magnetic / ball / roller

- ☐ type of bolt, size: see drawings

barrel / flush / tower / stable / extension / size

SANS 10400-S stipulates that door handles should be 450 mm away from any wall.

Consider handles, levers and controls that are easy to operate by disabled persons. SANS 10400-S: The manual operation of handles, taps, levers, switches, locks, control mechanisms and keys is in part affected by their design. The selection of controls requiring a 'twist-action' of the wrist and hand, and fine-finger movements should be avoided.

- ☐ hardware on fire doors: see drawings

### **padlocks**

- ☐ type: see drawings

keyed / combination / masterkeyed

- ☐ duty: medium / heavy

- ☐ material: see drawings

brass / iron / chrome plated brass / aluminium / stainless steel

- ☐ size: see drawings

40 / 50 / ... mm

### **keys**

- ☐ master and grand master keys: see drawings.

## **16.4 Hinges**

### **hinges for lightweight doors**

- ☐ type: see drawings

piano / pivot / flush / european (adjustable) / strap

### **hinges for medium to heavy doors**

- ☐ material: see drawings

steel / stainless steel / brass / bronze

- ☐ number of hinges for fire doors: see drawings.

## **16.5 Door closers**

- ☐ type: see drawings

surface-mounted / concealed in frame / concealed in floor / concealed in door / overhead / floor / manual / automatic

Consult AAAMSA Technical Publication: Hardware, Door Controls etc.

Ensure surface mounted overhead closers do not hit the wall when opening.

All fire doors are required to be fitted with closers (NBR), usually overhead. Do not fit a mechanical hold open arm to a fire door. Use concealed mechanisms in hygienic areas.

For concealed floor types, ensure floor spring box depth of up to 75 mm can be accommodated.

Specify a higher strength closer for exposed, windy or draughty conditions. Specify a lower strength for narrow doors.

Double doors with rebated meeting stiles must be fitted with a door selector to ensure the inactive leaf closes first.

- ☐ floor springs, consisting of a floor spring unit set into the floor, bottom and top door strap of size and finish: see drawings

Size depends on door size and weight – see manufacturer's literature.



## 16.6 Pelmets, curtain rails, rods, blinds

### **pelmets**

- ☐ type, size and profile: see drawings / wood / metal / fabric

### **rails with rollers or glides**

- ☐ track: single / double
- ☐ duty class: light / heavy
- ☐ finish: ...
- ☐ cord: with / without weighted cord pulleys

### **rods with rings**

- ☐ rod, rings, end caps: wood / aluminium / steel

### **tie backs**

- ☐ tie backs: ...

### **indoor venetian blinds**

- ☐ slat width: 50 / 35 / 25 mm
- ☐ headbox: steel / aluminium
- ☐ type of ladder web: reinforced plastic / woven cotton / knitted cords

## 16.7 Edge, feature, dividing strips

- ☐ strip material: solid brass / aluminium / hot dip galvanized steel / PVC
- ☐ colour of plastic: ...

## 16.8 Sunken door matting

- ☐ material: natural coconut fibre with PVC backing / rubber / interlocking aluminium channels with plastic inserts / light or heavy-duty loop matting.

## 16.9 Number/name plates, safety signs

Type, letter size, position, message etc. should be given in schedule form.

Signs may be grouped: general information signs; hospital signs; safety signs; signs for disabled persons; statutory signs, e.g. fire safety.

- ☐ type: changeable plate system / variable room identification system / changeable letter system / illuminated signs / in-house signage / statutory signage

Changeable plate system: fixed plate holders to which may be attached or inserted removable interchangeable sign plates; variable room identification system: fixed room numbers and removable name strips; changeable letter system: holders into which can be inserted removable individual letters, numbers, etc.; illuminated signs: cabinet enclosing a light source illuminating a translucent face panel bearing the specified signage; in-house signage: project specific signs

- ☐ materials: aluminium / plastic / stainless steel
- ☐ colour: ...

### **symbolic safety signs**

- ☐ type: PV / MV / WW / FB / GA

PV (prohibitory – circular, red), MV (mandatory – circular, blue), WW (warning – triangular, yellow), FB (informative, fire-fighting – square, red), GA (informative, general – square, green)

- ☐ reflectivity, luminosity: standard (non-reflective) / self-luminous (radio luminescent) / internally illuminated / retro-reflective or photo luminescent / decal / embossed

- ☐ size: 100 x 100 (WW7 only) / 150 x 150 / 190 x 190 / 290 x 290 / 440 x 440 / 880 x 880 mm)

See SANS 1186 Annex C for positioning, fixing, illumination and maintenance of signs.

## **16.10 Drawer runners/slides**

- ☐ type commercial ball-bearing runner: normal / self-closing / soft-closing / push-locking
- ☐ load capacity: 30 kg static / 45/90 – 160 kg (heavy duty)
- ☐ extension: full / three-quarter.

Relevant standards:

SANS 10140 Identification colour marking.

## 17 Glazing

SAGGA – South African Glass and Glazing Association – is the trade association and AAAMSA member.

### 17.1 Materials

#### glass

Clear and tinted float glass is made in South Africa by one manufacturer in Springs.

☐ type of glass: see drawings

float / safety / security / pattern / tinted / insulated / polymer

☐ float glass thickness: see drawings

Local float glass thickness: 3, 4, 5, 6 and 10 mm.

☐ laminated safety glass interlayer strength class: NS / HPR / HI

NS (normal strength), HPR (high penetration resistance), HI (high impact).

☐ bullet-resistant glass: class and level of attack: GA / GC / RA / RB / SB

Safety and security glass is made by several local manufacturers. Laminated safety glass is made with a poly-vinyl butyral interlayer (0,38 mm for Normal Strength (NS); 0,76 mm High Penetration Resistant (HPR); 1,14 mm High Impact (HI)); or a cast in place polyester resin interlayer, available in one thickness only (0,5 mm Normal Strength). SANS 1263 provides for three applications, i.e. human contact, burglary and firearms. See SANS 1263 for bullet-resistant glass classes and level of attack.

☐ pattern glass thickness: 4 / 6 mm; colour: clear / amber / bronze; pattern: ...

All patterns cost the same.

☐ tinted glass: heat-absorbing / heat-reflecting / glare-reducing

☐ insulated glass units (SIGU's) : 6/12/6, low-e surface #2, dehydrated air filled gap / ...

6/12/6 denotes glass-space-glass. Common insulated glass thickness range (glass-space-glass) in South Africa is 20–28 mm. Life expectancy of double glazing in South Africa has not been recorded. Northern hemisphere experience indicates 7–12 years, 20 years being exceptional.

☐ coloured glass: ...

☐ work on glass: cutting / obscuring / acid embossing / silvering / gilding / staining or painting / bending

#### polymer glazing

☐ polymer glazing type: PC / PMMA / PVC clear / GRP / PS / PET / single wall / multi-wall

Available polymer glazing materials are polycarbonate (PC), polymethyl methacrylate (PMMA or 'acrylic'), polyvinyl chloride (PVC), glass-fibre reinforced polyester (GRP), polystyrene (PS), polyethylene terephthalate (PET). PC and PMMA is available in sheet sizes 1 250, 1 500 or 2 050 wide by up to 6 m long by 1,5 – 6 mm thick. They can be cold bent to minimum radii of 300 x thickness for acrylic, or 100 x thickness for polycarbonate.

Outstanding properties of polymer glazing are impact strength (polycarbonate 250x glass), light transmission, light weight, weather resistance, thermal insulation in multi-wall construction (40% better than glass). Typical applications: rooflights, industrial roofs, commercial greenhouses, shopping centres. Polycarbonate is self-extinguishing, acrylic burns like hardwood. No toxic fumes are claimed. Make generous allowance for thermal movement.

### 17.2 Glazing

#### 17.2.2 Structural glazing

☐ design: by *competent person* (glazing) / submit proposals

Structural glazing depends on stringent quality tests and checks, for example the pretreatment of aluminium, surface finishing, sealants, and factory and site care. Check with AAAMSA.

A butt joint in structural glazing is assumed to have no structural strength.

Check underwater glazing, glazing for fire protection, for control of reflections in shop windows, for solar control, for one-way vision, unframed glazing, suspended glazing, glass floors, glazing with channel profiles, glazing with plastics and patent glazing, with manufacturers, specialists and SANS 10137.

### **17.2.3 Protection and cleaning**

Anti-sun glass can be permanently damaged by mortar or plaster splashes. Specify precautions if risk is high.

## **17.3 Mirrors**

☐ type: silvered clear glass / silvered coloured glass / stainless steel / privacy

silvered mirror backs are easily damaged. Silvered obscure glass also available. Stainless steel for vandal proof areas.

☐ size and position: see drawings

Consider full length mirrors in public places for children and disabled persons.

☐ coloured glass: pink / gold / bronze / black

Relevant standards:

SANS 10137 The installation of glazing materials in buildings.

SANS 1263 Safety and security glazing materials for buildings.

SANS 10400-N Glazing.

SANS 2001-CG1 Installation of glazing.

Relevant sources:

Selection Guide for architectural Aluminium Products. AAMSA.

Skylight Association of Southern Africa.

## 18 Drainage, sewerage, water and gas supply, fire equipment, sanitary plumbing

### 18.1 Roof eaves drainage

#### 18.1.2 Gutters and downpipes

- ☐ gutter type: see drawings

eaves / valley / box / parapet/chimney

- ☐ material: Z275 / Z450 / Z600 / AZ150 / AZ200 hot dip galvanised steel sheet / uncoated steel painted on-site / aluminium / copper / U-PVC / fibre cement / prepainted

Galvanized sheet: Z275 or AZ150 for inland use; Z450/ Z600 or AZ200 for the *coastal region*, prepainted for corrosive industrial use. Commercial standard rainwater goods are made of 0,4 or 0,5 mm thick sheet.

- ☐ profile: see drawings

half round / square / rectangular

- ☐ size: see drawings

100 x 75 mm, or 100 / 125 / 150 mm half round (domestic); 125 x 100 (institutional); 150 x 100 / 200 x 150 / >225 x 225 (industrial). Sheet metal gutter standard lengths: 1,8; 3,0; 3,6; 4,8; 5,4; 6,0 m.

Gutter and downpipe sizes are determined by roof area and rainfall region in accordance with the requirements of SANS 10400-R: summer rainfall area: 140 mm<sup>2</sup>/m<sup>2</sup> roof area served; year-round rainfall area: 115 mm<sup>2</sup>; winter rainfall area: 80 mm<sup>2</sup>. Downpipe internal size: 100 mm<sup>2</sup>/m<sup>2</sup> roof area served or 4400 mm<sup>2</sup> (75 mm diameter). For more information on gutter design, e.g. risk, rainfall intensity, hail and outlet protection, launders, drop boxes etc. see The Red Book – Southern African Steel Design Handbook, Section 11.

#### accessories

- ☐ outlet drop boxes: funnel shaped

Drop boxes for box gutter outlets improve flow and reduce stoppage by debris.

- ☐ overflow weirs in box gutters: required
- ☐ hail guards: see drawings

removable / pedestrian trafficable

Hail guards over gutters act as protection against hail, as maintenance walkways, as outlet protection and as protection against leaves and wind-blown debris. Trafficable hail guards should be made of suitable gauge expanded mesh – provide clear working *drawings*. Hail guards should be removable for maintenance.

- ☐ launders: see drawings

Launders are horizontal downpipes draining intermediate box gutter outlets to the exterior of large industrial buildings.

#### gutter brackets

- ☐ type: purlin / fascia / purpose-designed for industrial/box gutters / as supplied by gutter manufacturer

#### downpipes

- ☐ material: galvanised steel sheet / PVC

Do not use PVC downpipes if offsets are required.

- ☐ size: see drawings

75 / 100 / 120 / 150 mm square / diameter

Best solution for outlet protection is to use oversize downpipes ≥200 mm diameter.

- ☐ sheet metal downpipe bends: crimped / solder mitred / sealed and pop riveted

## 18.2 Flat concrete roof, balcony and floor drainage

### 18.2.1 Rainwater outlets

- ☐ type: see drawings

patent with grating / pipe without grating

- ☐ patent type: see drawings

vertical / 45° / 90° / two-way / car-park / pedestrian

- ☐ outlet size: see drawings

50 / 80 / 100 / 150 mm diameter

Outlets without gratings should be used for small roof areas in accessible position only, e.g. for balconies, and be not less than 75 mm in diameter due to the waterproof dressing restricting the pipe bore, unless pipe can be flanged.

### 18.2.2 Floor outlets

- ☐ material: ductile iron with baked epoxy coating / stainless steel

### 18.2.3 Outlet downpipes

- ☐ material: PVC / galvanized steel
- ☐ size: see drawings

75 / 110 / 160 mm (PVC); 80 / 100 / 125 / 150 mm (steel)

## 18.3 Stormwater drainage

### 18.3.1 Earthworks (SANS 2001-DP1)

SANS 2001-DP1 covers earthworks for trenches for all types and sizes of buried pipelines, ducts, cables and prefabricated culverts, including excavation, preparation of trench bottoms, bedding, backfilling and reinstatement of surfaces.

Specification data:

- ☐ pipes that are to be encased in concrete: see drawings

### 18.3.2 Storm water drainage (SANS 2001-DP5)

SANS 2001-DP5 covers the construction of stormwater drainage systems including pipelines, manholes, culverts, catchpits, inlet and outlet structures.

Specification data:

#### **pipes**

- ☐ material of pipe, associated fittings: see drawings

concrete / fibre cement / PVC-U / GRP / PP / PE

- ☐ diameter: see drawings

concrete pipes: 100, 150, 225, 300, 375, 450, 525, 600, 675, 750, 825, 900, 1050, 1200, 1350, 1500, 1800 mm. Check diameters of other material pipes.

#### **culverts**

- ☐ precast concrete culverts

- ☐ class: 75S / 100S / 125S / 150S / 175S / 200S

- ☐ dimensions (internal) : see drawings

span: 450, 600, 750, 900, 1200, 1500, 1800, 2400, 3000 mm

height: 300, 450, 600, 900, 1200, 1500, 1800, 2400, 3000 mm

**tests**

- ☐ tests: required / not required

**18.3.3 In situ concrete stormwater channels**

- ☐ overall width: see drawings

380 / 450 / ... mm

380 mm width: 230 mm x 75 mm deep channel; 450 mm width: 300 mm x 100 mm deep channel.

- ☐ fall: see drawings

1:250 min.

- ☐ spill basin shape, size and finish: see drawings.

**18.4 Sewerage****18.4.1 Earthworks (SANS 2001-DP1)**

Specification data:

- ☐ pipes that are to be encased in concrete: see drawings

**18.4.2 Sewers (>160 mm) (SANS 2001-DP4)**

SANS 2001-DP4, *Sewers*, covers the construction of sewer systems within servitudes, road reserves and interconnected complexes and is suitable for the construction of below ground sewers having a diameter greater than 160mm. Excludes sewer rising mains, pump stations, treatment works, and ancillary works.

Specification data:

- ☐ type of pipe, associated fittings: ductile iron / fibre cement / PVC-U / structured wall PVC-U / PP / GRP / pitch impregnated fibre / vitrified clay / reinforced concrete

Unplasticised polyvinyl chloride (PVC-U); polypropylene (PP); glass-reinforced plastics (GRP)

- ☐ diameter: see drawings

200 / 250 / 315 / 355 / 400 / 450 / 500 / 560 / 630 / 750 / 800 / 900 / 1 000 mm diameter (PVC-U). Check diameters of other material pipes.

- ☐ gradient: see drawings
- ☐ step irons in manholes: required / not required
- ☐ masonry manholes: plastered internally / plastered internally and externally to prevent infiltration
- ☐ tests on completed pipelines: required / not required.

**18.4.3 Sewers for buildings (SANS 2001-DP7)**

SANS 2001-DP7 covers surface mounted sewers having a nominal diameter of 200 mm or less; and below ground sewers having a nominal diameter of 160 mm or less including manholes and the like which discharge into a connecting sewer, conservancy tank, French drain or septic tank. This standard is *suitable* for constructing sewers designed in accordance with the design rules provided in SANS 10400-P, Drainage. Construction of manholes is referred to SANS 2001-DP4.

Specification data:

- ☐ type of pipe, associated fittings: cast iron / ductile iron / fibre cement / PVC-U / structured wall PVC-U / PP / GRP / pitch impregnated fibre / vitrified clay / reinforced concrete
- ☐ nominal diameter: see drawings

40 / 50 / 75 / 110 / 160 mm

- ☐ gradient: see drawings

SANS 10400-P requires that sewer gradient be not flatter than 1:120 for 100 mm diameter pipes and 1:200 for 150 mm pipes. The hydraulic load determines the minimum grade of the pipe.

#### 18.4.4 Surface boxes, manhole covers, gully gratings, frames

For vehicular and pedestrian areas only (does not apply to gullies and manholes in buildings).

☐ type: see drawings

surface box / valve chamber / manhole/inspection cover / gully grating

☐ material: polymer concrete / cast iron or steel

##### **polymer concrete**

☐ polymer concrete covers

☐ size: see drawings

☐ duty class: see drawings

heavy (trucks) / medium (domestic vehicles) / light (no wheeled vehicles)

##### **cast iron/steel and concrete**

☐ cast iron, cast steel, rolled steel combined with concrete covers

☐ size: see drawings

☐ duty class: see drawings

A15 / B125 / C250 / D400 / E600 / F900

Class A15 pedestrian and pedal cyclists; B125 car parks; C250 road kerbside channels; D400 roads, hard shoulders, parking for all types of road vehicles; E600 docks, aircraft pavements; F900 particularly high wheel loads.

☐ gully gratings: laid loose / bedded in bitumen.

#### 18.4.5 Grease interceptors

☐ material: stainless steel / reinforced fibreglass

☐ type, capacity and size: see drawings / to approval of the local authority

Several models are available on the market.

#### 18.4.6 Pit latrines

☐ type: see drawings

VIP / masonry / patent / to approval of local authority

☐ construction: masonry / patent precast concrete / patent polymer

☐ pit size: see drawings

Pit size depends on capacity/ number of persons using. Omit if default (750 x 1 500 x 2 000 mm minimum deep) is acceptable. Maximum pit size: 1 000 x 2 500 x 2000 mm.

#### 18.4.7 Conservancy tanks, septic tanks and french drains

☐ type: see drawings

conservancy tank / septic tank / french drain

☐ construction: masonry / patent precast concrete / patent polymer

☐ tank capacity: see drawings / as prescribed by local authority

Conservancy tank capacity is typically 6 000 L. See SANS 10400-P for sizing of septic tank. Patent septic tank capacity 1 250 litres (2-4 persons); 1 500 (2-6); 1 750 (4-6); 2 000 (4-7); 2 500 (4-9). Consult SANS 10252 for design guidelines.

☐ french drain length: see drawings

See SANS 10400-P for length formula, positioning, soil type, etc.



## 18.5 Water supply

### 18.5.1 Earthworks (SANS 2001-DP1)

SANS 2001-DP1 covers earthworks for trenches for all types and sizes of buried pipelines, ducts, cables and prefabricated culverts, including excavation, preparation of trench bottoms, bedding, backfilling and reinstatement of surfaces.

Specification data:

- ☐ pipes that are to be encased in concrete: see drawings.

### 18.5.2 Below ground medium pressure pipelines (SANS 2001-DP2)

SANS 2001-DP2 covers the supply and installation of pipelines of diameter greater than 160 mm and up to 1 000 mm, complete with ancillary works (valves, strainers, hydrants, manholes, surface boxes, chambers) for transporting water and sewage under working pressures up to 2,5 MPa.

Erf or connections to buildings from mains are covered in SANS 2001-DP6.

Specification data:

- ☐ type of pipe: steel / ductile iron / concrete / fibre-cement / GRP / PE / PP / contractor's choice)

glass-reinforced plastics (GRP); polyethylene (PE); polypropylene (PP)

- ☐ nominal pipe sizes: see *drawings*.

225 / 300 / 375 / 450 / 525, 600 / 675 / 750 / 825 / 900 mm

### 18.5.3 Below ground water installation for buildings (SANS 2001-DP6)

SANS 2001-DP6 covers the construction of water pipelines having a nominal diameter of up to 160 mm from a water reticulation main to the boundaries of individual erven or other specified points on erven. It covers the installation of pipework and associated specials which provide water, meters and fire hydrants

SANS 2001-DP6 is suitable for construction of fire installations designed in accordance with the design rules provided in SANS 10400 W, Fire installations.

Specification data:

- ☐ type of pipe and associated fittings: galvanised mild steel / fibre cement / GRP / PE / PP / PVC / PVC-U / PVC-M / PVC-O / copper / contractor's choice

Glass-fibre reinforced plastics (GRP) / polyethylene (PE) / polypropylene (PP) / polyvinyl chloride (PVC) / unplasticised polyvinyl chloride (PVC-U) / modified polyvinyl chloride (PVC-M) / oriented polyvinyl chloride (PVC-O).

- ☐ nominal pipe size: see drawings

40 / 50 / 75 / 110 / 160 mm

- ☐ meter type and size: ...

### 18.5.4 Above ground water installation

- ☐ pipe material: galvanised mild steel / PP / copper / contractor's choice
- ☐ nominal pipe size: see drawings

8 / 10 / 12 / 15 / 18 / 22 / 28 / 35 / 42 / 54 / 67 / 76 / 108 mm (copper, check other pipe types)

- ☐ fixing of pipes <20 mm: chased / surface fixed

Surface mounting may be a requirement from a maintenance point of view.

Chasing is prohibited in wall faces that are to receive roof flashing. Roof flashing is inserted in grooves sawn by a separate trade with disc cutters after pipes are installed, leading to unnecessary and costly pipe repair work when pipes are damaged.

### 18.5.5 Water storage tanks

- ☐ tank material: tumbled polymer / pressed steel sections bolted and sealed together / corrugated steel
- ☐ capacity or size: see drawings / ...L
- ☐ stand for external tanks: ...

## 18.6 Electric geysers and solar water heaters

### 18.6.1 Electric geysers

- ☐ geyser type: open outlet / cistern type / closed (unvented) / floor or wall mounting / horizontal or vertical

geysers should be placed near kitchen sinks that are regularly used throughout the day. Show geyser positions in drawings.

- ☐ nominal capacity: see drawings

open outlet and cistern type  $\leq 15$  / 25 / 50 / 75 / 100 / 125 / 150 / 175 / 200 / 250 L; closed type 15 / 25 / 50 / 75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 400 / 600 L

- ☐ design: standard / solar / dual purpose.

### 18.6.2 Solar water heaters

- ☐ type: domestic / commercial / industrial
- ☐ capacity in litres (integral units only): ...
- ☐ collector/storage combination: integral / close-coupled / split
- ☐ heat transfer method: direct / indirect
- ☐ circulation method: thermo-siphon / pumped
- ☐ cover: with cover / without cover
- ☐ supplementary energy source required: mains electricity / gas / ...
- ☐ working pressure: 0 / 100 / 200 / 300 / 400 kPa
- ☐ freezing, hail resistance: required / not required.

## 18.8 Fire equipment

### fire hose reels

- ☐ height from floor to spindle if not 2 100 mm: ...
- ☐ enclose reel in security box with clear acrylic cover and suitable closer: required / not required

### portable fire extinguishers

- ☐ portable non-refillable general purpose extinguishers (SANS 1322):

Suitable for all classes of fire other than class D

- ☐ class: I / II

class I (temp  $<110^{\circ}\text{C}$ ); II (temp  $<65^{\circ}\text{C}$ )

- ☐ capacity: 1,5 / 2,5 kg
- ☐ extinguishing medium: lp gas / dry powder

- ☐ water, foam or dry powder rechargeable extinguishers (SANS 1910):

- ☐ type: water / foam / dry powder
- ☐ class of fire: A / B / C

A (ordinary combustibles); B (flammable liquids); C (live electric power), or combinations, e.g. ABC

- ☐ CO<sub>2</sub> type extinguisher (SANS 1567):

- ☐ capacity: <9kg
- ☐ class of fire: A / B / C

- ☐ BCF type extinguisher (SANS 1151) capacity: 1 – 12 kg

Suitable for class of fire AC / BC / ABC

- ☐ enclose extinguisher in security box with clear acrylic cover and suitable closer: required / not required.

## 18.9 Sanitary plumbing

### 18.9.1 Sanitary appliances

#### appliances

- ☐ appliance type: see drawings

wash-hand basin / bath / water closet / urinal / bidet / sink / flushing cistern

- ☐ material: see drawings

glazed ceramic / stainless steel / plastic / stone / concrete

- ☐ stainless steel grade: 430 / 304 / 316; finish: satin / bright

Omit if default (430) is acceptable. Stainless steel grades are listed by the American Iron and Steel Institute (AISI). Grade 430 is *suitable* for domestic purposes, kitchen sinks, wash troughs and hand wash basins. Grade 304 is *suitable* where mild corrosive conditions exist, e.g. in *coastal areas*. Grade 316 is *suitable* for laboratories, photographic workrooms and seagoing vessels where corrosive conditions are severe.

- ☐ anti-theft waste plug: required / not required
- ☐ flow restrictors: required / not required

#### baths

- ☐ type, shape: see drawings

built-in / freestanding / spa / rectangular / oval / corner

- ☐ handles: required / not required

#### basins

- ☐ type, shape: see drawings

counter-top / wall hung / drop-in / pedestal / round / oval / corner

#### wash troughs

- ☐ type: see drawings

single trough / double trough / with drainboard

#### water closets

- ☐ type: see drawings

wall-hung / floor mounted / close-couple / squat

#### flushing cisterns

- ☐ type: see drawings

high level / low level / near level / close coupled / wall-hung / concealed

- ☐ flush capacity: low-flush (4½ or 6 L) / regular flush (6 or 9 L)
- ☐ flush valve flushing operation: single flush / dual flush / interruptible flush

#### urinals

- ☐ urinal type: see drawings

bowl / trough / stall

### **bidets**

- ☐ bidet type: see drawings

wall-hung / floor mounted

### **sinks**

- ☐ sink type: see drawings

domestic / laboratory / scullery / scrub sink / cleaner's / drop-in / wall-hung / pot / freestanding / with drainboard / with backsplash and tiling key / single, double or triple compartment

- ☐ bowl position: see drawings

left / right / centre

### **shower enclosures**

SASEMA (South African Shower Enclosure Manufacturer's Association). SANS 549 "domestic" includes use in hotels, student accommodation, hospitals.

- ☐ shower enclosure type: purpose made / prefabricated / domestic to SANS 549 / medical / industrial / cabinet / curtain / roofed (steam shower)

- ☐ drained floor type: tiled / tray / bath

- ☐ glazed wall/door/roof construction: framed / frameless

Frameless construction requires toughened safety glass. Holes for hinges etc. must be prepared before toughening.

- ☐ safety glass: toughened safety glass / laminated safety glass / plastic

- ☐ door type: pivoting / folding- sliding

- ☐ metal finish: anodising, grade ... / powder coating, type 4

Metal coating grade/thickness will depend on location: anodising grade AG15 or AG20 will suffice for mild atmospheric conditions, while grade AG25 will be required for coastal applications. For powder coating, type 4 or 5 should suffice. Check with manufacturer.

## **18.9.2 Taps, valves, showerheads**

- ☐ tap, valve type: see drawings

bath / basin / shower / sink / garden / bib / pillar / mixer / divert mixer / swivel / stop / flush / gate / hose / washing machine / draincock / float

- ☐ showerhead type: see drawings

fixed rose, diameter ... / adjustable rose / swivel / rail / vandalproof / handshower and holder

- ☐ material: chromium plated brass / stainless steel / plastic

- ☐ flush valve type: WCHP / WCLP / urinal

WCHP (Water closet high pressure; WCLP (water closet low pressure).

## **18.9.3 Traps**

- ☐ type: see drawings

bottle trap / P-trap / P-trap resealing / pop-up

- ☐ material: plastic / rubber / chromium plated brass

- ☐ depth of seal: 40 / 75 mm.

## **18.9.4 Miscellaneous**

### **holders**

- ☐ holder type: see drawings

paper / soap / tumbler / tooth brush / toilet brush / towel rail/ring/hook

- ☐ material: chromium plated brass / glazed ceramic / aluminium / wood

**shelves**

- ☐ material: safety glass with polished edges on nickel-chromed / wood / metal / plastic brackets

**cabinets**

- ☐ type: wall / vanity / with mirror
- ☐ material: wood / plastic / metal.

## Relevant standards:

SANS 10105 The classification, use and maintenance of portable fire extinguishers.

SANS 10112 The installation of polyethylene and PVC-U pipes.

SANS 10102 Selection of pipes for buried pipelines.

SANS 10252-1 part 1: Water supply and drainage for buildings; part 2: Drainage installation for buildings.

SANS 10254: The installation of fixed electric storage water heating systems.

SANS 10400-P Drainage.

SANS 10400-Q Non-water-borne means of sanitary disposal.

SANS 10400-R Stormwater disposal.

## Relevant sources:

Concrete Pipe Handbook published by the Concrete Society of Southern Africa.

## 19 Electrical works

### 19.1 Earthworks (SANS 2001-DP1)

SANS 2001-DP1 covers earthworks for trenches for all types and sizes of buried pipelines, ducts, cables and prefabricated culverts, including excavation, preparation of trench bottoms, bedding, backfilling and reinstatement of surfaces.

Specification data:

- ☐ areas where pipes are to be encased in concrete: see drawings

### 19.2 Cable ducts (underground) (SANS 2001-DP3)

SANS 2001-DP3 covers the supply, and the laying and bedding in trenches, of pipes of diameter not exceeding 160 mm as ducts for the protection of telephone and electric power cables.

Specification data:

- ☐ type of pipe, associated fittings: pitch impregnated fibre / PVC-U / fibre cement / vitrified clay

Unplasticised polyvinyl chloride (PVC-U).

- ☐ draw pits: see drawings.

### 19.3 Materials and installation

#### 19.3.1 Wiring

##### conduits

Chasing is prohibited in wall faces that are to receive roof flashing. Roof flashing is inserted in grooves sawn with disc cutters after conduits are installed, leading to unnecessary and costly repair work.

##### conductors

See SANS 10198 The selection, handling and installation of electric power cables of rating not exceeding 33 kV.

##### distribution board, meter cabinets

- ☐ position of DB's and meter cabinets: see drawings.

#### 19.3.2 Fittings

##### luminaires

- ☐ type: see drawings

surface mount / recessed / accent / downlighter / step / theatre / outdoor (pole, step, bollard)

##### stove, hob, oven, cooker hood

- ☐ stoves, hobs, ovens, cooker hoods model, type: ... / see drawings.

Relevant standards:

SANS 10114 Interior lighting.

SANS 10389 Exterior lighting.

SANS 10142 The wiring of premises.

SANS 10222 Electrical security installations.

SANS 10313: The protection of structures against lightning.

SANS 61024 Lightning protection of structures.

## **20 Mechanical works**

### **20.1 Installation**

- ☐ routing and/or concealment of cables, ducts, trays, pipes etc. : see drawings.

### **20.3 Location and access**

- ☐ catwalks, cat ladders, access panels: see drawings.

|  |
|--|
| Catwalks and cat ladders should be detailed and coordinated with other services in order to keep to a minimum. |
|--|

## 21 External works

### 21.1 Paving

#### 21.1.1 Materials

##### units

- ☐ paving unit type: see drawings

precast concrete blocks / burnt clay pavers / in-situ concrete / precast concrete slabs

##### precast concrete segmental paving blocks

- ☐ type: S-A (interlock) / S-B (semi-interlock) / S-C (rectangular)
- ☐ class: 25 / 35

Class 25 (MPa) concrete blocks should be specified for most uses.

- ☐ nominal thickness: 50 / 60 / 80 / 100 / 120 mm

Thickness of blocks depends on site conditions, design requirements and cost.

- ☐ top edges: chamfered / not chamfered
- ☐ colour: ...

##### burnt clay paving units

- ☐ class: PB / PA

PB (uniform), PA (highly uniform in shape and size).

- ☐ colour and work size: ...

##### precast concrete paving slabs

- ☐ size: 295 / 445 / 595 x 295 / 445/295 / 595/455 x 50/65 mm

##### sand for bedding and jointing of flexible paving

The use of mine sand for jointing is generally accepted.

#### 21.1.2 Preparation

##### subgrade

- ☐ subgrade levels and falls: see drawings

Check soil and traffic conditions with a Competent Person. The sub-base thickness is a function of both the type and amount of traffic to be carried and the strength of the subgrade. See also SANS 1200 ME, MF, ML.

##### concrete sub-base for rigid paving

- ☐ thickness, reinforcement: see Section 2

##### weed killer

- ☐ treat area to be paved with *suitable* weed killer: required / not required

##### levels, falls, pattern

- ☐ levels and falls: see drawings

A fall of 1:60 is regarded as an optimum fall. Gradients of 1:100 are less forgiving (workmanship, settlement).

- ☐ pattern: see drawings / herringbone / basket weave / stretcher / waving

Edge restraints along the perimeter of the paving is necessary to prevent lateral spread of the units and to retain the bedding course sand. See concrete culverts, kerbs etc. below.



### 21.1.3 Laying

See SANS 784 for guidance on tactile indicators for access and mobility.

- ☐ type of paving: see drawings / flexible block/brick / flexible slab / rigid block/brick / in situ concrete

#### flexible block/brick paving

Flexible paving is paving laid on sand, with joints filled with sand. The surfaces of flexible paving usually bed down  $\pm 5$  mm after trafficking.

Consider mixing filling sand with 10 – 15% cement depending on traffic, type of paver, and control of weed growth. Spray paving thus filled with a fine spray of water immediately after filling to clean off all cement.

- ☐ concrete anchor beams across road on grades exceeding 8%: ...

Horizontal forces of motor traffic increase considerably on grades exceeding 8%, causing creep. This is avoided by casting concrete anchor beams across the road. On steeper grades the paving should preferably be rigid. See CMA technical note 6.2 1994.

#### flexible slab

- ☐ joints: filled with mortar / to be left open

#### rigid block/brick paving

Rigid paving is paving units bedded in mortar on a concrete base. External paving is exposed to wide temperature and moisture fluctuation which can only be provided for by movement joints.

#### accuracy

Accuracy depends on experience of contractor and/or labourers, and importance of the contract.

## 21.2 Concrete culverts, kerbs, channels

- ☐ type: see drawings

culvert / kerb / channel

### 21.2.1 Materials

- ☐ precast concrete culvert class: 75S / 100S / 125S / 150S / 175S / 200S

Class depends on foundation conditions and fill.

- ☐ dimensions (internal) : see drawings

span: 450 / 600 / 750, 90 / 120 / 150 / 180 / 240 / 3 000 mm; height: 300 / 450 / 600 / 900 / 1 200 / 1 500 / 1 800 / 2 400 / 3 000 mm

- ☐ kerb type: see drawings

rectangular / half-battered / battered / mountable

- ☐ edging type: see drawings

rectangular / half-round

- ☐ channel type: see drawings

rectangular / tapered.

### 21.2.2 Laying

- ☐ movement joints: leave open / fill with polysulphide.

## 21.3 Concrete retaining blocks

Concrete retaining blocks are an economical, versatile and environmentally compatible method of retaining earth and be used for planting, steps, seats, pavilions, and for erosion and scour control.

**blocks**

- ☐ shape, size and colour: ...

**preparation**

- ☐ depth, level and type of foundation: see drawings

Foundations: also on sloping or gravel foundation. *Drawings* should show this. Compacted earth foundation is usually sufficient for structures not higher than 1,2m. Higher walls should be thicker, inclined towards the retained earth, anchored with a geogrid mesh, or by modifying the properties of the backfill. Consult the supplier of the blocks and/or Competent Person. Ensure building regulations are complied with.

- ☐ width of foundation: see drawings

Show width of foundation if of concrete.

- ☐ drain pipes, aggregate drain, geofabric drain behind retaining wall: required / not required

**placing**

- ☐ stacking pattern: see drawings
- ☐ geofabric reinforcement: required / not required.

SANS 207 gives recommendations for the application of reinforcement techniques to soils and other fills.

**21.4 Gabions****materials**

- ☐ cage dimension: 4 x 1 x 1 / 6 x 2 x 0,5 m
- ☐ mesh wire to be PVC-coated: required / not required.

**21.5 Fencing**

- ☐ type: see drawings

line wire on steel posts, stays, droppers and standards / wire chain-link mesh on strain wire on steel posts, stays, droppers and standards / welded mesh / barbed tape / palisade / electric / private swimming pool

**21.5.1 Line wire and chain-link mesh fencing**

- ☐ type wire: ...

line / barbed

- ☐ type chain link wire: 1 / 2

1 (zinc coated) / 2 (zinc coated and PVC coated).

- ☐ colour of PVC coating when relevant: dark green / white
- ☐ nominal size mesh of chain-link wire: 40 / 50 / 60 / 75 / 100 mm

**posts, stays, standards, droppers**

- ☐ type: steel / concrete / wood

**erection**

- ☐ fence height: see drawings

900 / 1 200 / 1 800 / 2 000 / 2 400 / 3 000 / 3 600 mm

**fencing gates**

- ☐ size, shape: see drawings.

**21.5.2 Weld mesh fencing**

- ☐ material: mild steel / high tensile steel / very high tensile steel

High tensile steel (>950 MPa); very high tensile steel (>1 250 MPa).

- ☐ mesh size: 25 x 25 / 50 x 25 / 50 x 50 / 100 x 50 / 100 x 100 mm
- ☐ finish: hot dip galvanized / black / hot dip galvanized and powder-coated
- ☐ fence height: see drawings

1 200 / 1 800 / 2 400 mm

### **21.5.3 Barbed tape fencing**

- ☐ type: A (concertina) / B (flatwrap) / C (barbed tape unclipped) / D barbed razor tape
- ☐ material: zinc-coated steel strip / stainless steel
- ☐ zinc coating grade: light / medium / heavy

### **21.5.4 Palisade fencing**

- ☐ type: steel / concrete
- ☐ finish on steel: paint / hot dip galvanized

#### **steel**

- ☐ type: security purpose / general purpose
- ☐ steel fence height: see drawings

1 800 / 2 400 / 3 000 / 3 600 mm

- ☐ concrete fence height: see drawings

1 800 / 2 400 mm.

### **21.5.5 Electric fencing**

- ☐ type: wall top / from ground up / electrified palisade / freestanding
- ☐ number of lines for wall-top type: 6 / ...
- ☐ powered by: mains / battery / solar.

### **21.5.6 Gate automation**

- ☐ theft-resistant cages with padlock: required / not required.

### **21.5.7 Private swimming pool fencing**

- ☐ fence height: see drawings

1,6 m\* / 1,2 m

- ☐ type of protective wire coating: powder / zinc / paint / dual (paint over zinc).

## **21.6 Precast concrete plank walling**

- ☐ type panel: plain / decorative
- ☐ colour: natural / ...
- ☐ height of wall: see drawings

900 / 1 200 / 1 500 / 1 800 / 2 200 mm

- ☐ width of panel: 300 / 600 mm.

## **21.7 Swimming pools**

- ☐ swimming pool size, shape and finish: see drawings

## **21.8 Timber decking**

SANS 10043 covers general principles on the installation of timber decking.

## 21.8.1 Materials

### poles

- ☐ wood: softwood / hardwood

Softwood: Pinus; hardwood: Eucalyptus.

- ☐ top diameter (thin end): see drawings

50-79 (red) / 80-99 (yellow) / 100-119 (blue) / 120-139 (white) / 140-159 (orange) / 160-179 (green) / 180-199 (black) mm; ditto posts: 145-174 / 175-199 / 200-230 mm.

### structural laminated timber

- ☐ wood: softwood / hardwood

Softwood: Pinus; hardwood: Eucalyptus.

- ☐ appearance and finish: P

Rough-sawn (R), fine-sawn (F), planed (P), sanded (S), smoothed (G), coated (C), special (X).

Preservative treatment: The Forestry Act 1968 (Act 72 of 1968) provides for the legal requirement of pressure treatment of structural softwood timber to combat any fungus or bacterial disease, insects or parasites affecting the timber. The present legislation applies to the so-called *the coastal region* only.

- ☐ fire retardant treatment: required / not required

- ☐ size: ...

### deck boarding

- ☐ wood: softwood (Pinus) / hardwood

- ☐ softwood:

- ☐ grade: clear / semi-clear

- ☐ dimensions: 22 / 33 mm x >50 mm wide

- ☐ hardwood:

- ☐ specie: ...

- ☐ grade: clear / figured

- ☐ dimensions: 20 mm x 35 – 90 mm wide

### fixings

- ☐ screws: solid brass / silicon bronze / aluminium / stainless steel

### balustrades

- ☐ material: wood / metal / glass / ...

- ☐ construction: ...

Balustrades to conform to SANS 10400-M.

## 21.8.2 Installation

- ☐ pole to ground contact: see drawings / planted in concrete / on metal brackets on concrete footings
- ☐ plug screw holes with matching wood: required / not required
- ☐ protect end grain with metal caps: required / not required / see drawings.

## 21.9 Landscaping

### 21.9.9 Garden furniture

- ☐ garden furniture type: see drawings

|   |
|---|
| table / bench / seat / canopy / litter bin / playground equipment |
|---|

☐ material: see drawings

|                                 |
|---------------------------------|
| precast concrete / wood / metal |
|---------------------------------|

☐ finish: ...

### **21.9.10 River pebbles**

☐ size, colour, mix: ...

|                     |
|---------------------|
| Relevant standards: |
|---------------------|

|                                |
|--------------------------------|
| SANS 1200 MJ Segmental paving. |
|--------------------------------|

|   |
|---|
| Precast concrete paving blocks – laying manual. The Concrete Masonry Association. |
|---|

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|--|
| Technical guide: Clay Pavers & Paving – selection and construction guidelines. Corobrik. |
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|--|
| SANS 10244 Zinc and zinc-alloy coatings on steel wire. |
|--|

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|---|
| SANS 10104 Handrailing and balustrading (safety aspects). |
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| SANS 14001 Environmental management systems. |
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# **COVID Directive**

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**GOVERNMENT NOTICE**

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**DEPARTMENT OF EMPLOYMENT AND LABOUR**

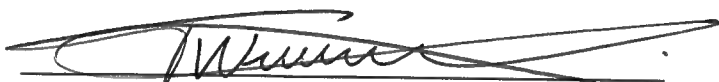
**CONSOLIDATED DIRECTIONS ON OCCUPATIONAL HEALTH AND SAFETY  
MEASURES IN CERTAIN WORKPLACES**

**No. R.**

**2020**

**DIRECTION ISSUED IN TERMS OF REGULATION 4(10) OF THE REGULATIONS  
MADE UNDER SECTION 27(2) OF THE DISASTER MANAGEMENT ACT, 2002:  
MEASURES TO ADDRESS, PREVENT AND COMBAT THE SPREAD OF COVID-19 IN  
CERTAIN WORKPLACES IN THE REPUBLIC OF SOUTH AFRICA**

I, Thembelani Waltermade Nxesi, the Minister of Employment and Labour, in terms of Regulation 4(10) of the Regulations, as published under Government Notice No. R.480 of 29 April 2020 and amended by Regulations published under Government Notices No. R.608 of 28 May 2020, R.714 of 25 June 2020, R.763 of 12 July, R.846 of 31 July 2020, R.891 of 17 August 2020, R.999 of 18 September 2020 and R.1011 of 20 September 2020 in terms of section 27(2) of the Disaster Management Act, 2002 (Act No. 57 of 2002), hereby issue the Consolidated Directions on Occupational Health and Safety Measures in certain workplaces as set out in the Schedule.



**MR TW NXESI, MP**

**MINISTER OF EMPLOYMENT AND LABOUR**

**DATE:** 28/09/2020

## **SCHEDULE**

### **Consolidated Directions on Occupational Health and Safety Measures in certain workplaces**

### **Issued by the Minister in terms of Regulation 4(10) of the National Disaster Regulations**

#### **Definitions**

1. In these Directions, a word or expression bears the meaning assigned to it in the Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997) or the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and in the Regulations made by the Minister of Cooperative Government and Traditional Affairs in terms of section 27(2) of the Disaster Management Act, 2002 (Act No. 57 of 2002), and published under Government Notice No. R. 480, in *Government Gazette* No. 43258 of 29 April 2020, as amended, and unless the context otherwise indicates-

**"BCEA"** means the Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997);

**"COVID-19"** means Coronavirus Disease 2019;

**"Department"** means the Department of Employment and Labour;

**"Disaster Management Act"** means the Disaster Management Act, 2002 (Act No. 57 of 2002);

**"health services"** means-

- (a) health care services, including reproductive health care and emergency medical treatment, contemplated in section 27 of the Constitution;
- (b) basic nutrition and basic health care services contemplated in section 28 (1) (c) of the Constitution;
- (c) medical treatment contemplated in section 35 (2) (e) of the Constitution; and
- (d) municipal health services;

**"health worker"** includes-

- (a) a health care provider providing health services in terms of any law including-



- (i) Allied Health Professions Act, 1982 (Act No. 63 of 1982);
- (ii) Health Professions Act, 1974 (Act No. 56 of 1974);
- (iii) Nursing Act, 1978 (Act No. 50 of 1978);
- (iv) Pharmacy Act, 1974 (Act No. 53 of 1974); and
- (v) Dental Technicians Act, 1979 (Act No. 19 of 1979);

(b) any other person who is engaged in the provision of health services including those providing management and support services;

**“inspector”** means a person-

- (a) designated as an inspector in terms of section 28 of OHSA;
- (b) with the approval of the Minister responsible for Transport, a railway safety inspector appointed in terms of section 32 of the National Railway Safety Regulator Act, 2002 (Act No. 16 of 2002) in respect of a “network” and a “railway operation” as those terms are defined in that Act;
- (c) law enforcement officers appointed with public health responsibilities by a local authority authorised in terms of direction 16(1);

**“OHSA”** means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);

**“PPE”** means personal protective equipment;

**“Regulations”** means the Regulations made under section 27(2) of the Disaster Management Act, 2002 (Act No. 57 of 2002) in respect of the declaration of a state of national disaster under section 27(1) of the Act published under Government Notice No. R.303 in Government Gazette No. 43906 of 15 March 2020 as extended in terms of section 27(5)(c) of the Act;

**“virus”** means the SARS-CoV-2 virus;

**“vulnerable employee”** means any employee, as contemplated in the Department of Health Guidelines<sup>1</sup>—

- (a) with known or disclosed health issues or comorbidities or any other condition that may place the employee at a higher risk of complications or death than other employees if infected with COVID-19; or
- (b) above the age of 60 years who is at a higher risk of complications or death if infected;

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<sup>1</sup> *Guidance on vulnerable employees and workplace accommodation in relation to COVID-19* – see the link in Annexure A.

**“worker”** means any person who works in an employer’s workplace including an employee of the employer or contractor, a self-employed person or volunteer<sup>2</sup>; and  
**“workplace”** means any premises or place where a person performs work.

### **Application**

2. (1) Subject to subdirection (2), these Directions apply to employers and workers in workplaces who are permitted to continue or commence operations under the Regulations.
- (2) This Direction does not apply to a workplace—
  - (a) excluded from the OHSA in terms of section 1(3) of the OHSA<sup>3</sup>;
  - (b) in respect of which another Minister has issued a direction under the Regulations dealing with health and safety of employees.
- (3) Subject to the employer’s obligations under the OHSA to conduct a risk assessment, employers with less than 10 employees need only apply the measures set out in direction 12 of these Directions.
- (4) These Directions apply for the duration of the national state of disaster, unless otherwise indicated.

### **Risk assessment and plans for protective measures**

3. (1) Every employer must—
  - (a) undertake a risk assessment to give effect to the minimum measures required by these Directions, taking into account the specific circumstances of the workplace and the requirements of the OHSA Regulations for Hazardous Biological Agents;
  - (b) on the basis of that risk assessment, develop a plan outlining the protective measures in place for the phased return of its employees before opening;
  - (c) consult on the risk assessment and plan with—
    - (i) any representative trade union, as contemplated by section 14(1) of the Labour Relations Act, 1995 (Act No. 66 of 1995); and

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<sup>2</sup> The distinction between ‘worker’ and ‘employee’ in the Directions is used to ensure that all persons who in work in a workplace are protected and to locate the responsibility in respect of certain obligations imposed on the employer in respect of its employees such as an application for illness benefits or worker’s compensation.

<sup>3</sup> Section 1(3) of OHSA excludes mines, mining areas or works in terms the Minerals Act, 1991 (Act No. 50 of 1991) and ships, boats or cranes in terms of the Merchant Shipping Act, 1951 (Act No. 57 of 1951).

- (ii) any health and safety committee established in terms of section 19 of the OHSA or, in the absence of such a committee, a health and safety representative designated in terms of section 17(1) of the OHSA or employee representative; and
  - (d) make that plan available for inspection by an inspector and a person contemplated in subdirection (c).
- (2) The plan referred to in subdirection (1)(b) must include—
  - (a) the date that the workplace will open and the hours of opening;
  - (b) a list of employees permitted to return to work and those who are required to work from home;
  - (c) the plan and timetable for the phased-in return of employees to the workplace;
  - (d) identify the vulnerable employees for the purposes of direction 4(b);
  - (e) ways of minimising the number of workers at the workplace at any one time as contemplated in direction 4(h);
  - (f) the workplace protective measures required to be taken in terms of these Directions and any sectoral guideline to get the workplace COVID-19 ready;
  - (g) the measures for the daily screening of employees and the screening of clients, contractors and visitors to the workplace; and
  - (h) the details of the COVID-19 compliance officer appointed in terms of direction 4(f); and
  - (i) a procedure to resolve any issue that may arise from the exercise by an employee of the right to refuse to work in the circumstances contemplated in direction 14(1).
- (3) The employer must phase the return of their employees to work in accordance with the plan.

#### **Administrative measures**

- 4. (1) Every employer must establish the following administrative measures:
  - (a) If the employer employs more than 50 employees, that employer must submit a record of its risk assessment, together with a written policy concerning the protection of the health and safety of its employees from COVID-19, as contemplated in section 7(1) of the OHSA to—
    - (i) its health and safety committee established in terms of section 19 of the OHSA; and

- (ii) the Department of Employment and Labour within 21 days of the commencement of this Direction;<sup>4</sup>
- (b) it must require employees to disclose whether they have any of the health issues, comorbidities or conditions contemplated in the definition of vulnerable employees and thereafter take special measures to mitigate the risk of COVID-19 for those employees in accordance with the Department of Health's Guidelines<sup>5</sup> to facilitate their safe return to work or their working from home;
- (c) it must notify all workers of the contents of these directions and the manner in which it intends to implement it;
- (e) it must notify its employees that, if they are sick or have symptoms associated with COVID-19, that they must not come to work and must take paid sick leave in terms of section 22 of the BCEA;
- (f) it must appoint a manager as a COVID-19 compliance officer to—
  - (i) oversee the implementation of the plan contemplated in direction 3(1)(b);
  - (ii) oversee the adherence to the health and safety measures established in the workplace to give effect to requirements of this Direction including appointing employees to perform this function if the employer has more than one workplace; and
  - (iii) address employee or workplace representative concerns and to keep them informed and, in any workplace in which an health and safety committee has been elected, consult with that committee on the nature of the hazard in that workplace and the measures that need to be taken;
- (g) it must ensure that the measures required by this Direction and its risk assessment plan are strictly complied with through monitoring and supervision;
- (h) it must, as far as practicable, minimise the number of workers at the workplace at any given time through rotation, staggered working hours, shift systems, remote working arrangements or similar measures in order to achieve social distancing as contemplated in direction 5 and to limit congestion in public transport and at the workplace;
- (i) it must take measures to minimise contact between workers as well as between workers and members of the public;

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<sup>4</sup> Submission must be made by email to the address of the appropriate Provincial Chief Inspector listed in <http://www.labour.gov.za/About-Us/Ministry/Pages/IES0320-7398.aspx>

<sup>5</sup> *Guidance on vulnerable employees and workplace accommodation in relation to COVID-19* – see the link in Annexure A.

- (j) it must provide workers with information that raises awareness in any form or manner, including where reasonably practicable leaflets and notices placed in conspicuous places in the workplace informing workers of the dangers of the virus, the manner of its transmission, the measures to prevent transmission such as personal hygiene, social distancing, use of masks, cough etiquette and where to go for screening or testing if presenting with COVID-19 related symptoms;
- (k) if a worker has been diagnosed with COVID-19, it must-
  - (i) inform the National Institute for Occupational Health<sup>6</sup> in accordance with the National Department of Health Guidelines<sup>7</sup> either directly or through an employers' association;
  - (ii) inform the Compensation Commissioner in accordance with the Directive on Compensation for Workplace-acquired Novel Corona Virus Disease (COVID-19)<sup>8</sup>;
  - (iii) investigate the mode of exposure, including any control failure, and review its risk assessment to ensure that the necessary controls and PPE requirements are in place;
  - (iv) determine the need to temporarily close the affected work area for decontamination using an incident-based risk assessment with due regard to the Department of Health's Guidelines<sup>9</sup> after consultation with the health and safety committee, if there is one, or with a health and safety representative; and
  - (v) give administrative support to any contact-tracing measures implemented by the Department of Health.
- (2) In addition to the duties listed in subdirection (1), an employer who employs more than 50 employees in a workplace -
  - (a) must submit the following categories of data to the National Institute for Occupational Health<sup>10</sup> in the manner set out in the National Department of Health Guidelines<sup>11</sup>:

<sup>6</sup> Report must be made to the [OHSworkplace@nioh.ac.za](mailto:OHSworkplace@nioh.ac.za) or via the online platform at <http://ohss.nioh.ac.za/>

<sup>7</sup> National Department of Health Guideline: **Guideline on the submission of COVID-19 related health data from workplaces to the National Department of Health** – see link in Annexure A.

<sup>8</sup> GN 387, 23 July 2020, GG 43540.

<sup>9</sup> *Guidance note for workplaces in the event of identification of a COVID-19 positive employee* – see link in Annexure A.

<sup>10</sup> At the following email address: [OHSworkplace@nioh.ac.za](mailto:OHSworkplace@nioh.ac.za) or via the online platform at <http://ohss.nioh.ac.za/>

<sup>11</sup> *National Department of Health Guideline: Guideline on the submission of COVID-19 related health data from workplaces to the National Department of Health* – see link in Annexure A.

- (i) Each employee's vulnerability status for serious outcomes of a COVID-19 infection;
- (ii) details of the COVID-19 screening of employees who are symptomatic;
- (iii) details of employees who test positive in terms of a positive laboratory test for the COVID-19 virus<sup>12</sup>;
- (iv) the number of employees identified as high risk contacts within the workplace if a worker has been confirmed as being positive;
- (v) details on the post-infection outcomes of those testing positive, including the return to work assessment outcome;
- (b) must submit the data referred to in para (a)-
  - (i) once in respect of each employee's status contemplated in sub-para (i);
  - (ii) as soon as possible before Tuesday of each week in respect of the data referred to in sub-paras (ii) to (v) for the previous calendar week commencing on Sunday;
- (c) must inform its employees of the submission made in terms of sub-direction (a) and advise them of its adherence to the Protection of Personal Information Act, 2013 (Act No.4 of 2013);
- (d) may submit that data to an employer association if the association has-
  - (i) entered into an agreement with the National Institute for Occupational Health to receive, process and submit the data to the Institute; and
  - (ii) undertaken to submit the data on behalf of the employer.

### **Social distancing measures**

5. (1) Every employer must arrange the workplace to ensure minimal contact between workers and, as far as practicable, ensure that there is a minimum of one and a half metres between workers while they are working, for example, at their workstations.
- (2) Depending on the circumstances of the workplace or the nature of the sector, the minimum distance may need to be greater, but reducing the number of workers present in the workplace at any time in terms of direction 4(h) may assist in achieving the required social distancing.
- (3) If it is not practicable to arrange work stations to be spaced at least one and a half metres apart, the employer must—

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<sup>12</sup> The type of test (antigen or antibody) must be specified in the submission.

- (a) arrange physical barriers to be placed between work stations or erected on work stations to form a solid physical barrier between workers while they are working; or
  - (b) when required, supply the employee, free of charge, with appropriate PPE based on a risk assessment of the working place.
- (4) Every employer must ensure that social distancing measures are implemented through supervision, both in the workplace and in the common areas outside the immediate workplace, through queue control or within the workplace, such as canteens and lavatories. These measures may include dividing the workforce into groups or staggering break-times to avoid the concentration of workers in common areas.

### **Symptom screening**

6. (1) Every employer must take measures—
- (a) to screen workers when they report for work in order to—
    - (i) ascertain whether they have any of the symptoms associated with COVID-19 as per the current National Institute for Communicable Diseases definition<sup>13</sup>, namely a cough, sore throat, shortness of breath (or difficulty in breathing), or loss of smell or taste;
    - (ii) determine whether they suffer from any of the following additional symptoms: fever, body aches, redness of eyes, nausea, vomiting, diarrhoea, fatigue, weakness or tiredness; and
  - (b) require workers to immediately inform the employer if they experience any of the symptoms in subdirection (1)(a) while at work.
- (2) Employers must comply with any guidelines issued by the the National Department of Health, in consultation with the Department, in respect of—
- (a) symptom screening and testing;<sup>14</sup> and
  - (b) if required to do so, medical surveillance and testing.
- (3) If a worker presents with COVID-19-related symptoms, or advises the employer of these symptoms, the employer must—
- (a) not permit the worker to enter the workplace or report for work; or
  - (b) if the worker is already at work immediately—

<sup>13</sup> *Clinical management of suspected or confirmed COVID-19 disease* – see the link in Annexure A.

<sup>14</sup> For more specific guidelines see *Guidelines for symptom monitoring and management of workers for SARS-CoV-2 infection* – see the link in Annexure A.

- (i) isolate the worker, provide the worker with a surgical mask and arrange for the worker to be transported to a public health facility<sup>15</sup> in a manner that does not place other workers or members of the public at risk either to be self-isolated or to be referred for a medical examination or testing;
  - (ii) assess the risk of transmission, disinfect the area and the worker's workstation, undertake contact tracing and refer those workers who may be at risk for screening and take any other appropriate measure to prevent possible transmission;
  - (iii) place its employee on paid sick leave in terms of section 22 of the BCEA or if the employee's sick leave entitlement under the section is exhausted, make application for an illness benefit in terms of clause 4 of the Directive issued on 25 March 2020 on the COVID-19 Temporary Employer Relief Scheme under regulation 4(10) of the Regulations promulgated in terms of section 27(2) of the Disaster Management Act;
  - (iv) take steps to ensure that the employee is not discriminated against on grounds of having tested positive for COVID-19 in terms of section 6 of the Employment Equity Act, 1998 (Act No. 55 of 1998); and
  - (v) if there is evidence that the worker contracted COVID-19 arising out and in the course of employment, lodge a claim for compensation in terms of the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993), in accordance with Notice No. 193 published on 3 March 2020.<sup>16</sup>
- (4) If a worker has been diagnosed with COVID-19 and isolated in accordance with the Department of Health Guidelines,<sup>17</sup> an employer may only allow a worker to return to work-
- (a) without requiring viral testing if the worker has completed the mandatory 10 days of isolation either from the onset of symptoms-
    - (i) in mild cases of infection (not requiring hospitalisation for COVID-19); or
    - (ii) in moderate to severe cases of infection (requiring supplemental oxygen or hospitalisation) from the date of achieving clinical stability or earlier if the worker has gone a medical evaluation confirming fitness to work;

<sup>15</sup> <https://www.nicd.ac.za/covid-19-testing-sites/>

<sup>16</sup> GN 387 GG 4350 of 23 July 2020 – see link in Annexure A.

<sup>17</sup> *Clinical management of suspected or confirmed COVID-19 disease* – see the link in Annexure A.



- (b) if the employer ensures that personal hygiene, wearing of masks, social distancing, and cough etiquette is strictly adhered to by the worker;
  - (c) if the employer closely monitors the worker for symptoms on return to work; and
  - (d) if the worker, on return to work, wears a surgical mask<sup>18</sup> for 21 days from the date of diagnosis.
- (5) If a worker has been in contact in the workplace with another worker who has been diagnosed with COVID-19, the employer must assess that worker's exposure in accordance with the Department of Health's Guidelines<sup>19</sup> to ascertain whether the exposure carries a high or low risk of transmission between the workers.
- (6) If there is a low risk exposure, the employer—
  - (a) may permit the worker to continue working using a cloth mask complying with standard precautions; and
  - (b) must monitor the worker's symptoms for 10 days from the first contact.
- (7) If there is a high risk exposure—
  - (a) a health worker must remain in quarantine for 7 days or with the agreement of the worker, 5 days;
  - (b) all other workers must remain in quarantine for 10 days; and
  - (c) the employer of that worker must place the worker on sick leave in accordance with subdirection (3)(b)(iii) for that period;
  - (d) if the worker remains asymptomatic, no further testing is required prior to return to work, except in respect of health workers returning to work in less than 10 days.

### **Sanitizers, disinfectants and washing of hands**

#### **7. (1) For the purposes of this direction-**

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<sup>18</sup> A surgical mask is Class A medical device (3-ply mask) categorised by the South African Health Products Regulatory Authority. Surgical masks must be fluid-resistant, disposable, and loose-fitting devices covering the mouth, nose and chin that create a physical barrier between the mouth and nose of the wearer and the immediate environment. The surgical mask must protect the wearer's nose and mouth from contact with droplets, splashes and sprays that may contain germs and filter out large particles in the air. Surgical masks may also protect others by reducing exposure to the saliva and respiratory secretions of the mask wearer.

<sup>19</sup> The *Guidelines for symptom monitoring and management of workers for CoV-2 infection* and the *Guideline: Clinical management of suspected or confirmed COVID-19 disease* – see the links in Annexure A.

- (a) a hand sanitizer must be one that has at least 70% alcohol content and is in accordance with the recommendations of the Department of Health<sup>20</sup>;
  - (b) a surface disinfectant must be in accordance with the recommendations of the Department of Health<sup>21</sup>.
- (2) Every employer must, free of charge, ensure that—
  - (a) there are sufficient quantities of hand sanitizer based on the number of workers or other persons who access the workplace at the entrance of, and in, the workplace which the workers or other persons are required to use; and
  - (b) every employee who works away from the workplace, other than at home, must be provided with an adequate supply of hand sanitizer.
- (3) If a worker interacts with the public, the employer must provide the worker with sufficient supplies of hand-sanitizer at that worker's workstation for both the worker and the person with whom the worker is interacting.
- (4) Every employer must take measures to ensure that—
  - (a) all work surfaces and equipment are disinfected before work begins, regularly during the working period and after work ends;
  - (b) all areas such as lavatories, common areas, door handles, shared electronic equipment are regularly cleaned and disinfected; and
  - (c) disable biometric systems or make them COVID-19-proof.
- (5) The employer must ensure that—
  - (a) there are adequate facilities for the washing of hands with soap and clean water;
  - (b) only paper towels are provided to dry hands after washing – the use of fabric toweling is prohibited;
  - (c) the workers are required to wash their hands and sanitize their hands regularly while at work;
  - (d) the workers interacting with the public are instructed to sanitize their hands between each interaction with a member of the public; and
  - (e) surfaces that workers and members of the public come into contact with are routinely cleaned and disinfected.

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<sup>20</sup>See paragraph 6 of the National Department of Health: *Practical Manual for Implementation of the National Infection Prevention and Control Strategic Framework, March 2020 (pp17-20)* – see the link in Annexure A

<sup>21</sup>National Institute for Occupational Health: *Cleaning and Decontamination of Workplaces in the Context of Covid-19 (10 June 2020)* – see Annexure A.

### **Cloth masks**

8. (1) The main benefit of everyone wearing a cloth mask is to reduce the amount of virus containing droplets being transmitted by those with the infection and transmitted to others and to surfaces that others may touch. Since some infected persons may not have symptoms or may not know they are infected, the Department of Health requires that all persons wear cloth masks when in a public place.
- (2) For the reasons underlying the Department of Health's requirement, every employer must—
  - (a) provide each of its employees, free of charge, with a minimum of two cloth masks, which comply with the Recommended Guidelines Fabric Face Masks,<sup>22</sup> for the employee to wear while at work and while commuting to and from work; and
  - (b) require any other worker to wear masks in the workplace.
- (3) The number and replaceability of cloth masks that must be provided to an employee or required of other workers must be determined in accordance with any sectoral guideline and in the light of the employee or worker's conditions of work, in particular, where these may result in the mask becoming wet or soiled.
- (4) Every employer must ensure that workers are informed, trained, instructed and supervised as to the correct use of cloth masks.
- (5) The general requirement for workers to wear masks does not derogate from the fact that, where a risk assessment indicates that specific personal protective equipment is required, those categories of workers must be provided with the accredited personal protective equipment in accordance with Department of Health guidelines.

### **Measures in respect of workplaces to which public has access**

9. (1) The principal purpose of the measures contained in the following clause is to protect workers from being exposed to the virus through their interaction with the public and to protect members of the public from being exposed to virus through their interaction with workers or other persons present in such a workplace.
- (2) Depending on what is reasonably practicable, given the nature of the workplace contemplated in subdirection (1), every employer must—

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<sup>22</sup> Department of Trade, Industry and Competition: *Recommended Guidelines Fabric Face Masks* - see the link in Annexure A.

- (a) determine the floor area of the workplace in square metres in order to determine the number of customers and workers that may be inside the workplace at any one time with adequate space available;
- (b) arrange the workplace to ensure that there is a distance at least one and a half metres between workers and members of the public or between members of the public;
- (c) put in place physical barriers at counters or provide workers with face shields or visors;
- (d) undertake symptom screening measures of persons other than its employees entering the workplace with due regard to available technology and any guidelines issued by the Department of Health;
- (e) display notices advising persons, other than employees entering the workplace, of the precautions they are required to observe while in the workplace;
- (f) require members of the public, including suppliers, to wear masks when inside their premises;
- (g) take steps to ensure that customers queuing inside or outside the workplace are able to maintain a distance of one and half metres from each other;
- (h) provide hand sanitizer for use by the public at the entrance to the workplace; and
- (i) assign an employee as a compliance officer to ensure that these measures are complied with and that all directions in respect of hygienic conditions and limitation of exposure to persons with COVID-19 are adhered to.

### **Ventilation**

#### **10. Every employer must—**

- (a) keep the workplace well ventilated by natural or mechanical means to reduce the SARS-CoV-2 viral load;
- (b) where reasonably practicable, have an effective local extraction ventilation system with High-Efficiency Particulate Air filters that-
  - (i) is technically assessed to be functioning effectively;
  - (ii) is regularly cleaned and maintained;
  - (iii) does not recirculate the air;
- (e) ensure that ventilation vents do not feed back in through open windows; and
- (f) ensure that ventilation filters are cleaned and replaced in accordance with the manufacturer's instructions by a competent person.

### **Specific personal protective equipment**

11. Every employer must check regularly on the websites of the National Department of Health<sup>23</sup>, National Institute of Communicable Diseases<sup>24</sup> and the National Institute for Occupational Health<sup>25</sup> whether any specialised PPE for COVID-19 is required or recommended in any guidelines given the nature of the workplace or the nature of a worker's duties and the associated level of risk.

### **Small businesses**

12. Employers with 10 employees or less must take the following measures:
- (a) If the employer is permitted to recommence operations under the Regulations, it must develop a basic plan for the phasing in the return of its employees taking into account those that are able to work remotely and those over the age of 60 years or who have comorbidities;
  - (b) arrange the workplace to ensure that employees are at least one and half metres apart or, if not practicable, place physical barriers between them to prevent the possible transmission of the virus;
  - (c) ensure that employees that present with the symptoms set out in direction 6(1)(a) are not permitted to work;
  - (d) immediately contact the relevant provincial inspectorate<sup>26</sup> for instruction and direct the employee to act in accordance with those instructions;
  - (e) provide cloth masks or require an employee to wear some form of cloth covering over their mouth and nose while at work;
  - (f) provide each employee with hand sanitizers, soap and clean water to wash their hands and disinfectants to disinfect their workstations;
  - (g) ensure that each employee while at work washes with soap and sanitizes their hands;
  - (h) ensure that their workstations are disinfected regularly; and

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<sup>23</sup> <http://www.health.gov.za/>

<sup>24</sup> <https://www.nicd.ac.za/>

<sup>25</sup> <http://www.nioh.ac.za/>

<sup>26</sup> See the list of telephone numbers for provincial inspectorates in Annexure C.

- (i) take any other measures indicated by a risk assessment of the workplace, including such measures as are appropriate in direction 9(2), if the public has access to the workplace.

### **Worker obligations**

13. In addition to the obligations of employees under the OHSA, every worker is obliged to comply with measures introduced by their employer, as required by these Directions.

### **Refusal to work due to exposure to COVID-19**

14. (1) An employee may refuse to perform any work if circumstances arise which, with reasonable justification, appear to that employee or to a health and safety representative to pose an imminent and serious risk of their exposure to COVID-19.
- (2) An employee who has refused to perform work in terms of subdirection (1) must, as soon as is reasonably practicable, notify the employer, either personally or through a health and safety representative, of the refusal and the reason for the refusal.
- (3) Every employer that has been notified in terms of this paragraph must-
- (a) after consultation with the compliance officer and the health and safety committee or, if there is no committee, a health and safety representative, endeavour to resolve any issue that may arise from the exercise of the right in terms of sub-direction (1);
  - (b) if the matter cannot be resolved internally, notify an inspector<sup>27</sup> of the issue within 24 hours and advise the employee and all other parties involved in resolving the issue that an inspector has been notified; and
  - (c) comply with any prohibition issued by an inspector in terms of section 30 of the OHSA.
- (4) Subdirection (1) applies whether or not the person refusing to work has used or exhausted any other applicable external or internal procedure.
- (5) No person may benefit from, or promise any benefit to any person for, not exercising his or her right in terms of subdirection (1).
- (6) No person may threaten to take any action against a person because that person has exercised or intends to exercise the right in terms of subdirection (1).

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<sup>27</sup> Notification by contacting the relevant provincial inspectorate at the telephone numbers listed in Annexure C or at an address in <http://www.labour.gov.za/Contacts/Provincial-offices>

- (7) No employee may be dismissed, disciplined, prejudiced or harassed for refusing to perform any work as contemplated in subdirection (1).
- (8) If there is a dispute as to whether subdirection (2) has been contravened, the employee may refer the dispute to the Commission for Conciliation, Mediation and Arbitration or an accredited bargaining council for conciliation and arbitration in accordance with the procedures contained in section 191 of the Labour Relations Act, 1995 (Act No. 66 of 1995).
- (9) If the arbitrator, appointed as contemplated in subdirection (8), finds that the employer has contravened subdirection (2), the arbitrator may make any appropriate order contemplated in section 193, read with 194(3) or (4) of the Labour Relations Act, 1995.

#### **No deduction from employee's remuneration**

- 15. No employer may make any deduction from an employee's remuneration, or require or permit an employee to make any payment to the employer or any other person, in respect of anything which the employer is obliged to provide or to do in terms of these Directions.

#### **Monitoring and enforcing Directions**

- 16. (1) To the extent that this Direction gives effect to the OSHA, the Minister responsible for Employment and Labour may authorise local authorities to perform certain inspectorate functions in terms of section 42(3) of the OSHA.
- (2) If a person fails to comply with this direction, an inspector may perform any of the functions in section 29 of the OHSA and exercise any of the powers listed in section 30 of the OHSA in order to monitor compliance with this Direction.
- (3) In so far as any contravention of these Directions constitutes a contravention of an obligation or prohibition under the OHSA, the offences and penalties provided for in section 38 of the OHSA apply.
- (4) An inspector may, for the purpose of promoting, monitoring and enforcing compliance with the OHSA, advise employees and employers of their rights and obligations in terms of these Directions in accordance with section 64 of the BCEA.

#### **Sectoral protocols and guidelines**

- 17. (1) Sectoral or industry associations must, in the event of high health risks, develop sector-

- specific health protocols in consultation with the Department of Health to limit the spread of COVID-19 in the sector including providing for those circumstances where a firm within the sector cannot stagger working hours or provide transport for its employees.
- (2) The Chief Inspector appointed in terms of section 27 the OHSA must facilitate the development of sector specific guidelines to supplement this Direction by engaging with the social partners through the offices of the National Economic Development and Labour Council.
- (3) The sector specific guidelines should include the matters referred to in Annexure B.

#### **Amendment of footnotes Annexure A**

18. The Minister may from time to time amend the footnotes and Annexure A and publish the amendments online without issuing an amended direction in order to update the links to any new applicable guideline or recommendation.

#### **Withdrawal of Directions**

19. The Directions issued in terms of regulation 10(8) of the Regulations made under section 27(2) of the Disaster Management Act and published under Government Notice No. 639 in Government Gazette No. 43400 of 4 June 2020 are hereby withdrawn.

#### **Commencement of Directions**

20. These Directions come into effect on the date of publication in the Government Gazette.
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## **Annexure A**

### **DEPARTMENT OF EMPLOYMENT AND LABOUR LINKS**

#### ***Hazardous Biological Agents Regulations***

<https://www.gov.za/documents/occupational-health-and-safety-act-regulations-hazardous-biological-agents>

#### ***Directive on Compensation for Workplace-acquired Novel Corona Virus Disease (COVID-19)***

[https://www.gov.za/sites/default/files/gcis\\_document/202007/43540gen387.pdf](https://www.gov.za/sites/default/files/gcis_document/202007/43540gen387.pdf)

### **DEPARTMENT OF TRADE, INDUSTRY AND COMPETITION LINKS**

#### ***Department of Trade, Industry and Competition: Recommended Guidelines Fabric Face Masks***

[http://www.thedtic.gov.za/wp-content/uploads/Updated Recommended Guidelines Fabric Face Masks May2020.pdf](http://www.thedtic.gov.za/wp-content/uploads/Updated_Recommended_Guidelines_Fabric_Face_Masks_May2020.pdf)

### **DEPARTMENT OF HEALTH LINKS**

#### ***Guidance on vulnerable employees and workplace accommodation in relation to COVID-19 (Version 4: 25 May 2020)***

[http://www.nioh.ac.za/wp-content/uploads/2020/05/20\\_2020-V4.-Guidance-on-vulnerable-employees-and-workplace-accommodation....pdf](http://www.nioh.ac.za/wp-content/uploads/2020/05/20_2020-V4.-Guidance-on-vulnerable-employees-and-workplace-accommodation....pdf)

#### ***Guidance note for workplaces in the event of identification of a COVID-19 positive employee (Version 5: 14 May 2020)***

[http://www.nioh.ac.za/wp-content/uploads/2020/05/guidelines\\_positive\\_worker\\_19\\_May\\_20.pdf](http://www.nioh.ac.za/wp-content/uploads/2020/05/guidelines_positive_worker_19_May_20.pdf)

#### ***Clinical management of suspected or confirmed COVID-19 disease (Version 4: 18th May 2020)***

<https://www.nicd.ac.za/wp-content/uploads/2020/05/Clinical-management-of-suspected-or-confirmed-COVID-19-Version-4.pdf>

***Guidelines for symptom monitoring and management of workers for SARS-CoVID-2 infection (Version 5: 19 August 2020)***

[https://www.nioh.ac.za/wp-content/uploads/2020/08/V5-Guidelines-for-symptom-monitoring-and-management-of-workers-for-COVID\\_19\\_19aug20.pdf](https://www.nioh.ac.za/wp-content/uploads/2020/08/V5-Guidelines-for-symptom-monitoring-and-management-of-workers-for-COVID_19_19aug20.pdf)

***Guideline on the submission of COVID-19 related health data from workplaces to the National Department of Health (Version 1, 19 August 2020)***

[https://www.nioh.ac.za/wp-content/uploads/2020/08/Workplace-Data-Submission-Guideline\\_19Aug20.pdf](https://www.nioh.ac.za/wp-content/uploads/2020/08/Workplace-Data-Submission-Guideline_19Aug20.pdf)

***National Department of Health: Practical Manual for Implementation of the National Infection Prevention and Control Strategic Framework, March 2020 (pp17-20)***

<https://www.nicd.ac.za/wp-content/uploads/2020/04/Practical-Manual-for-implementation-of-the-National-IPC-Strategic-Framework-March-2020-1.pdf>

***Cleaning and Decontamination of Workplaces in the Context of Covid-19 (10 June 2020)***

[https://www.nioh.ac.za/wp-content/uploads/2020/06/disinfection\\_ohs\\_academic\\_june-20.pdf](https://www.nioh.ac.za/wp-content/uploads/2020/06/disinfection_ohs_academic_june-20.pdf)

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-

### Annexure C

#### List of Contact Details for Provincial Inspectorates

|     | Name and Surname         | Office              | Cell Number  | Position       | Address  |
|-----|--------------------------|---------------------|--------------|----------------|--|
| 1.  | Michael Msiza            | Gauteng IES - IES   | 0829008131   | PCI            | 239 Nana Sita Streets, Pretoria  |
| 2.  | Lesibe Raphela           | Gauteng IES - IES   | 076 764 9964 | OHS Specialist |  |
| 3.  | Ivan Vass                | Northern Cape - IES | 082 802 6796 | PCI            | Cnr Compound and Pniel Road, Kimberley                                     |
| 4.  | Isaac Mohapi             | Northern Cape - IES | 0724693689   | OHS Specialist |  |
| 5.  | Phaswane Tladi           | Limpopo – IES       | 0845043801   | PCI            | 42A Schoeman Street, Polokwane   |
| 6.  | Carol Mthethwa           | Limpopo - IES       | 071 684 9584 | OHS Specialist |  |
| 7.  | David Esau               | Western Cape – IES  | 082 791 4485 | PCI            | 6th Floor, West Bank Building, Cnr Riebeeck and Long Streets, Cape Town    |
| 8.  | Fezeka Ngalo             | Western Cape - IES  | 0827916244   | OHS Specialist |  |
| 9.  | Boikie Mampurū           | Northwest – IES     | 082 908 2308 | PCI            | 2nd Floor, Provident House, University Drive, Mmabatho                     |
| 10. | Lucia Ramusi             | Northwest – IES     | 082 490 0808 | OHS Specialist |  |
| 11. | Lucky Mkhonto            | Eastern Cape - IES  | 082 908 2318 | PCI            | 3 Hill Street, East London, 5201   |
| 12. | Kulungile Nkanjeni       | Eastern Cape - IES  | 060 992 7332 | OHS Specialist |  |
| 13. | Manelisi Luxande         | Free State          | 066 304 3469 | PCI            | Laboria House, 43 Charlotte Maxeke Street, Bloemfontein                    |
| 14. | Makalo Khoele            | Free State          | 076 047 0282 | OHS Specialist |  |
| 15. | Pearl Dyalvani           | Mpumalanga          | 072 463 2575 | Acting PCI     | Labour Building, Cnr Hofmeyer Street and Beatty Avenue, Witbank            |
| 16. | Nhlanhla Mbuyazi         | Mpumalanga          | 0724617999   | OHS Specialist |  |
| 17. | Mncedisi Edward Khambula | KwaZulu Natal       | 0609859286   | PCI            | 267 Anton Lembede (Smith Street), Royal Building, 11th Floor, Durban, 4000 |
| 18. | Sandile Kubeka           | KwaZulu Natal       | 0609942436   | OHS Specialist |  |

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# Electrical Specifications

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**public works**

Department:  
Public Works  
REPUBLIC OF SOUTH AFRICA

**SPECIFICATION**  
**FOR THE**  
**ELECTRICAL INSTALLATION**  
**OF A**  
**ALBERTON SAPS**

SPECIFICATION FOR THE ELECTRICAL INSTALLATION  
OF A COMPREHENSIVE SERVICE  
AT  
ALBERTON SAPS

**CONSISTING OF:**

**SECTION C3 Alberton SAPS : ELECTRICAL INSTALLATION WORK**

**In part C3 see separate documents for:**

Building work  
Mechanical work  
Fire detection work  
Generator  
Lift  
Etc.



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## SPECIFICATION FOR ELECTRICAL WORK

### PART 1 - GENERAL

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## **PART 1 - GENERAL**

### **1 TESTS**

After completion of the works and before practical completion is achieved, a full test will be carried out on the installation for a period of sufficient duration to determine the satisfactory working thereof. During this period the installations will be inspected and the Contractor shall make good, to the satisfaction of the Principle Agent/Electrical Engineer or the employer, any defects which may arise.

The Contractor shall provide all instruments and equipment required for testing and any water, power and fuel required for the commissioning and testing of the installations at completion.

### **2 MAINTENANCE OF INSTALLATIONS**

With effect from the date of the Practical completion Certificate the Contractor shall at his own expense undertake the regular servicing of the installation during the maintenance period and shall make all adjustments necessary for the correct operation thereof.

If during the said period the installations is not in working order for any reason for which the Contractor is responsible, or if the installations develops defects, he shall immediately upon being notified thereof take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however be so frequent as to become troublesome, or should the installations otherwise prove unsatisfactory during the said period the Contractor shall, if called upon by the Principle Agent/Electrical Engineer or the Employer, at his own expense replace the whole of the installations or such parts thereof as the Principal Agent/Electrical Engineer or the Employer may deem necessary with apparatus specified by the Principal Agent/Electrical Engineer or the Employer.

### **3 REGULATIONS**

The installation shall be erected and tested in accordance with the Acts and Regulations as indicated in the scope of works

### **4 NOTICES AND FEES**

The Contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority.

On production of the official account, only the net amount of the fee charged by the Supply Authority for connection of the installation to the supply mains, will be refunded to the Contractor by the Employer.

### **5 SCHEDULE OF FITTINGS**

In all instances where schedule of light, socket outlet and power points are attached to or included on the drawings, these schedules are to be regarded as forming part of the specification.

### **6 QUALITY OF MATERIALS**

Only materials of first class quality shall be used and all materials shall be subject to the approval of the Employer. Departmental specifications for various materials to be used on this Contract are attached to and form part of this specification.

Wherever applicable the material is to comply with the relevant South African Bureau of Standards, specifications, or to IEC Specifications, where no SANS Specifications exist.

Materials wherever possible, must be of South African manufacture.

### **7 CONDUIT AND ACCESSORIES**

The type of conduit and accessories required for the service, i.e. whether the conduit and accessories shall be of the screwed type, plain-end type or of the non-metallic type and whether metallic conduit shall be

black enamelled or galvanised, is specified in Part 2 of this specification.

Unless other methods of installation are specified for certain circuits, the installation shall be in conduit throughout. No open wiring in roof spaces or elsewhere will be permitted.

The conduit and conduit accessories shall comply fully with the applicable SANS specifications as set out below and the conduit shall bear the mark of approval of the South African Bureau of Standards.

- a) Screwed metallic conduit and accessories: SANS 61386-1 and 21.
- b) Plain-end metallic conduit and accessories: SANS 61386-1 and 21.
- c) Non-metallic conduit and accessories: SANS 61386-1 and 21.

All conduit fittings except couplings, shall be of the inspection type. Where cast metal conduit accessories are used, these shall be of malleable iron. Zinc base fittings will not be allowed.

Bushes used for metallic conduit shall be brass and shall be provided in addition to locknuts at all points where the conduit terminates at switchboards, switch-boxes, draw-boxes, etc.

Draw-boxes are to be provided in accordance with the "Wiring Code" and wherever necessary to facilitate easy wiring.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm. In all other instances the sizes of conduit shall be in accordance with the "Wiring Code" for the specified number and size of conductors, unless otherwise directed in part 2 of this specification or indicated on the drawings.

Only one manufactured type of conduit and conduit accessories will be permitted throughout the installation.

Running joints in screwed conduit are to be avoided as far as possible and all conduit systems shall be set or bent to the required angles. The use of normal bends must be kept to a minimum with exception of larger diameter conduits where the use of such bends is essential.

All metallic conduit shall be manufactured of mild steel with a minimum thickness of 1,2mm for plain-end conduit and 1,6mm in respect of screwed conduit.

Under no circumstances will conduit having a wall thickness of less than 1,6mm be allowed in screed laid on top of concrete slabs.

Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must on indication by the Department's inspectorate staff, be completely removed and rectified and any wiring already drawn into such damaged conduits must be completely renewed at the Contractor's expense.

Conduit and conduit accessories used for flame-proof or explosion proof installations and for the suspension of luminaires as well as all load bearing conduit shall in all instances be of the metallic screwed type.

All conduit and accessories used in areas within 50 km of the coast shall be galvanised to SANS 32 and SANS 121.

Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Department to any claim submitted by the Contractor, which may result from a lack of knowledge in regard to the supply authority's requirements.

## **8 CONDUIT IN ROOF SPACES**

Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1,5m by means of saddles screwed to the roof timbers.

Nail or crampets will not be allowed.

Where non-metallic conduit has been specified for a particular service, the conduit shall be supported and fixed with saddles with a maximum spacing of 450 mm. The Contractor shall supply and install all additional supporting timbers in the roof space as required.

Under flat roofs, in false ceilings or where there is less than 0,9m of clearance, or should the ceilings be insulated with glass wool or other insulating material, the conduit shall be installed in such a manner as to allow for all wiring to be executed from below the ceilings.

Conduit runs from distribution boards shall, where possible terminate in fabricated sheet steel draw-boxes installed directly above or in close proximity to the boards.

## **9 SURFACE MOUNTED CONDUIT**

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified under Part 2 of the specification, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection coupling used where necessary.

No threads will be permitted to show when the conduit installation is complete, except where running couplings have been employed.

Running couplings are only to be used where unavoidable, and shall be fitted with a sliced couplings as a lock nut.

Conduit is to be run on approved spaced saddles rigidly secured to the walls.

Alternatively, fittings, tees, boxes, couplings etc., are to be cut into the surface to allow the conduit to fit flush against the surface. Conduit is to be bedded into any wall irregularities to avoid gaps between the surface and the conduit.

Crossing of conduits is to be avoided, however, should it be necessary purpose-made metal boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw-boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to be run along the wall plates and the beams.

Painting of surface conduit shall match the colour of the adjacent wall finishes.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc., and round-head screws shall be used for fixing saddles, switches, socket outlets, etc., to walls, wood plugs and the plugging in joints in brick walls are not acceptable.

## **10 CONDUIT IN CONCRETE SLABS**

In order not to delay building operations the Contractor must ensure that all conduits and other electrical equipment which are to be cast in the concrete columns and slabs are installed in good time.

The Contractor shall have a representative in attendance at all times when the casting of concrete takes place.

Draw-boxes, expansion joint boxes and round conduit boxes are to be provided where necessary. Sharp

bends of any nature will not be allowed in concrete slabs.

Draw and/or inspection boxes shall be grouped under one common cover plate, and must preferably be installed in passages or male toilets.

All boxes, etc., are to be securely fixed to the shuttering to prevent displacement when concrete is cast. The conduit shall be supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete slabs and/or beams.

Before any concrete slabs are cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

## **11 FLEXIBLE CONNECTIONS FOR CONNECTING UP OF STOVES, MACHINES, ETC.**

Flexible tubing connections shall be of galvanised steel construction, and in damp situations of the plastic sheathed galvanised steel type. Other types may only be used subject to the prior approval of the Department's site electrical representative.

Connectors for coupling onto the flexible tubing shall be of the gland or screw-in types, manufactured of either brass or cadmium or zinc plated mild steel, and the connectors after having been fixed onto the tubing, shall be durable and mechanically sound.

Aluminium and zinc alloy connectors will not be acceptable.

## **12 WIRING:**

Except where otherwise specified in Part 2 of this specification, wiring shall be carried out in conduit throughout. Only one circuit per conduit will be permitted.

No wiring shall be drawn into conduit until the conduit installation has been completed and all conduit ends provided with bushes. All conduits to be clear of moisture and debris before wiring is commenced.

Unless otherwise specified in Part 2 of this specification or indicated on the service drawings, the wiring of the installation shall be carried out in accordance with the "Wiring Code". Further to the requirements concerning the installation of earth conductors to certain light points as set out in the "Wiring Code", it is a specific requirement of this document that where plain-end metallic conduit or non-metallic conduit has been used, earth conductors must be provided and drawn into the conduit with the main conductors to all points, including all luminaires and switches throughout the installation.

Wiring for lighting circuits is to be carried out with 1,5mm<sup>2</sup> conductors and a 1,5mm<sup>2</sup>-earth conductor. For socket outlet circuits the wiring shall comprise 4mm<sup>2</sup> conductors and a 2,5mm<sup>2</sup>-earth conductor. In certain instances, as will be directed in Part 2 of this specification, the sizes of the aforementioned conductors may be increased for specified circuits. Sizes of conductors to be drawn into conduit in all other instances, such as feeders to distribution boards, power points etc., shall be as specified elsewhere in this specification or indicated on the drawings. Sizes of conductors not specified must be determined in accordance with the "Wiring Code".

The loop-in system shall be followed throughout, and no joints of any description will be permitted.

The wiring shall be done in PVC insulated 600/1000 V grade cable to SANS 1507.

Where cable ends connect onto switches, luminaires etc., the end strands must be neatly and tightly twisted together and firmly secured. Cutting away of wire strands of any cable will not be allowed.

## **13 SWITCHES AND SOCKET OUTLETS**

All switches and switch-socket outlet combination units shall conform to the Department Quality Specifications, which form part of this specification.

No other than 16 A 3 pin sockets are to be used, unless other special purpose types are distinctly specified or shown on the drawings.

All light switches shall be installed at 1,4m above finished floor level and all socket outlets as directed in the Schedule of Fittings which forms part of this specification or alternatively the height of socket outlets may be indicated on the drawings.

#### **14 SWITCHGEAR**

Switchgear, which includes circuit breakers, iron-clad switches, interlocked switch-socket outlet units, contactors, time switches, etc., is to be in accordance with the Departmental Quality Specifications which form part of this specification and shall be equal and similar in quality to such brands as may be specified.

For uniform appearance of switchboards, only one approved make of each of the different classes of switchgear mentioned in the Quality Specifications shall be used throughout the installations.

#### **15 SWITCHBOARDS**

All boards shall be in accordance with the types as specified, be constructed according to the detail or type drawings and must be approved by the Employer before installation.

In all instances where provision is to be made on boards for the supply authority's main switch and/or metering equipment the contractor must ensure that all requirements of the authorities concerned in this respect are met.

Any construction or standard type aboard proposed, as an alternative to that specified must have the prior approval of the Employer.

All busbars, wiring, terminals, etc., are to be adequately insulated and all wiring is to enter the switchgear from the back of the board. The switchgear shall be mounted within the boards to give a flush front panel. Cable and boxes and other ancillary equipment must be provided where required.

Clearly engraved labels are to be mounted on or below every switch. The working of the labels in English, is to be according to the lay-out drawings or as directed by the Electrical Engineer and must be confirmed on site. Flush mounted boards to be installed with the top of the board 2,0m above the finished floor level.

#### **16 WORKMANSHIP AND STAFF**

Except in the case of electrical installations supplied by a single-phase electricity supply at the point of supply, an accredited person shall exercise general control over all electrical installation work being carried out.

The workmanship shall be of the highest grade and to the satisfaction of the Employer.

All inferior work shall, on indication by the Employer's inspecting officers, immediately be removed and rectified by and at the expense of the Contractor.

#### **17 VERIFICATION AND CERTIFICATION OF ELECTRICAL INSTALLATION (CERTIFICATE OF COMPLIANCE AND TEST REPORT**

On completion of the service, a certificate of compliance must be issued to the Principal Agent/Electrical Engineer or Employer in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) in the format as set out in SANS 10142-1 & 2.

#### **18 EARTHING OF INSTALLATION**

##### **Main earthing**

The type of main earthing must be as required by the supply authority if other than the Employer, and in any event as directed by the Principal Agent/Electrical Engineer, who may require additional earthing to meet test standards.

Where required an earth mat shall be provided, the minimum size, unless otherwise specified, being 1,0m

x 1,0m and consisting of 4mm diameter hard-drawn bare copper wires at 250mm centres, brazed at all intersections.

Alternatively or additionally earth rods or trench earths may be required as specified or directed by the Electrical Engineer.

Installations shall be effectively earthed in accordance with the "Wiring Code" and to the requirements of the supply authority. All earth conductors shall be stranded copper with or without green PVC installation.

Connection from the main earth bar on the main board must be made to the cold water main, the incoming service earth conductor, if any and the earth mat or other local electrode by means of 12mm x 1,60 mm solid copper strapping or 16 mm<sup>2</sup> stranded (not solid) bare copper wire or such conductor as the Department's representative may direct. Main earth copper strapping where installed below 3m from ground level, must be run in 20 mm diameter conduit securely fixed to the walls.

All other hot and cold water pipes shall be connected with 12mm x 0,8mm perforated for solid copper strapping (not conductors) to the nearest switchboard. The strapping shall be fixed to the pipework with brass nuts and bolts and against walls with brass screws at 150-mm centres. In all cases where metal water pipes, down pipes, flues, etc., are positioned within 1,6m of switchboards an earth connection consisting of copper strapping shall be installed between the pipework and the board. In vertical building ducts accommodating both metal water pipes and electrical cables, all the pipes shall be earthed at each distribution board.

### **Roofs, gutters and down pipes**

Where service connections consist of overhead conductors, all metal parts of roofs, gutters and down pipes shall be earthed. One bare 10mm<sup>2</sup> copper conductor shall be installed over the full length of the ceiling void, fixed to the top purlin and connected to the main earth conductor and each switchboard. The roof and gutters shall be connected at 15m intervals to this conductor by means of 12mm X 0,8mm copper strapping (not conductors) and galvanised bolts and nuts. Self-tapping screws are not acceptable. Where service connections consist of underground supplies, the above requirements are not applicable.

### **Sub-distribution boards**

A separate earth connection shall be supplied between the earth busbar in each sub-distribution board and the earth busbar in the Main Switchboard. These connections shall consist of a bare or insulated stranded copper conductors installed along the same routes as the supply cables or in the same conduit as the supply conductors. Alternatively armoured cables with earth continuity conductors included in the armouring may be utilised where specified or approved.

### **Sub-circuits**

The earth conductors of fall sub-circuits shall be connected to the earth busbar in the supply board in accordance with SANS 10142.

### **Ring Mains**

Common earth conductors may be used where various circuits are installed in the same wire way in accordance with SANS 10142. In such instances the sizes of earth conductors shall be equivalent to that of the largest current carrying conductor installed in the wire way, alternatively the size of the conductor shall be as directed by the Engineer. Earth conductors for individual circuits branching from the ring main shall be connected to the common earth conductor with T-ferrules or soldered. The common earth shall not be broken.

### **Non-metallic Conduit**

Where non-metallic conduit is specified or allowed, the installation shall comply with the Department's standard quality specification for "conduit and conduit accessories".

Standard copper earth conductors shall be installed in the conduits and fixed securely to all metal appliances and equipment, including metal switch boxes, socket-outlet boxes, draw-boxes, switchboards,



luminaires, etc. The securing of earth conductors by means of self-threading screws will not be permitted.

### **Flexible Conduit**

An earth conductor shall be installed in all non-metal flexible conduit. This earth conductor shall not be installed externally to the flexible conduit but within the conduit with the other conductors. The earth conductor shall be connected to the earth terminals at both ends of the circuit.

### **Connection**

Under no circumstances shall any connection points, bolts, screws, etc., used for earthing be utilised for any other purpose. It will be the responsibility of the Contractor to supply and fit earth terminals or clamps on equipment and materials that must be earthed where these are not provided.

Unless earth conductors are connected to proper terminals, the end shall be tinned and lugged.

## **19 MOUNTING AND POSITIONING OF LUMINAIRES**

The Contractor is to note that in the case of board and acoustic tile ceilings, i.e. as opposed to concrete slabs, close co-operation with the building contractor is necessary to ensure that as far as possible the luminaires are symmetrically positioned with regard to the ceiling pattern.

The layout of the luminaires as indicated on the drawings must be adhered to as far as possible and must be confirmed with the Department's representative.

Fluorescent luminaires installed against concrete ceilings shall be screwed to the outlet boxes and in addition 2 x 6mm expansion or other approved type fixing bolts are to be provided. The bolts are to be  $\frac{3}{4}$  of the length of the luminaires apart.

Fluorescent luminaires to be mounted on board ceilings shall be secured by means of two 40mm x No. 10 round head screws and washers. The luminaires shall also be bonded to the circuit conduit by means of locknuts and brass bushes. The fixing screws are to be placed  $\frac{3}{4}$  of the length of the fitting apart.

Earth conductors must be drawn in with the circuit wiring and connected to the earthing terminal of all fluorescent luminaires as well as other luminaires exposed to the weather in accordance with the "Wiring Code".

Incandescent luminaires are to be screwed directly to outlet boxes in concrete slabs. Against board ceilings the luminaires shall be secured to the bracing or joists by means of two 40mm x No. 8 round head screws.

## **PART 2: INSTALLATION DETAILS**

**[Omit which is not applicable. Clauses 1 to 10 of Part 2 are standard clauses (which should not be altered) and must be inserted in the document in the order as set out.]**

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## **PART 2: INSTALLATION DETAILS**

### **1 CABLE SLEEVE PIPES**

Where cables cross under roadways, other services and where cables enter buildings, the cables shall be installed in earthenware or high-density polyethylene pipes.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

### **2 NOTICES**

The Contractor shall issue all notices and make the necessary arrangements with Supply Authorities, the Postmaster-General, and S.A. Transport Services, Provincial or National Road Authorities and other authorities as may be required with respect to the installation.

### **3 ELECTRICAL EQUIPMENT**

All equipment and fittings supplied must be in accordance with the attached quality specification (Part 3 of this document), suitable for the relevant supply voltage, and frequency and must be approved by the Employers Electrical Engineer.

### **4 DRAWINGS**

The drawings generally show the scope and extent of the proposed work and shall not be held as showing every minute detail of the work to be executed.

The position of power points, switches and light points that may be influenced by built-in furniture must be established on site, prior to these items being built in.

### **5 BALANCING OF LOAD**

The Contractor is required to balance the load as equally as possible over the multiphase supply.

### **6 SERVICE CONDITIONS**

All plant shall be designed for the climatic conditions appertaining to the service.

### **7 SWITCHES AND SOCKET OUTLETS**

The installation of switches and socket outlets must conform to clause 13 of Part 1 of this specification.

### **8 LIGHT FITTINGS AND LAMPS**

The installation and mounting of luminaires must conform to clause 19 of Part 1 of this specification.

All fittings to be supplied by the Contractor shall have the approval of the Employer.

The light fittings must be of the type specified in the Schedule of Light Fittings.

### **9 EARTHING AND BONDING**

The Contractor will be responsible for all earthing and bonding of the building and installation. The earthing and bonding is to be carried out strictly as described in clause 18 of Part 1 of this specification and to the satisfaction of the Employer/s Electrical Engineer.

## 10 MAINTENANCE OF ELECTRICAL SUPPLY

All interruptions of the electrical supply that may be necessary for the execution of the work, will be subject to prior arrangement between the Contractor and the Client and the Employer's Electrical Engineer.

## 11 EXTENT OF WORK

The work covered by this contract comprises the complete electrical installation, in working order, as shown on the drawings and as per this specification, including the supply and installation of all fittings and also the installation of such equipment supplied by the Employer.

## 12 SUPPLY AND CONNECTION

***[The supply voltage, responsibility of the Supply Authority and the contractor must be specified]***

### **EXAMPLE:**

The supply will be at 400/230 Volt 50Hz.

The Contractor must arrange in good time with the local Municipality for the installation of the 500kVA transformer and low-tension meter point and submit the account to the Employer's Regional Office for payment.

The Contractor will be responsible for the supply and installation of the supply cable from the meter box to the main low-tension distribution board (MDB). The size and length of the cable is listed in the Schedule of Cables and measured in the Bills of Quantities.

### **Standby Plant**

The 10kVA standby plant complete with automatic changeover control panel (Distribution Board – X) be supplied, installed and commissioned by others.

The Contractor will only be responsible for the supply and installation of the cable connections between the Main Distribution Board and the Charge- over Control Panel (Distribution Board - X).

The supply cables are listed in the Schedule of Cables and measured in the Bills of Quantities.

## 13 CONDUIT AND WIRING

**Conduit and conduit accessories shall be black enameled/galvanized screwed conduit or black enameled/galvanized plain end conduit in accordance with SANS 61386.**

All conduits, regardless of the system employed, shall be installed strictly as described in the applicable paragraphs of clauses 4 to 8 of Part 1 of the specification. Wiring of the installation shall be carried out as directed in clause 9 part 1 of this specification.

Where plain end conduit is offered all switches and light fittings must be supplied with a permanent earth terminal for the connection of the earth wire.

Lugs held by switch fixing screws or self tapping screws will not be acceptable.

### 13.1 Telephone Installation

The Contractor shall allow for the complete installation of all conduits, outlet boxes, the communication service provider Distribution boards, sleeve pipes, etc., required for the telephone system as shown on the drawings.

The sizes of all telephone conduits are indicated on the drawings and must be installed in the floor slab. Galvanized steel draw-wires shall be installed in all conduits.

End boxes must consist of a 50mm x 100 mm x 100mm outlet box fitted with suitable blank cover plates, flush mounted 0,4m above floor level.

The communication service provider Distribution Board must consist of a 150mm x 600mm x 600mm metal box and hinged door with a 20mm thick wooden backboard. The board must be flush mounted, 1,37m above the floor.

### **13.2 Intercom Installation**

The supply and installation of the intercom system is not included in this Contract.

The Contractor shall allow for the complete supply and installation of all conduits and outlet boxes required for the intercom installation as shown on the drawings.

The size of all conduits, boxes and mounting heights of the end boxes are indicated on the drawings. Galvanized steel draw-wires shall be installed in all conduits and the boxes fitted with suitable blank cover plates.

### **13.3 Power Trunking**

The Contractor shall be responsible for the supply and installation of all power trunking complete with corner pieces, end pieces, junction pieces, supply conduits, cover plates and power outlets as specified and indicated on the drawings.

The power trunking must comply with SANS 61084. The Contractor must ensure that the power trunking is installed to satisfaction of the Employer's Electrical Engineer before commencing with the wiring of the power trunking.

**[The method of installing and wiring of the power trunking must be specified in detail.]**

## **14 POWER POINTS**

**Allow for the installation of power points and equipment as listed in the schedule, indicated on the drawings and described below:**

- 14.1 ELECTRIC STOVE
- 14.2 ELECTRIC COOKING TOP
- 14.3 WATER HEATERS, ETC.

[The power points required for the service must be specified in detail with reference to supplier of the equipment, method of installation and final connection. The size of the conduit/the conductors and cable must be listed in the Schedule of Power Points.]

Example: Water Heaters

The Contractor must electrically connect all water heaters as specified and listed in the Schedule of Power Points.

NOTE: The hot water installation must be approved by the Employers Electrical Engineer. Detail with regard to the size and type of water heaters that must be provided must be obtained from the Architect.

## **15 CABLES**

The Contractor shall supply and completely install all distribution cables as indicated on the drawings, and listed in the Schedule of Cables.

The storage, transportation, handling and laying of the cables shall be according to first class practice, and the contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to cables during such operations.

The cable-trenches shall be excavated to a depth of 0,9m deep below ground level and shall be 450mm wide for one to three cables, and the width shall be increased where more than three cables are laid together so that the cables may be placed at least two cable diameters apart throughout the run. The bottom of the trench shall be level and clean and the bottom and sites free from rocks or stones liable to cause damage to the cable.

The Contractor must take all necessary precautions to prevent the trenching work being in any way a hazard to the personnel and public and to safeguard all structures, roads, sewage works or other property on the site from any risk of subsidence and damage.

In the trenches the cables shall be laid on a 75mm thick bed of earth and be covered with a 150-mm layer of earth before the trench is filled in.

All joints in underground cables and terminations shall be made either by means of compound filled boxes according to the best established practice by competent cable jointers using first class materials or by means of approved epoxy-resin pressure type jointing kits. Epoxy-resin joints must be made entirely in accordance with the manufacturer's instructions and with materials stipulated in such instructions. Low tension PVCA cables are to be made off with sealing glands and materials designed for this purpose which must be of an approved make. Where cables are cut and not immediately made off, the ends are to be sealed without delay.

The laying of cables shall not be commenced until the trenches have been inspected and approved. The cable shall be removed from the drum in such a way that no twisting, tension or mechanical damage is caused and must be adequately supported at intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after drawing in of the cables.

Backfilling (after bedding) of the trenches is to be carried out with a proper grading of the material to ensure settling without voids, and the material is to be tamped down after the addition of every 150mm. The surface is to be made good as required.

On each completed section of the laid and jointed cable, the insulation resistance shall be tested to approval with an approved "Megger" type instrument of not less than 500 V for low tension cables.

Earth continuity conductors are to be run with all underground cables constituting part of a low tension distribution system. Such continuity conductors are to be stranded bare copper of a cross-sectional area equal to at least half that of one live conductor of the cable, but shall not be less than 4mm<sup>2</sup> or more than 70mm<sup>2</sup>. A single earth wire may be used as earth continuity conductor for two or more cables run together, branch earth wires being brazed on where required.

#### 15.1 LAYING, JOINTING AND MAKING OFF OF ELECTRICAL CABLES

**[The requirements specified hereafter, are aimed essentially at high tension cable but are also valid for low tension cable, where applicable.]**

1. The use of the term "Inspector", includes the engineer or inspector of the Department or an empowered person of the concerned supervising consulting engineer's firm.
2. No cable is to be laid before the cable trench is approved and the soil qualification of the excavation is agreed upon by the Contractor and inspector.
3. After the cable has been laid and before the cable trench is back-filled the inspector must ensure that the cable is properly bedded and that there is no undesirable material included in the bedding layer.
4. All cable jointing and the making off of the cables must only be carried out by qualified experienced cable jointers. Helpers of the jointers may not saw, strip, cut, solder, etc. The cable and other work undertaken by them must be carried out under the strict and constant supervision of the jointer.
5. Before the Contractor allows the jointer to commence with the jointing work or making off of the

cable (making off is recognized as half a joint) he must take care and ensure:

- 5.1 That he has adequate and suitable material available to complete the joint properly and efficiently. Special attention must be given to ensure the cable ferrules and cable lugs are of tinned copper and of sufficient size. The length of the jointing lugs must be at least six times the diameter of the conductor,
- 5.2 That the joint pit is dry and that all loose stones and material are removed,
- 5.3 That the walls and banks of the joint pit are reasonable firm and free from loose material which can fall into the pit,
- 5.4 That the necessary coffer-dams or retaining walls are made to stop the flow of water into the joint pit,
- 5.5 That the joint pit is provided with suitable groundsheets so that the jointing work is carried out in clean conditions,
- 5.6 That the necessary tents or sails are installed over the joint pit to effectively avert unexpected rainfall and that sufficient light or lighting is provided,
- 5.7 That the necessary means are available to efficiently seal the jointing or cable end when an unexpected storm or cloudburst occurs, regardless of how far the work has progressed,
- 5.8 That the cables and other materials are dry, undamaged and in all respects are suitable for the joint work or making off,
- 5.9 That the heating of cable oil, cable compound, plumbers metal and solder is arranged that they are at the correct temperature when required so that the cable is not unnecessarily exposed to the atmosphere and consequently the ingress of moisture (care must be taken of overheating)

Flow temperatures of cable oil and compound must be determined with suitable thermometers. Cable oil and compound must not be heated to exceed the temperatures given on the containers and precaution must be taken to ensure that the tin is not overheated in one position. The whole mass must be evenly and proportionally heated.

(Temperatures of solder and plumbers metal may be tested with brown paper (testing time: 3 seconds). The paper must colour slightly - not black or burnt).

6. Before the paper-insulated cables are joined, they must be tested for the presence of moisture by the cable jointers test. This consists of the insertion of a piece of unhandled insulated impregnated paper tape in warm cable oil heated to a temperature of  $130 \pm 5^{\circ}\text{C}$ .

Froth on the surface of the oil is an indication that moisture is present in the impregnated insulation and the amount of the froth gives an indication of the moisture present.

7. If the cable contains moisture or is found to be otherwise unsuitable for jointing or making of the inspector is to be notified immediately and he will issue the necessary instruction to cope with the situation.
8. The joint or making off of paper insulated cables must not be commenced during rainy weather.
9. Once a joint is in progress the jointer must proceed with the joint until it is complete and before he leaves the site.
10. The jointer must ensure that the material and his tools are dry at all times, reasonably clean and absolutely free from soil.
11. Relating to the jointing of the cable the following requirements apply:
  - 11.1 All jointing must be carried out in accordance with recognized and tried techniques and comply

strictly with the instructions given by the supplier of the jointing kit.

- 11.2 The cables must be twisted by hand so that the cores can be joined according to the core numbers. If necessary the cable is to be exposed for a short distance to accomplish this. Under no circumstances may the cores in a joint be crossed so as to enable cores to be joined according to the core numbers. If it is not possible to twist the cables so that the preceding requirements can be met, then cores are to be joined in the normal way without any consideration of the core numbers.
- 11.3 Normally the cables will have profile conductors. The conductors shall be pinched with gas pliers to form a circular section, bound with binding wire so that they do not spread, and then tinned before jointing.
- 11.4 Jointing ferrules, the length of which are at least 6 times the diameter of the conductors, must be slid over the conductor ends to be joined and pinched tightly. Then they are soldered by means of the ladle process whilst being pinched further closed.

Use resin only as a flux. The slot opening in the ferrule must be completely filled, including all depressions.

Remove all superfluous metal with a cloth dipped in tallow. Work during the soldering process must be from top to bottom. Rub the ferrule smooth and clean with aluminium oxide tape after it has cooled down to ensure that there are not any sharp points or edges.

**NB:** The spaces between the conductor strands must be completely filled by soldering process and must be carried out quick enough to prevent the paper insulation from burning or drying out unnecessarily.

- 11.5 After the ferrules have been rubbed smooth and clean, they and the exposed cores must be treated with hot cable oil (110°C) to remove all dust and moisture. These parts are to be thoroughly basted with the oil.
- 11.6 The joiner must take care that his hands are dry and clean before the joint is insulated. Also the insulating tape which is to be used must first be immersed in warm cable oil (110°C) for a sufficient period to ensure that no moisture is present.
- 11.7 After the individual cores have been installed they must be well basted with hot cable oil and again after the applicable separator and/or belt insulation tape is applied before the lead joint sleeve is placed in position.
- 11.8 The lead joint sleeve must be thoroughly cleaned and prepared before it is placed on the cable and must be kept clean during the whole jointing process. Seal the filling apertures of the sleeve with tape until the sleeve is ready for compound filling.
- 11.9 The plumbing joints employed to solder the joint sleeve to the cable sheath, must be cooled off with tallow and the joint sleeve is to be filled with compound while it is still warm. Top up continuously until the joint is completely filled to compensate for the compound shrinkage.
- 11.10 The outer joint box must be clean and free from corrosion. After it has been placed in position it must be slightly heated before being filled with compound. Top up until completely full.
- 12. As far as cable end boxes are concerned the requirements as set out above are valid where applicable.

## **16. DISTRIBUTION BOARDS**

In addition to clause 14 and clause 15 of Part 1 of this specification the following shall also be applicable to switchboards required for this service.

The Contractor shall supply and install the distribution boards as indicated on the drawings and listed in the



distribution Board Schedule. All distribution boards shall comply with the quality specification in Part 3 of this specification, and be approved by the Employer's Electrical Engineer.

The following types of distribution boards are required for the service:

***[All buildings and the types of boards required for the service must be listed.]***

***The latest Departmental Quality Specification Section for Distribution Boards must be included in Part 3 of the specification.]***

## **17. SUBSTATION**

### **17.1 GENERAL SUB-STATION WORK**

### **17.2 SUB-STATION EARTHING**

### **17.3 CONTRACTOR'S RESPONSIBILITY**

## **18. SCHEDULE OF LIGHT FITINGS**

**The Departmental Quality Specification for the relevant luminaires must be included in Part 3 of the specification.**

The light fittings and accessories are to be according to the quality specifications in Part 3 and shall be approved by the Employer.

Type A: Industrial 40W LED surface mounted channel luminaire with mid-power LED strip complete with diffuser colour 4000K with SANS approved mark.

Type B: Industrial 2 x 40W LED surface mounted channel luminaire with mid-power LED strips complete with diffuser colour 4000K with SANS approved mark.

Type C: Decorative 2 x 40W LED office luminaire with mid-power LED strips and low brightness double parabolic diffuser colour 4000K with SANS approved mark.

Type D: 53W wall/pole/stirrup mounted LED bulkhead luminaire with corrosion resistant aluminium housing and high impact UV resistant polycarbonate protector for LED's, IP66 with optimal photometric performance and flexible combinations of LED arrays, colour 4000K.

## **19. SCHEDULE OF POWER POINTS**

| <b>BOARD</b> | <b>OWER POINT</b> | <b>TYPE</b>            | <b>SIZE OF CABLES, CONDUIT AND WIRING</b>  | <b>LOAD WATTS</b> |
|--------------|-------------------|------------------------|--|-------------------|
| MDB          | PP1               | 150 liter              | 20mm dia. conduit with 2 x 4mm <sup>2</sup> conductors and 2,5mm <sup>2</sup> earth wire | 3000              |
|              | PP2               | 4 plate electric stove | 25 mm dia. conduit with 2 x 10mm <sup>2</sup> conductors and 6mm <sup>2</sup> earth wire | 9000              |
| DB-A         | PP3               | 350 liter water heater | 25 mm dia. conduit with 4 x 4mm <sup>2</sup> conductors and 2,5mm earth wire             | 3 x 3000          |
| DB-C         | PP1               | Petrol pump            | 4mm <sup>2</sup> 2-core PVCA cable with 4mm <sup>2</sup> earth wire                      | 1000              |

## 20. SCHEDULE OF CABLES, CONDUIT AND WIRING

Supply, install and connect the following cable, conduit and wiring:

| FROM                      | TO   | SIZE AND TYPE  | LOAD (kVA) |
|---------------------------|------|--|------------|
| Meter box<br>Normal Power | MDB  | 70mm <sup>2</sup> 4-core PVCA cable and 35mm <sup>2</sup> earth wire                   | 114        |
| MDB<br>Normal Power       | DB-A | 25mm <sup>2</sup> 4-core PVCA cable and 16mm <sup>2</sup> earth wire                   | 50         |
| MDB<br>Normal Power       | DB-B | 16mm <sup>2</sup> 4-core PVCA cable and 10mm <sup>2</sup> earth wire                   | 36         |
| MDB<br>Normal Power       | DB-X | 25mm dia. conduit with 4 x 6mm <sup>2</sup> conductors and 4mm <sup>2</sup> earth wire | 10         |
| DB-X<br>Standby Power     | MDB  | 25mm dia. conduit with 4 x 6mm <sup>2</sup> conductors and 4mm <sup>2</sup> earth wire | -          |
| MDB<br>Standby Power      | DB-C | 4mm <sup>2</sup> 4-core PVCA cable and 4mm <sup>2</sup> earth wire                     | 7          |
| DB-C<br>Standby Power     | PP1  | 4mm <sup>2</sup> 4-core PVCA cable and 4mm <sup>2</sup> earth wire                     | 1          |

## 21. SCHEDULE OF DISTRIBUTION BOARDS

The front panels of normal supply, standby power and no-break supply sections shall be painted in distinctive colours as follows:

Normal supply : Light Orange, colour B26 of SANS 1091.  
Standby power : Signal Red, colour A11 of SANS 1091.  
No-break supply: Dark Violet, colour F06 or Olive Green, Colour H05 of SANS 1091.

Indicated is the probable fault level rating (kA) of the busbars. Refer to the Summary of Switchgear and Circuits for the minimum fault level rating of specified equipment.

| BOARD | TYPE                         | PANEL         | FAULT LEVEL | LOAD kVA |
|-------|------------------------------|---------------|-------------|----------|
| MDB   | Floor standing, without door | Normal power  | 10          | 114      |
|       |                              | Standby power | 2,5         | 10       |
| DB-A  | Surface, with door           | Normal power  | 5           | 50       |
| DB-B  | Flush, without door          | Normal power  | 2,5         | 36       |
| DB-C  | Weather-proof                | Standby power | 2,5         | 8        |

## 22. SUMMARY OF SWITCHGEAR AND CIRCUITS

The indicated fault current rating (kA) is the minimum value that the switchgear must comply with for connecting to the busbars of the respective panels-distribution boards.

### MAIN DISTRIBUTION BOARD : MDB

#### PANEL - 1 : NORMAL POWER

Main switch : 200A three pole 10kA circuit breaker.  
Distribution board – A : 100A three pole 10kA circuit breaker.  
Distribution board – B : 60A three pole 10kA circuit breaker.  
10kVA Standby plant : 30A three pole 10kA circuit breaker.

#### PANEL-2 : NORMAL POWER

Local main switch: 60A three pole isolator  
 Lighting circuits 1-3: 3 x 10A one pole 5kA circuit breakers.  
 Socket outlets : 3 x 60A two pole 30mA single-phase earth leakage relays, and 10 x 20A Single pole 5kA circuit breakers.

Circuits P1 to P10

Water heater PP1 20A two pole 5kA circuit breaker.

4 Plate stove PP2 40A single pole 5kA circuit breaker.

### **PANEL – 3 : STANDBY POWER**

Local main switch 30A three pole 5kA circuit breaker.  
 Distribution Board-C : 20A three pole 5kA circuit breaker.  
 Lighting circuits x 4 & x 5 : 2 x 10A single pole 5kA circuit breakers.  
 Socket outlets Circuit x P11 : 40A two pole 30mA single phase earth leakage relay, and 1 x 20A single pole 5kA circuit breaker.

***[Socket outlets circuits (P) must be controlled by 60A two pole 30mA single phase earth leakage relay and 20A single pole 5kA circuit breakers. With a maximum of 5 circuits (10 plugs) per earth leakage relay.]***

### **MDB: PANEL-2: POWER**

| CIRCUIT NO. | FITTING NO. | TYPE OF FITTING    | QTY | LOAD EACH (W) | LOAD TOTAL (W) | MOUNTING                        |
|-------------|-------------|--------------------|-----|---------------|----------------|---------------------------------|
| 1           | 1-4         | Type B             | 4   | 130           | 520            | Ceiling                         |
|             | 5-8         | Type A             | 4   | 100           | 400            | Ceiling                         |
| 2           | 1,3         | Type D             | 2   | 8             | 16             | Wall 2,8m above floor level     |
|             | 2,4,6       | Type D             | 3   | 65            | 195            | Tie beam                        |
|             | 5,7         | Type D             | 2   | 300           | 600            | Ceiling                         |
|             | 8           | Type C             | 2   | 130           | 260            | Ceiling                         |
| 3           | 1,2,5,6     | Type D             | 4   | 65            | 260            | Tie beam                        |
|             | 3,4,7,8     | Type B             | 4   | 130           | 520            | Ceiling                         |
| P1-P4       | 1,2         | Socket outlets     | 8   | 500           | 4 000          | Wall, 0,4m above floor          |
| P5-P7       | 1,2         | Socket outlets     | 6   | 500           | 3 000          | Wall, 1,4m above floor          |
| P8-P10      | 1,2         | Socket outlets     | 6   | 500           | 3 000          | Power skirting 1,2m above floor |
| PP1         | 1           | 150 l Water heater | 1   | 3 000         | 3 000          | See power points                |
| PP2         | 1           | 4 Plate stove      | 1   | 9 000         | 9 000          | See power points                |

### **MDB: PANEL 3: STANDBY POWER**

| CIRCUIT NO. | FITTING NO. | TYPE OF FITTING | QTY | LOAD EACH (W) | LOAD TOTAL (W) | MOUNTING                    |
|-------------|-------------|-----------------|-----|---------------|----------------|-----------------------------|
| X4          | 1-8         | Type A          | 8   | 100           | 800            | Ceiling                     |
| X5          | 1-8         | Type D          | 8   | 100           | 800            | Wall 2,8m above floor level |
| XP1-XP4     | 1,2         | Socket outlets  | 2   | 500           | 1 000          | Wall, 0,4m above floor      |

## **PART 3: QUALITY SPECIFICATION FOR MATERIALS AND EQUIPMENT OF ELECTRICAL INSTALLATIONS**

***“Part 3: Quality specification for materials and equipment” manual of the Department of Public Works is applicable for this Contract and the manual can be obtained from the Department of Public Works.***

***[ONLY ITEMS OF MATERIAL applicable to the Contract must be included in Part 3]***

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## **ADDITIONAL REQUIREMENTS OR SPECIFICATIONS NOT COVERED IN QUALITY SPECIFICATIONS ABOVE**

### **LED LIGHTS**

All Light fittings installed for this project is to be of the LED type, unless otherwise stated.

The following international standard specifications and South-African Bureau of Standards shall apply to the LED luminaire specification:

|                    |  |
|--------------------|--|
| SANS 475           | Luminaires for interior lighting, street lighting and floodlighting – Performance and requirements |
| SANS 10114-1       | Interior lighting part 1: Artificial lighting of interiors   |
| SANS 10114-2       | Interior lighting part 2: Emergency lighting   |
| SANS 60598-1       | Luminaires part 1: General requirements and tests  |
| SANS 60598-2.1     | Luminaires part 2: Particular requirements section 1 – Fixed general purpose luminaires.           |
| SANS 60598-2.2     | Luminaires part 2: Particular requirements section 2 – Recessed luminaires.                        |
| SANS 60598-2.3     | Luminaires part 2: Particular requirements section 3 – Luminaires for road and street lighting.    |
| SANS 60598-2.5     | Luminaires part 2: Particular requirements section 5 – Flood lighting.                             |
| SANS 61347-1 to 13 | Lamp control gear  |
| SANS 62031         | LED modules for general lighting – Safety specifications   |

|              |  |
|--------------|--|
| SANS 62384   | DC or AC supplied electronic control gear for LED modules – Performance requirements.  |
| SANS 62560   | Self-ballasted LED lamps for general lighting services with supply voltages > 50V – Safety specification.  |
| SANS 62612   | Self-ballasted LED lamps for general lighting services with supply voltages > 50V – Performance requirements                                       |
| EN 55015     | Limits and methods of measurement of radio disturbance of electrical lighting or equipment.  |
| EN 61000-3.2 | Electromagnetic compatibility (EMC) limits for harmonic current emissions.   |
| EN 61000-3.3 | Electromagnetic compatibility (EMC) limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems. |
| EN 61547     | Equipment for general lighting purposes: EMC immunity requirements.  |
| IEC-EN 62471 | Photo biological safety of lamps and lamp systems for LEDs   |
| IES LM-79-08 | Approved method: Electrical and photometric measurement of solid-state lighting products.  |
| IES LM-80    | Approved method: Measuring lumen maintenance of LED light sources.   |

#### General requirements:

The luminaire shall be suitable for operation with mid-power LEDs. **Note that no LED tubes are allowed to be used.**

The luminaire shall be suitable for operation on a 230V single phase 50Hz mains supply.

Power factor capacitors shall be supplied to correct the power factor to at least 0.95 or higher.

The luminaire shall be marked with identification labels stating the brand name and model and shall bear the SANS approval mark.

The driver shall comply with IEC 61347-1 and IEC 61347-2B as applicable and shall be suitable for operation on 230V +/-10%, 50Hz single phase system and it must be insured that harmonics filter is provided as per SANS 61000-3-2. The drivers and LED circuitry shall be protected against lighting and power surges. Suitable surge arrestors with a 10kA rating shall be provided for indoor installations and 20kA for outdoor installations.

Colour rendering (Ra) shall be not less than 80 and lumen depreciation of not more than 30% L70 at 50 000 hours @ Tq 25°C. Colour temperature of the LED lamp shall be 4000K, unless otherwise stated.

#### Thermal requirements:

The luminaire must be able to withstand an ambient temperature of 35°C. Storage temperature of this luminaire should be able to handle -40°C < T < 60°C.

To this end internal electrical and mechanical components shall not be allowed to exceed their maximum temperature ratings of 75°C. Test reports from an independent authorised testing facility proving this requirement shall be made available on request.

Noise requirements:

The noise level emitted from the luminaire shall be kept as low as possible. Drivers/electronic components shall therefore fully comply with the latest edition of SANS 55015.

**= END OF SPECIFICATION =**

#### **PART 4: BILLS OF QUANTITIES**

**Electrical, mechanical and/or any other engineering work must be measured by the quantity surveyor and must be prepared in accordance with the latest edition of the Standard System of Measuring Building Work.**

**No additional provision for Preliminaries may be included in the engineering sections of the bills of quantities.**

**Bills of Quantities are included in part C2.2 of the tender document.**

## PART 5: ELECTRICAL WORK MATERIAL SCHEDULE

The Contractor shall complete the following schedules and submit them to the Electrical Engineer within 21 days of the date of the acceptance of the tender.

The schedules will be scrutinised by the Electrical Engineer and should any material offered not comply with the requirements contained in the specification, the Contractor will be required to supply material in accordance with the contract at no additional cost.

**NB:** Only one manufacturer's name to be inserted for each item.

| Item | Material                         | Make or trade name | Country of origin |
|------|----------------------------------|--------------------|-------------------|
| 1.   | Distribution boards              |                    |                   |
| 2.   | Circuit breakers 1P, 2P, 3P      |                    |                   |
| 3.   | On load isolators without trips  |                    |                   |
| 4.   | Contactors 1P, 2P, 3P            |                    |                   |
| 5.   | Earth leakage relays 1 & 3 phase |                    |                   |
| 6.   | H.R.C. fuse switches             |                    |                   |
| 7.   | Kilowatt hour meter              |                    |                   |
| 8.   | Current transformers             |                    |                   |
| 9.   | Voltmeter                        |                    |                   |
| 10.  | Maximum demand ammeter           |                    |                   |
| 11.  | Daylight sensitive switch        |                    |                   |
| 12.  | Time switch                      |                    |                   |
| 13.  | Conduit                          |                    |                   |
| 14.  | Conduit boxes                    |                    |                   |
| 15.  | Power skirting                   |                    |                   |
| 16.  | Surface switches                 |                    |                   |
| 17.  | Watertight switches              |                    |                   |
| 18.  | 16A flush socket outlets         |                    |                   |
| 19.  | 16A surface socket outlets       |                    |                   |
| 20.  | 16A watertight socket outlets    |                    |                   |
| 21.  | Fluorescent luminaires           |                    |                   |
| 22.  | Type A                           |                    |                   |
|      | Type B                           |                    |                   |
|      | Type C                           |                    |                   |
|      | Type D                           |                    |                   |
|      | Etc.                             |                    |                   |
| 23.  | Bulkhead fittings: Type F        |                    |                   |
| 24.  | Spherical fittings: Type G       |                    |                   |
| 25.  | 4 plate stove                    |                    |                   |
| 26.  | Convection heater                |                    |                   |
| 27.  | Fan heater                       |                    |                   |
| 28.  | Fans                             |                    |                   |
| 29.  | Clocks                           |                    |                   |
| 30.  | PVCA cable                       |                    |                   |
| 31.  | Cable trays                      |                    |                   |



## **PARTICULARS OF ELECTRICAL CONTRACTOR**

Note to consultants

Please ensure that DPW -22(EC) Particulars of electrical contractor is inserted in main tender document.

## **PART 6: DRAWINGS**

### **NOTE TO CONSULTANTS**

**List all drawings**

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# Mechanical Specifications

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**SPECIFICATION FOR THE  
HEATING VENTILATION AND AIR CONDITIONING  
FOR  
*RENNOVATION TO TAUNG HOTEL AND CONVENTION CENTRE.***

*JUNE 2023*

# **SPECIFICATION OF HVAC WORKS FOR TAUNG HOTEL CENTRE**

## **SECTION-1**

### **GENERAL DESCRIPTION & DESIGN BASIS**

#### **1.1 SCOPE (General)**

This specification, together with the schedule of quantities and tender drawing(s) enclosed, covers the design, manufacture, assembly and testing at manufacturer's works, delivery to site, installation, testing & commissioning into service, carrying out all acceptance tests, for the VRF Air-conditioning and ventilation systems for Taung Hotel Centre in Taung.

#### **1.2 LOCATION**

The proposed new building for Taung Hotel and Convention Centre is located in Taung in North West Province.

#### **1.3 AREAS TO BE AIR-CONDITIONED AND VENTILATED ARE AS PER ENCLOSED DRAWINGS:**

Refer to drawings for HVAC.

#### **1.4 BASIS FOR DESIGN AND SYSTEM PROPOSED:**

1.4.1 based on SANS 10400 air conditioning requirements, the following floor areas were considered for the provision of air conditioning system. A Variable Refrigerant flow (VRF) Heat Recovery type of HVAC system using the zero ozone depletion potential R410A refrigerant gas is proposed for the building owing to the higher efficiency and increased controllability, the VRF system in achieving a sustainable design.

Based on the local climatic conditions indicated below, the HVAC cooling loads were worked out based on Bsimac simulation. This was the basis used to determine the size of the VRV system.

## 1.4.2 BUILDING THERMAL DESIGN

### 1.4.2.1 Roof Construction

U-VALUE ( $\text{W}/\text{m}^2\text{K}$ ) = 0.4

### 1.4.2.2 Wall Construction

U-VALUE ( $\text{W}/\text{m}^2\text{K}$ ) = 1.122

### 1.4.2.3 Floor Construction

U-VALUE ( $\text{W}/\text{m}^2\text{K}$ ) = 1.1

### 1.4.2.4 Penetration

a) Glazing 6.38mm Solar value

|   |      |
|---|------|
| Light Transmission                      | 40%  |
| Light Reflection                        | 11%  |
| Solar Total Elimination                 | 63%  |
| Solar Reflection                        | 12%  |
| Solar Absorption                        | 68%  |
| Solar Direct Transmission               | 23%  |
| Solar Total Transmission                | 37%  |
| Shading Coefficient                     | 0.42 |
| U Value $\text{W}/\text{m}^2 \text{ C}$ | 3.4  |
| Sound Control                           | 33dB |
|   |      |

## 1.4.3 INTERNAL LOADS CONSIDERED:

The design is based on CSIR report 300 "Climatic and other design data for Evaluating Heating and Cooling requirements in Buildings" with the view of the following weather parameters:

The following weather parameters for the town of Taung shall be used on the project:

- ❖ Minimum energy requirements will be in accordance with section 803.2.1 of the 2003 IECC (International Energy Conservation Code)
- ❖ All rotating equipment particularly fans, should be designed in such a way that they statically and dynamically balanced.

## DESIGN PARAMETERS

- Lighting load: 10 W per sq.m
- Equipment load: 80 W per sq. m
- Occupant densities: Offices 12 m<sup>2</sup>/person
- Boardrooms/meeting Rooms 2.5 m<sup>2</sup>/person
- Canteen/Tea Rooms 5 m<sup>2</sup>/person
- Common Rooms 5 m<sup>2</sup>/person
- Server Room 12 m<sup>2</sup>/person
- Indoor Conditions for Air Conditioning Areas: Temperature: 22 ± 2 °C
- RH: Not exceeding to 55 % RH

## **1.5 SCOPE**

The air-conditioning and ventilation system shall mainly consist of the following equipment and accessories (as per Schedule of Quantities):

- 1.5.1. It is proposed to provide a VRF HVAC system by providing R410A refrigerant (or equivalent CFC free refrigerant) heat recovery outdoor units, located on the roof.
- 1.5.2. Constant Volume diffusers of different capacities.
- 1.5.3. BC controller boxes
- 1.5.4. Insulated refrigerant piping, Indoor Units Wired Control & power cabling.
- 1.5.5. Electrical power & control panel.
- 1.5.6. Condensate drain piping system.
- 1.5.7. Galvanised Iron fresh air ducting insulated on the outside.
- 1.5.8. VRF system Centralised PC based controller.
- 1.5.9. Any other components or works necessary for the satisfactory completion of the work shall be in the scope of the HVAC Contractor including Some Civil/Builders work related to HVAC works e.g. opening and closing of holes etc.
- 1.5.10 4 way ceiling mounted cassette units for closed offices.
- 1.5.11 Split units inverter type using r410A

## **SECTION 2**

### **GENERAL SPECIFICATION**

## **2.1 SCOPE**

This scope under general conditions together with the tender drawings, and the schedule of quantities covers the design, manufacture, assembly and testing, packing for transport to site, transport, loading and unloading, handling of equipment at site, erection, testing and commissioning into service, carrying out all the acceptance tests and handing over the VRF HVAC Heat Recovery System to Client.

## **2.2 BUILDING CONSTRUCTION**

The building details are available with the Client. Agents may collect relevant data for reference.

## **2.3 MATERIALS AND WORKMANSHIP**

All materials used shall conform to the requirements of materials specified in this specification and Green Building Council of South Africa (GBCSA). Where material requirements are not specified they shall conform to the applicable standards and codes approved by the Client. All materials shall be new, free from defects and first class in all respects. Parts shall be free from flaws and objectionable imperfections and shall be machined true in a workman like manner. No deviation from the specified materials is permissible unless otherwise by written consent by the Mechanical Engineer or Client representative. Wherever materials are not specifically called out, they shall be properly selected by the contractor to the best standards for the particular application and with the prior approval of the Engineer.

## **2.4 STANDARDS & CODES**

The design, manufacture and performance of all equipment shall comply with all current applicable statutory regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the requirements of the latest editions of applicable SABS/ CIBSE and ASHRAE standards and any clearances if required. The contractor shall refer to the relevant sections of this specification for equipment standards and codes. Nothing in this specification shall be construed to relieve the contractor of his responsibility.

## **2.5 TENDER DRAWINGS**

2.5.1 A List of the Tender Drawings which have been prepared by the Mechanical Engineer showing the locations & system equipment layout and schematic diagrams for the VRF HVAC system works are enclosed.

2.5.2 The equipment layout, duct layouts & pipework as shown in the drawings represent a feasible scheme based on spaces available and the necessary equipment. The contractor may rearrange the setup in the space(s) allocated subject to the approval of the Engineer and the Client

2.5.3 On completion of the works, the contractor shall be required to submit Six (6) off hard copies of "As built drawings" including a readable soft (electronic) copy of the drawings cut on a CD to be kept by the Client.

2.5.4 Where the drawings and specifications conflict, the more stringent shall be followed. The instructions of Engineer or its representative shall be final & binding. The Tenderers shall point out all discrepancies between the drawings and the specifications in their offer and shall explicitly specify / confirm any works not included in the scope. Nothing extra shall be paid for on any other account thereafter unless otherwise instructed by the Engineer or Client.

## **2.6 INSTRUCTIONS**

The contractor's proposal must include everything required to make the installation a complete working system with all statutory approvals whether or not specifically shown and specified including all labour and materials, transportation etc. necessary for the complete installation of everything described and provided to complete the system and ready for Owner's use. It shall be the responsibility of the tenderer to check the suitability & site constraints for installing all the systems on site.

The contractor shall include any apparatus, appliances, materials and labour which may be necessary to complete the works in accordance with the intent or purpose of these specifications and as instructed by the Engineer. The execution of the project shall be carried out by the contractor without extra cost irrespective of whether explicitly specified in and/or indicated on the drawings, or not.

The works shall be done in conformity to the specifications, accompanying the drawings and with the requirement of the General, Architectural, Structural plans, and other regulatory and statutory bodies including the Department of Health, if required.

## **2.7 INSPECTION AND TESTING (GENERAL)**

2.7.1 The contractor shall perform all tests and inspections necessary to ensure that the materials and workmanship conform to the requirements of the contract including fabrication drawings approved by the Department or their authorized representatives.

2.7.2 The Engineer or His/her authorized representative shall have access to the contractor's or sub-contractor's works at all reasonable times to determine compliance with the provisions of this specification and/or to witness the contractor's inspection and tests.

2.7.3 All tests covered by this specification shall be subject to inspection and approval by the Mechanical Engineer.



2.7.4 The contractor shall maintain records of all inspection works carried out on his works or his sub-contractor's works. Copies of such records shall be made available to the client upon request and shall become the property of the Client. A procedure for the repair of defects shall be submitted to the Client for approval, prior to any repair modifications being made.

If the previous quality test and inspection are impaired by the subsequent repairs, the work shall be re-inspected and re-tested to the satisfaction of the Purchaser or his authorized representative. Equipment found unsatisfactory as to workmanship or material shall be removed by the contractor and replaced to the satisfaction of Mechanical Engineer at no extra cost.

2.7.5 All materials of components, castings, equipment, piping, instruments etc. shall be tested and inspected in the presence of the Engineer or his authorized representative. Test certificates of all imported components shall be made available for approval of the Mechanical Engineer.

2.7.6 Final acceptance shall be after the equipment is installed and tested on site to give satisfactory performance.

2.7.7 The Contractor shall provide the Mechanical Engineer, necessary equipment and tooling instruments, drawings and personnel etc. required for inspection of the work.

2.7.8 Strict measures of quality control shall be exercised throughout the work.

2.7.9 Static and dynamic balancing of all rotating parts shall be conducted in the presence of the Mechanical Engineer or his authorised representative.

2.7.10 The contractor shall submit the following documents before acceptance: Six(6) sets of

2.7.10.1. All the tests observations.

2.7.10.2. All the operation & maintenance manuals.

2.7.10.3. Leaflet & literature

2.7.10.4. Test Certificate

2.7.10.5. Guarantee Certificate

2.7.10.6. Person to be contacted during Guarantee period.

2.7.10.7. As-built drawings with soft copy.

## **2.8 TESTS ON SITE**

- 2.8.1 During site fabrication, the pipe branches, elbows etc., shall be inspected and the joints and connections are to be checked before they are assembled in position. After assembly, the system shall be checked for leakages, vibrations and noise
- 2.8.2 After the complete erection of the system with all accessories installed on site, these shall be tested as per applicable CIBSE codes (unless otherwise specified) to check and access their functional performance. The tests shall be conducted on site in the presence of the Mechanical Engineer or his representative. Such tests shall include but not limited to the following:
- (a) To check the capability to deliver rated capacity, power consumption and performance factors after the installation of the entire piping, ventilation, ducting systems etc.
  - (b) To check the capability of piping systems to deliver rated flow capacities after the installation of the Valves & entire piping networks.
  - (c) To check the proper and continuous reliable operation of the system equipment & controls regulating the equipment for a period of minimum seventy two (72) hours, after the complete installation of system.
  - (d) Leak testing of the pipework, fittings, connections etc. as applicable.
  - (e) To check noise and vibrations etc.
  - (f) Any other tests as required to check compliance with specification and system requirements by statutory bodies, DID & any other local authority for these systems in services.
- 2.8.3 All the required instrumentation, consumables & services for the above tests shall be provided by the contractor at no extra cost and are deemed to be included in the contractor's offer.

## **2.9 TESTING, BALANCING AND COMMISSIONING**

Comprehensive pre-commissioning, commissioning as well as quality monitoring and control shall be carried out on all the mechanical systems including VRF units, fans, air distribution systems and DX air handling units in a systematic manner and in accordance with the latest CIBSE Commissioning Codes. Fans, air distribution systems shall be commissioned in accordance with CIBSE codes M & A. On completion of the contract, the contractor shall be required to provide training and system knowledge to the building owner/manager by submitting a documented design intent, As-built drawings, Operational and Maintenance Manuals as well as Commissioning Reports. In addition, the contractor shall provide training on all the systems to the building owners' building management staff. Full testing and commissioning procedures for individual equipment and for the entire systems shall be submitted.

**The training provided must include the following:**

- ❖ Review of controls setup, programming, alarms and troubleshooting;
- ❖ Review of O&M manuals;
- ❖ Building Operation (start up, normal operation, unoccupied operation, seasonal changeover, shutdown);
- ❖ Measures that can be taken to optimize energy efficiency;
- ❖ Occupational Health and Safety (OH&S) issues;
- ❖ Maintenance and servicing requirements and sourcing of replacements; and
- ❖ Obtaining and addressing occupant satisfaction feedback.

### **2.9.1 TOLERANCES**

The indoor climate factors and air flow rates, heating, cooling and humidifying performances, electrical characteristics and other design data shall be measured at the ventilation system design air flow rate. Tolerances of the measured values in respect of the selection of the measuring equipment are given in the following table:

| PARAMETER   | UNCERTAINTY* |
|---|--------------|
| Air flow rate, each individual room   | ± 20%        |
| Air flow rate, each system  | ± 15%        |
| Smoke extract   | 0-20%        |
| Supply air temperature  | ± 2℃         |
| Relative Humidity [RH]  | ± 15% RH     |
| Air velocity in occupied zone   | ± 0,05 m/s   |
| Air temperature in occupied zone  | ± 1,5℃       |
| A-weighted sound pressure level in the room   | ± 3 Dba      |
| * The uncertainties include the permitted deviations from the design values as well as any measuring error. |              |

If the performance of the system requires closer tolerances, this shall be specially defined in the documentation of the system. If product standards, national or local regulations require closer tolerances, this shall be adhered to.

### **2.10 SPARES AND TOOLS**

#### **2.10.1 Spares:**

The contractor shall offer a complete list of recommended spare parts for the equipment supplied along with the cost related to the items required for a period of three years satisfactory maintenance of the System

#### 2.10.2 Tools:

All special tools required for the operation and maintenance of the system shall be supplied by the contractor at an agreed cost.

### **2.11 GUARANTEES**

#### 2.11.1 Equipment Guarantee:

The contractor shall guarantee the trouble free & efficient performance of the System for the design capacity. One year period (12 months excluding shut down period due to fault) from the date of acceptance will be treated as the Maintenance and Guarantee Period. The contractor shall attend to all the faults and replace all defective materials (including consumables like refrigerant oil etc.) free of cost during the guarantee period. Major equipment parts shall be guaranteed for a further one year, from the date of replacement. Any leakage of lubricants due to defective manufacturing or bad workmanship shall also be made good by the contractor at no additional charge.

2.11.2 The contractor shall further guarantee the system for optimum operation, and that the power consumption shall not exceed, under any operating conditions the value specified in the Technical Data Sheets.

2.11.3 No inspection & clearance either in verbal or written shall relieve the contractor of any of his responsibilities & guarantees

### **2.12 TECHNICAL DATA**

Technical data for all equipment shall be furnished to the Mechanical Engineer as and when required.

### **2.13 AFTER SALE SERVICE**

The contractor shall ensure adequate and prompt after sales service in the form of maintenance personnel and spares as and when required with a view to minimizing the system break down period. Adequate measures shall be taken by the contractor to ensure that all spares are readily available during the normal economic life span of the system.

### **2.14 INSURANCES**

The bidder shall insure at his own cost all the men and materials during Transit from his factory to the execution site till the systems are handed over to the Client including damage done to others as per work order specification, schedule of quantities, and drawings. The more stringent shall only be followed.

**BUILDING VENTILATION**

**VENTILATION AND AIR-CONDITIONING**

**VENTILATION**

All rooms shall be ventilated and lit in accordance with and as required by the National Building Regulations and SANS unless otherwise specified. Building to be designed for optimum natural ventilation and lighting.

**Artificial Ventilation**

The following minimum air changes and fresh air requirements shall apply where artificial ventilation is required and supplied.

**Ventilation in Ablutions and Toilets**

**Ablutions**

Extract ventilation shall be provided by wall mounted extraction fans.

All areas shall be supplied from Fan coil units with diffusers. The VRV outdoor units to be located on the ground shall feed all the Fan coil units and the 4 way ceiling mounted cassette units. Supply air fans shall be installed that supply fresh air to the building and an extraction fan for extraction

## **SECTION 3B**

### **TECHNICAL SPECIFICATION FOR VARIABLE REFRIGERANT FLOW SYSTEMS**

#### **3.1 SYSTEM DESCRIPTION**

Variable refrigerant flow (VRF) is an air conditioning system configuration where there is one outdoor air cooled condensing unit linked or connected to multiple indoor units. The term VRF refers to the ability of the system to control the amount of refrigerant flowing to each of the multiple evaporators (indoor units), enabling the use of many evaporators of differing capacities and configurations connected or linked to a single outdoor unit with individualized comfort control, simultaneous heating and cooling in different zones, and heat recovery from one zone to another. VRF systems operate on the direct expansion (DX) principle that heat is transferred to or from the space directly by circulating refrigerant to evaporators located near or within the conditioned space with the difference that split type systems are one-to-one systems consisting of one evaporator unit connected to an external air cooled condensing unit.

The Variable Refrigerant Flow (VRF) Heat Recovery System has the capability of individual set point control & the Condensing unit incorporates multiple scroll compressors to obtain approx. 12% to 150% capacity control. The evaporators (indoor units) are each provided with Wired Remote Control in Open plan areas and Wireless Remote Control in enclosed offices as a standard accessory.

The VRF system shall be equipped with a Micro-Processor which shall enable the entire HVAC system to be controlled from a single PC. The PC shall be pre-loaded with the suitable software to control & monitor the following features:

- a) Temperature of air in the room / area served by any indoor unit.
- b) Indication of the number of indoor units and outdoor units working.
- c) On / off of individual indoor units.
- d) It shall be possible to change the setting of temperature of indoor units.
- e) To start / stop any indoor unit at pre-set times and it shall be possible to change the time settings.
- f) The microprocessor / PC software shall be compatible with the BMS for auto operation / control

#### **3.2 AMBIENT CONDITIONS**

The system shall be capable of operating within a wide range of ambient temperatures. The Condensing units shall be capable to provide cooling within an ambient temperature range of – 50

degrees C to 320 degrees C DB. The regulation of refrigerant flow is to be achieved by Scroll Compressors head pressure control (by varying fan speeds) & hot gas bypass connections etc.

### **3.3 REFRIGERANT**

The entire VRF condensing units and evaporating units shall be factory assembled and tested. The units shall come with an initial charge of the Zero Ozone Depletion potential refrigerant, R410a or any other refrigerant with the same Ozone Depletion Potential of zero. Any additional refrigerant required shall be added on site without any extra cost to the client. Loss / leakage of refrigerant gas due to defects of equipment or workmanship shall also be re-filled up at no extra cost during construction and up to and including the Maintenance and Guarantee period.

### **3.4 REFRIGERANT PIPING DISTANCE LIMITS**

The system shall be capable of refrigerant piping runs up to 150m between the condensing unit and indoor units with a 50m level difference without any oil traps or double risers.

The oil equalizing line should be inside the Condensing unit, to avoid 'inverted' oil traps at site.

The level difference between indoor units connected to the same refrigerant circuit can be extended to 40m

### **3.5 REFRIGERANT PIPEWORK**

The scope of Refrigerant Piping work shall include the supply, delivery, installation, testing and commissioning of all interconnecting pipework between the condensing units and the indoor units. Quality seamless refrigerant copper tubes with brazed connections and the appropriate distribution joints and headers shall be used. The piping shall be routed in such a manner, that brazed joints in the refrigeration piping are kept to a minimum. Test results and / or reports of refrigerant pipes to be provided as per:

- ❖ **CIBSE:** Guide B; Heating, ventilating, air conditioning and refrigeration
- ❖ **SANS 1123:2007:** Pipe flanges
- ❖ **SANS 12400:2011:** The application of the National Building Regulations.
- ❖ **SANS 60204:** Safety of machinery - Electrical equipment of machines
- ❖ **OHS Act No. 85 of 1993:** Occupational Health and Safety Act No. 85 of 1993

All refrigerant pipes are to be tested for conformance to relevant standards.



### **3.6 JOINT ORIENTATION**

Install the proprietary distribution refrigeration pipe joints and headers in an appropriate orientation in accordance with the manufacturer's specifications and recommendations to enable correct distribution of refrigerant. The distribution joints shall be factory insulated with pre-formed sections of expanded polystyrene or equivalent.

### **3.7 CLEANLINESS OF PIPING**

All pipe work must be kept clean and free from contamination to prevent unnecessary system down time. All pipe ends must be capped and sealed and kept so until immediately prior to making a joint.

### **3.8 PRESSURE TESTING**

On completion of the entire refrigerant pipe work installation, the pipework shall be pre-pressure tested and repaired if necessary and further pressure tested to hold 1.5 times of working pressure for a minimum 24 hours with dry nitrogen prior to insulating the joints. After satisfactory testing, the refrigerant pipes shall be evacuated and dehydrated to (- 755 MM HG) and hold for one to four hours depending on the pipe length.

### **3.9 ADDITIONAL CHARGE**

Additional refrigerant charge weight must be calculated based on the actual length of the refrigerant pipe work. The refrigerant charging process must be carried out with an appropriate charging station and under the supervision of the Mechanical Engineer.

### **3.10 PIPING INSULATION**

Insulate all suction lines in the Refrigerant pipe work with slip on closed cell. Nitrile Rubber electrometric pipe insulation having a wall thickness of not less than 15mm. Insulation must be protected when exposed to the atmosphere by special paint & mechanical covering. Glue all insulation (after pressure and leak testing) to provide a complete seal to prevent any condensation.

### **3.11 FIXING PIPE WORK**

Fix and support pipe work at a minimum of 2.5 meter centres including a suitable saddling arrangement. Cover the exposed Refrigerant pipes on the terrace with openable GI Cable trays / walk able platform.

### **3.12 INDOOR UNITS**

The indoor units shall be Ceiling concealed, Fan coil units with CAV diffusers as shown in drawings and site constraint. All indoor units shall be provided with wired Remote controllers in enclosed offices and wired remote controllers in open plan offices for easy operation.

#### ELECTRONIC EXPANSION VALVE

Each indoor unit shall be fitted with an electronic expansion valve which controls the refrigerant flow in response to the load variations in the room. The electronic expansion valve is to be controlled via a computerized controller which senses the return air temperature, refrigerant inlet and outlet temperatures. During the cooling operation the electronic expansion valve controls the refrigerant superheat degree at the evaporator.

#### INDOOR UNIT FANS

Direct driven DIDW multi-blade type blowers shall statically and dynamically balanced to ensure low noise and vibrations during operation. The noise level shall not exceed 35 DBA.

#### COOLING COILS

To be direct expansion constructed from copper tubes expanded into Aluminium fins to form a rigid mechanical bond.

### **3.13 SUPPLY AIR DISCHARGE LOUVERS**

The indoor units shall be provided with auto swing of the supply air louvers for cassette and diffusers under ceiling type indoor units. The louvers should be capable of providing continuous swing operation or to be fixed in any direction required.

### **3.14 UNIT CONTROL BOARD**

It shall Include in the indoor unit a printed circuit board complete with, address switches for a variety of operation controls, emergency operation switch and fault / operation indication LED's. The fan motors shall be thermally protected.

### **3.15 UNIT CASING**

The indoor unit casing (ceiling mounted units) to be fully insulated and sealed to prevent condensation.

### **3.16 CONDENSATE DRAIN**

The Drain connection of each indoor unit to the main Header should be of Min.25mm dia. The header pipe should be of 25mm dia. The drain pipe should be of hard PVC, whereas the connection of the indoor unit to the hard PVC pipe / GI pipings shall be with flexible braided pipe. The drain piping should be directed to storm water drainage pipes and the cassette type units shall be provided with condensate drain water pump it should lift the water to the drain headers automatically.

### **3.17 UNIT CONTROL**

In case of individual and group control, set the addresses of each indoor unit to minimize commissioning time. In case of centralized control, set the addresses by the remote controller.

### **3.18 CONDENSING UNITS**

To be fully weather proofed, factory assembled and pre-wired with all necessary electronic and refrigerant controls. Construct the casing from mild steel panels coated with a baked enamel finish and powder coatings. The condenser coil fins shall be provided with a corrosion resistant finish.

### **3.19 LARGER CONDENSING UNITS**

Incorporate minimum 2 compressors in condensing units above 7.5 HP with at least one variable speed Scroll type compressor.

### **3.20 MODULER DESIGN**

Allow for side by side installation by the modular design of the condensing units

### **3.21 FAN MOTOR SPEED CONTROL**

The condensing unit fan motors to have at least two speed operations to maintain constant head pressure control in all ambient temperatures and modes of operation.

### **3.22 COMPRESSORS**

Compressors shall be highly efficient hermetic scroll/inverter type. The Scroll shall be compressors with electronic controls, capable of loading and unloading to follow the variations on cooling loads, using the latest axial compliant sealing technology. The microprocessor panel should incorporate control for precise monitoring of status of the system. The electromagnetic interference & conversion losses shall be minimized.

### **3.23 REFRIGERANT CIRCUIT**

The refrigeration circuit shall be completed for the condensing units with refrigeration compressors, motors, fans, condenser coils, electronic expansion valve, solenoid valves, 4 way refrigerant valve, distribution headers, capillaries, filters, shut down valves, service ports, receivers and accumulators and all other components which are essential for safe and satisfactory operation.

### **3.24 SAFETY DEVICES**

Provide the following safety devices as a part of the outdoor unit. High pressure switch, fuses, crank case heater, fusible plug, over current protector.

### **3.25 OIL RECOVERY**

Equip the unit with an oil recovery system to ensure stable operation for systems with long refrigerant piping.

### **3.26 CONTROL**

Use computerized control to maintain a correct form of temperature. For the indoor units incorporate an on /off switch, fan speed selector, thermostat setting and liquid crystal display which indicates temperature setting. Operational mode, malfunction codes etc.

### **3.27 INDOOR UNIT CONTROL**

Accomplish by the use of individual controllers for each indoor unit.

### **3.28 FAULT DIAGNOSIS**

The system shall be equipped with a diagnostic function for quick and easy maintenance and service.

### **3.29 NOISE LEVEL**

The contractor shall ensure that systems provided shall not cause or exceed following noise levels:

1. 1 m away from outdoor units - 70 dba
2. 1 m away from indoor units - 35 dba

Contractor should clearly state any special treatment if necessary to achieve above noise levels.

### **3.30 VIBRATION LEVELS**

The contractor shall ensure that systems shall not cause or exceed the vibration levels and they shall be within limits as per standards.

### **3.31 REFRIGERANT JOINTS (REFNETS)**

All the refrigerant joints shall be proprietary in nature from the main VRF supplier. It should have one inlet and two outlet connections, both for suction and liquid line of respective size of the refrigerant piping along with its insulation. The refrigerant joint should be designed and supplied by the supplier of VRF indoor and outdoor unit manufacturer.

### **3.32 CENTRAL REMOTE CONTROLLER**

Central Remote Controller shall be supplied as specified in the Schedule of Quantities.

Following functions shall be possible;

- Control not less than 64 indoor units in each controller and not less than 16 outdoor units in each controller
- Zone control
- Malfunction code display
- All the functions available with wired remote controller
- It should be possible to wire the remote to 1200 m

### **3.33 REFRIGERANT PIPING**

Piping shall be refrigerant grade hard copper piping as required. Pipe jointing shall be done using special fittings. Refrigerant pipe joints supplied by VRF manufacturer shall be provided where required.

Piping jointing shall be of the brazed type. The piping shall be tested at 30 kg/cm<sup>2</sup>. The indoor and outdoor units shall be connected with refrigerant piping. All piping connections for the units should be performed inside the unit. The refrigerant piping should be insulated with 112 mm thick Nitrile rubber insulation.

Brazing shall be carried out to the compliance of SANS 12238 using silver soldered brazing rods. Purge gas shall be nitrogen, 1212% pure. Purge gas flow rate shall be in the range of 5 to 20 SCFH (8.5 to 34 CM/hr) and flow continuously during the brazing process. Purge gas shall flow until the

brazing is cool to the touch.. Compression fittings will not be accepted on refrigerant pipe work. After insulation of the complete piping the same shall be tested with nitrogen at 450 psi pressure. All records shall be kept in accordance with CIBSE commissioning codes. Upon leakage of joints after testing, the contactor shall be responsible for the remedial costs and the work shall be done to the satisfaction of the engineer.

After successful pressure the pipe work the same shall be vacuumed and vacuum shall be maintained for 8 hours, vacuum shall be achieved using a vacuum pump. The vacuum shall be broken by refrigerant. This exercise shall be carried out twice before the department's representative before charging the refrigerant in the circuit.

All connections of refrigerant piping shall be in high grade copper of refrigeration quality.

### **3.34 BUILDING MANAGEMENT SYSTEM**

Provide building management system with the VRF system.

The VRF system supplied must be provided with PC based air conditioning management system, from the supplier of VRF equipment. The required hardware must be selected, suitable or up to minimum Sixty (60) indoor units and Six(06) number of outdoor units.

## SECTION – 4

### TECHNICAL SPECIFICATION FOR AIR DUCTS

#### 4.1 SHEET METAL WORK (DUCT WORK) (Wherever applicable)

The Contractor shall supply, install and test all metal duct work complete with air balancing and commissioning as shown in drawings. All such working drawings shall be approved by the Engineer or his Representative. The duct work shall commence only after such approval is obtained from the Engineer.

##### 4.1.1 Duct work Sheet Metal

Duct shall be made of galvanized steel sheets. Galvanized steel sheets shall conform to:

**SANS 1238:2007-2005** : Cotton eyelet fabric

**SANS 12173-2003** : The installation, testing and balancing of air- conditioning ductwork

**SANS 1222:20012** : Metal roofing tiles

**SANS 1238:2005** : Air-conditioning ductwork

**SANS 1123:2004** : Fire dampers

**SANS 12400:2011** : The application of the National Building Regulations.

**SANS 60204** : Safety of machinery - Electrical equipment of machines

**OHS Act No. 85 of 112123:** Occupational Health and Safety Act No. 85 of 112123 as amended

##### 4.1.2 Installation

The duct fabrication and installation shall generally conform to **SANS 1238:2005**. The Contractors shall provide and neatly erect all sheet metal work as shown on drawings as may be required to carry out the intent of these specifications and Tender drawings. All necessary allowances and provisions shall be made by the Contractor for beams, pipes or other obstruction in the buildings whether or not the same shown on the drawings. Where necessary to avoid beams or other structural work or plumbing or other pipes or conduits, the ducts shall be transformed, divided or curved to one side the required area being maintained. All metal work in dead or furred down spaces shall be erected in time at no occasion to delay to other contractors work in the building.

Ducting over false ceiling shall be supported from the slab above and from beams.

In no case shall the duct be supported from the false ceiling hangers or be permitted to rest on ceiling. If a duct cannot be run as shown on the drawing the Contractor shall install the duct between the required points by any path available subject to the approval of the Mechanical Engineer.

All ducts shall be rigid and shall be adequately supported and braced where required with standing seams, tees or angles should be of ample size to keep the ducts true to shape and prevent buckling vibrations or breathing.

All joints shall be made air tight and all interior surfaces shall be smooth. Bends shall be made with a radius not less than one half the widths or the duct or with scientifically designed interior curved vanes, as approved. The vane shall be so placed that the aspect ratio of each of the individual elbow formed by the vanes will be about five.

All sheet metal connection, partitions and plenums required to continue the flow of air to and through the filters and fans, shall be constructed of 18G galvanized steel sheets thoroughly stiffened with adequate thick MS angle iron braces and fitted with all necessary doors and as required by the Engineer-in-charge to give access to all parts of the apparatus. Doors shall not be less than 450mm x 450mm in size.

Where metal ducts or sleeves terminate in woodwork, brick or masonry openings, air tight joints shall be made by means of closely fitted heavy flanged collars.

Doors shall be set in ducts and air plenums for access to pipes dampers, coils, valves, etc. Doors shall be provided with suitable latches. All access doors in the duct work shall be air tight.

The Fresh air handling units / HRV units, supply air grilles shall be connected to duct work by inserting at air inlet and air outlet double canvas sleeve / flexible air ducts as required. Each sleeve shall be 120 mm long minimum securely banded and bolted to duct and units. Each sleeve shall be made smooth and the connecting duct work rigidly held in line with unit inlet or outlet.

Duct shall be supported by means of painted MS rod or angle (min.12 mm dia) or angle suspenders hung from RCC slab by means of expansion bolts or anchor fasteners min. 12 mm dia.

#### **4.1.3 Testing and commissioning**

After the ducting installation is completed, all duct system shall be tested and commissioned for air leakage, structural arrangement and joint air tightness as per CIBSE Code A. The contractor shall test all the ducting, joints and others very carefully in the presence of Engineer-in-charge



or his representative. Any test without Engineer-in-charge's approval will be treated as null and void.

The entire air exhaust system shall be balanced to the air quantities as designed & the final balance of air quantities shall be recorded, submitted to the Engineer-in-charge for approval. Air balancing operation shall be supervised by qualified competent representative of the contractor who shall be present at the job site continuously for such work.

The volume of air captured at every hood shall be determined by the use of revolving vane anemometer and shall be used along with the stop watch to determine average velocity over the grille face. The louver setting of the grilles and deflection shall be fixed as to provide most uniform, draft-less distribution over the entire area served. Anemometer calibration correction factor and grille flow rate factor shall be taken into account while computing air delivery.

#### 4.1.4 Painting

Ducts, hangers, supports, diffusers and grilles wherever required shall be painted with two coats of approved epoxy paint over epoxy primer.

#### 4.1.5 Schedule of thickness for Duct work as per SANS 1238:2005

| Max. side<br>(mm) | Thickness of sheet |                  | Type of transverse joint connections  | Bracing  |
|-------------------|--------------------|------------------|---|--|
|                   | GI Sheet           | Aluminium sheets |   |  |
| Upto 300          | 0.63               | 0.80             | S-Drive, pocket or Bar slips, on max. 2.5m                                      | None   |
| 301 to 600        | 0.63               | 0.80             | S-Drive, pocket or Bar slips, on max. 2.5m                                      | None   |
| 601 to 750        | 0.63               | 0.80             | S-Drive, 25mm Pocket or 25mm Bar slips on                                       | 25 x 25 x 3mm. M.S. angles. 1.2m from joint    |
| 751 to 1200       | 0.80               | 1.00             | S-Drive, pocket or 25mm Bar slips on 2.5m centres                               | 25 x 25 x 3mm. M.S. angles. 1.2m from joint    |
| 1201 to 1500      | 0.80               | 1.00             | 40 X 40mm Angle connections, or 40mm pocket or 40mm bar slips with 35 X 3mm bar | 40 x 40 x 3mm angles 1.2m from joint           |
| 1501 to 2250      | 1.00               | 1.50             | 40 X 40mm Angle connections, or 40mm pocket or 40mm bar slips with 35 X 3mm bar | 40 x 40 x 3mm diagonal angles or 40 x 40 x 3mm |

|                 |      |      |  |  |
|-----------------|------|------|--|--|
| 2251 &<br>above | 1.25 | 1.80 | 50 X 50mm Angle connections,<br>or 40mm pocket or 40mm bar<br>slips, 1m max. centres with 35 X | 40 x 40 x 6mm<br>diagonal angles or<br>40 x 40 x 3<br>mm |
|-----------------|------|------|--|--|

## **SECTION – 5**

### **Technical Specification for Electrical works**

#### **5.0 GENERAL DESCRIPTION**

The electrical works pertaining to this VRF air conditioning works i.e. medium voltage power panel (wall mounted or floor mounted) & installation of Power & control cables etc. shall be as per the relevant SABS & International relevant standards.

#### **5.1 CONDUIT AND ACCESSORIES**

The type of conduit and accessories required for the service, i.e. whether the conduit and accessories shall be of the screwed type, plain-end type or of the non-metallic type and whether metallic conduit shall be black enamelled or galvanised, is specified in Part 2 of this specification.

Unless other methods of installation are specified for certain circuits, the installation shall be in conduit throughout. No open wiring in roof spaces or elsewhere will be permitted.

The conduit and conduit accessories shall comply fully with the applicable SABS specifications as set out below and the conduit shall bear the mark of approval of the South African Bureau of Standards.

- a) Screwed metallic conduit and accessories: SABS 1265, parts 1 and 2.
- b) Plain-end metallic conduit and accessories: SABS 1265, parts 1 and 2.
- c) Non-metallic conduit and accessories: SABS 1250

All conduit fittings except couplings, shall be of the inspection type. Where cast metal conduit accessories are used, these shall be of malleable iron. Zinc base fittings will not be allowed.

Bushes used for metallic conduit shall be brass and shall be provided in addition to locknuts at all points where the conduit terminates at switchboards, switch-boxes, draw-boxes, etc.

Draw-boxes are to be provided in accordance with the "Wiring Code" and wherever necessary to facilitate easy wiring.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm. In all other instances the sizes of conduit shall be in accordance with the

“Wiring Code” for the specified number and size of conductors, unless otherwise directed in part 2 of this specification or indicated on the drawings.

Only one manufactured type of conduit and conduit accessories will be permitted throughout the installation.

Running joints in screwed conduit are to be avoided as far as possible and all conduit systems shall be set or bent to the required angles. The use of normal bends must be kept to a minimum with exception of larger diameter conduits where the use of such bends is essential.

All metallic conduits shall be manufactured of mild steel with a minimum thickness of 1,2mm for plain-end conduit and 1,6mm in respect of screwed conduit. Under no circumstances will conduit having a wall thickness of less than 1,6mm be allowed in screeds laid on top of concrete slabs.

Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must on indication by the Department’s inspectorate staff, be completely removed and rectified and any wiring already drawn into such damaged conduits must be completely renewed at the Contractor’s expense.

Conduit and conduit accessories used for flameproof or explosion proof installations and for the suspension of luminaires as well as all load bearing conduit shall in all instances be of the metallic screwed type.

All conduit and accessories used in areas within 50 km of the coast shall be galvanised to SABS 763.

Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Department to any claim submitted by the Contractor, which may result from a lack of knowledge in regard to the supply authority’s requirements.

## **5.2. CONDUIT IN ROOF SPACES**

Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1,5m by means of saddles screwed to the roof timbers.

Nail or crumpets will not be allowed.

Where non-metallic conduit has been specified for a particular service, the conduit shall be supported and fixed with saddles with a maximum spacing of 450 mm. The Contractor shall supply and install all additional supporting timbers in the roof space as required.

Under flat roofs, in false ceilings or where there is less than 0,12m of clearance, or should the ceilings be insulated with glass wool or other insulating material, the conduit shall be installed in such a manner as to allow for all wiring to be executed from below the ceilings.

Conduit runs from distribution boards shall, where possible terminate in fabricated sheet steel draw-boxes installed directly above or in close proximity to the boards.

### **5.3. SURFACE MOUNTED CONDUIT**

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified under Part 2 of the specification, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection coupling used where necessary.

No threads will be permitted to show when the conduit installation is complete, except where running couplings have been employed.

Running couplings are only to be used where unavoidable, and shall be fitted with sliced couplings as a lock nut.

Conduit is to be run on approved spaced saddles rigidly secured to the walls. Alternatively, fittings, tees, boxes, couplings etc., are to be cut into the surface to allow the conduit to fit flush against the surface. Where conduits are to be embedded into any wall irregularities to avoid gaps between the surface and the conduit.

Crossing of conduits is to be avoided; however, should it be necessary purpose-made metal boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw-boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to be run along the wall plates and the beams.

Painting of surface conduit shall match the colour of the adjacent wall finishes.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc., and round-head screws shall be used for fixing saddles, switches, socket outlets, etc., to walls, wood plugs and the plugging in joints in brick walls are not acceptable.

#### **5.4. CONDUIT IN CONCRETE SLABS**

In order not to delay building operations the Contractor must ensure that all conduits and other electrical equipment, which are to be cast in the concrete columns and slabs, are installed in good time.

The Contractor shall have a representative in attendance at all times when the casting of concrete takes place.

Draw-boxes, expansion joint boxes and round conduit boxes are to be provided where necessary. Sharp bends of any nature will not be allowed in concrete slabs.

Draw and/or inspection boxes shall be grouped under one common cover plate and must preferable be installed in passages or male toilets.

All boxes, etc., are to be securely fixed to the shuttering to prevent displacement when concrete is cast. The conduit shall be supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete slabs and/or beams.

Before any concrete slabs are cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

#### **5.5.1 AXIAL FLOW FANS**

Suitable galvanized steel mounting plates or bracket provided from the same manufacturer shall be used for fixing the fan.

#### **5.5.3 CENTRIFUGAL FANS**

For floor mounted arrangement, the fan shall sit on concrete plinth by builder with anti-vibration mountings.

For ceiling mounted arrangement, the fan shall sit on anti-vibration mountings fixed on steel mounting frame. Threaded suspension rods with locking nuts shall be used for level adjustment.

Anti-vibration mounting shall be selected to cater for different point load of the fan at four corners.

#### **5.5.4 FAN COIL UNITS**

- 5.5.4.1. Threaded suspension rods with lock nut and washer shall be used for ceiling mounted fan coil units for level adjustment.
- 5.5.4.2. Flexible joints shall be installed for air duct, water pipe, conduit and other services connection to the unit.
- 5.5.4.3. Sufficient access panels shall be provided at the supply air duct and the return air plenum for servicing the blower and duct heater. Demountable return air grille of minimum dimensions 600 mm × 600 mm shall be considered as an access panel subject to the approval of the Architect.
- 5.5.4.4. Power supply will be provided by electrical sub-contractor and terminated at fused connector unit adjacent to each fan coil unit, all cabling from the power source (e.g. connector unit) to the control box of the fan coil unit and fan coil room remote control and accessories at convenient position including the termination shall be carried out by the Contractor. G.I. metal boxes for housing the fused connector unit

and all necessary conduit works inside ventilated ceiling or otherwise indicated shall be supplied and installed by the Contractor.

- 5.5.4.5. The location of the local control box shall be within 600 mm from the terminal box of the fan coil unit and the duct heater.
- 5.5.4.6. All units shall be selected to suit the limited space within the false ceiling, with due consideration to access for maintenance and servicing.
- 5.5.4.7. All blowers and motors of fan coil units shall be demountable from the ceiling void for maintenance purpose without causing damage to the associated ductwork and insulation.
- 5.5.4.8. The condensate drain pan shall be of stainless steel and insulated for those fan coil units installed in records rooms and control rooms and other essential areas sensible to water damage. A second or additional larger stainless steel insulated drain pan shall also be provided underneath to avoid any possible dripping of condensate. A water overflow alarm indication shall be equipped at conspicuous place outside the room or connected to CCMS.

#### **5.6.1 IN-LINE CENTRIFUGAL AND MIXED FLOW FANS**

In-line centrifugal and mixed flow fans shall be mounted on a G.I. steel support. Threaded steel rod with locking nuts shall be used for ceiling mounted purposes. Neoprene pad shall be provided for vibration isolation.

#### **5.6.2 MECHANICAL ROOF EXTRACT UNITS**

Mechanical roof extract unit shall be mounted on a vermin proof hard wood sill and concrete curb provided by builder with dimensions according to requirements of the manufacturer. All gaps between the mounting frame and structural base shall be sealed up properly.

#### **5.6.3 PROPELLER FANS**

Where propeller fans are mounted in a casing, the casing shall be longer than the length of the fan and motor. The casing shall be of galvanized steel or aluminium sheet or stainless steel as specified, and shall have flanged ends and an inspection door. A terminal box shall be mounted externally on the casing.



#### 5.6.4 PROTECTIVELY COATED FANS AND FANS FOR CORROSIVE OR HAZARDOUS APPLICATIONS

All steel mounting brackets, bolts, washers and nuts shall be hot dip galvanized and painted with protective coatings to meet the appropriated corrosive environment.

#### 5.6.5 ROTARY FANS

The installation of wall or ceiling mounted rotary fans shall follow the installation instruction of the fan manufacturer.

#### 5.6.6 TERMINAL AIR CONTROL DEVICES

Terminal air control devices shall be mounted on a steel support. Threaded steel rod with lock nuts shall be used for ceiling mounted purposes. Neoprene pad shall be provided for vibration isolation. Fixture shall be installed on the steel support to govern the lateral movement of the unit.

The power supply to the unit shall refer to Sub-section B3.6.4, B3.6.5 and B3.6.6. Flexible duct connecting the inlet/outlet of the unit shall be fixed by omega clip or similar approved devices.

#### 5.6.7 GRILLES AND DIFFUSERS

Grilles and diffusers shall be fixed on air duct by self-tapping stainless steel screw or purposely made spring or locking devices. Fixing the grille or diffuser by self-taping screw on the face panel exposed to view shall be avoided.

For linear diffuser or special made air fittings, lifting brackets or fixing devices shall be provided to facilitate site installation.

#### 5.6.8 DOMESTIC EXHAUST FANS

The installation of domestic exhaust fans shall follow the installation instruction of the manufacturer or refer to contract drawings. All domestic fans shall be protected with safety guards

## **SECTION 6**

### **THERMAL INSULATION**

#### **6.1 GENERAL**

In general, all ductwork and equipment shall be insulated if the air conveyed within the ductwork and the air external to it have a temperature difference which may cause an unwanted condensation or heat loss either on the duct surface or within the ductwork or result in unwanted thermal exchange between the external and inside air of the ductwork.

Thermal insulation shall be applied to chilled or hot water pipework distribution systems and to components within distribution systems such as valves, storage vessels, strainer and accessories.

All insulation shall fit tightly to surfaces to be covered, and all slabs and sections shall be built up close, butting edges being mitred, chamfered or shaped as necessary. Any minor interstices left in insulation shall be filled and sealed with granules embedded in suitable and approved adhesive compound.

Insulated pipes and ducts shall be supported on the outside of the insulation, with load spreading galvanised iron or corrosion treated steel metal plates of suitable size and thickness between the insulation and supports to prevent the insulation being crushed. A higher density load bearing quality insulation or hard wood block should be used at support points as recommended by the insulation manufacturer and as directed by the Engineer.

At the point of support, specially prepared blocks of hardwood or styrofoam material must be positioned to ensure the integrity of the vapour barrier and cladding where applicable by bonding the supports to the insulation.

All materials delivered to site shall be new, and where appropriate, colour coded and labelled at the factory to identify different grades, sizes and types. The insulation shall be protected from damage or deterioration before, during and after fixing. Damaged or compressed insulation should be replaced.

Immediately before applying insulation, clean all surfaces until these are free of rust, scale and grease, and are thoroughly dry. Under no circumstances should the insulation be applied to wet surfaces.

Any surface to be insulated, which shows any sign of rusting or damage, shall, prior to insulating, be thoroughly scrapped and wire brushed as necessary to remove all rust, scale, etc. Surfaces shall then be cleaned with appropriate solvent to remove all oil, grease and dirt prior to the application of two coats of grey epoxy primer paint and insulation. Only clean and dry insulation shall be applied in any case, and it shall be free from damage before application.

All materials including the thermal insulation itself, together with adhesives, paint, bands, sheeting, etc. shall be supplied with a reasonable margin for cutting, wastage and making good damage and loss. All materials shall be stored in a suitable manner so as to prevent them from damage or deterioration before fixing.

All insulation shall be applied so as to give a smooth, homogeneous and lineable surface. All rigid sections shall be concentric, and accurately matched for thickness. Steps and undulations in the surfaces are not acceptable. Any sections or slabs having damaged ends will be rejected.

Continuous insulation shall be provided through all sleeves and insulation joints shall be staggered with respect to joints on the associated pipework or ductwork systems.

Insulation damaged for whatever reasons will be rejected.

Where thermal insulation is applied to the outside of piped and ducted services, equipment and plant used to convey, store or generate fluids or gases at temperatures lower than the design ambient dew point temperature indicated, a water vapour barrier shall be provided unless it can be demonstrated that the insulation material itself provide adequate barrier throughout its thickness to the approval of the Engineer. The separate type vapour barrier where employed shall not be pierced or otherwise damaged by supports or by the application of external cladding.

Where relevant, moisture and vapour barriers, whether applied to the ductwork, hangers or projections, shall be continuous and completely provided throughout the surface of the insulation, and the insulation complete with the barrier shall be properly and firmly bound on the duct or pipe surface by appropriate fixing provisions. Such fixing provisions shall in no way impair the insulation or the vapour barrier. The Contractor shall be responsible for any damage on the insulation or barrier found and any subsequent wetting of the insulation shall be the full responsibility of the Contractor.

Flexible connections on air conditioning ductwork shall be insulated with flexible blanket made from non-flammable material. The insulated blanket is to be wrapped with vapour barrier that conforming to Sub-section C11.4. The blanket shall be wrapped around the flexible connection, overlapped and secured in place by metal bands at both ends to the rigid ducts.

Minimum 12% of insulation installation workers worked in a project should have a certificate certifying that the installation workers have satisfactorily completed relevant thermal insulation installation courses organised by recognized organisations

## **6.2 TYPES OF THERMAL INSULATION MATERIALS APPLICATION**

### **6.2.1 Phenolic Foam Insulation**

For pipe insulation and pipe support, the phenolic foam joint shall be of unique Z-shape slip along the longitudinal joint sealed with adhesive and shall be provided with shiplap joints (male and female joint) at both circumference ends. The shiplap joints shall be a minimum of 12mm long in contact with each other for thermal lock purpose and sealed with adhesive.

Rigid cut sections shall be used with factory applied Class 'O' facing for pipework. 'Butt-joints' of slabs shall be sealed with minimum 120 mm wide matching Class 'O' self adhesive tape as recommended by the insulation manufacturer. Overlap of factory applied Class 'O' facing for cut pipe sections shall be sealed with manufacturers recommended adhesive tape. All tapes shall be conformed to Sub-section C11.4.

Preformed factory fitting insulators cut to suit standard radius elbows, long bends and where available tees shall be used, otherwise, if not available, the Engineer's permission may be sought to neatly cut and mitre the insulation to fit around fittings. In this latter case, great care must be taken to ensure that all mitred joints are a close fit and that the finish coat of aluminium foil adhesive tape is neatly applied.

Flanges and other protrusions shall be insulated by fabricating oversize preformed sections ordered to suit the diameter of the flange or adjacent pipe insulation whichever is the greatest. The oversized section shall overlap on to the adjacent pipe insulation by a minimum of 75 mm on each side.

Pipe supports shall fit around the outside of the insulation. The insulation at the support points shall be heavy density load bearing phenolic foam in preformed sections made to the

same thickness as the adjacent pipe insulation. This shall be complete with the same external finish to Class 'O' as used on the adjacent standard pipe insulation.

Reference shall be made to the insulation manufacturer recommended support details to ensure correct load bearing and dimensions of high density foam inserts and associated galvanised metal plate supports are correct to spread the point loads involved.

All pipe insulation shall be zero ODP and GWP

#### **6.2.2 Glass Fibre Insulation**

All fibreglass insulation shall be completely sealed by effective vapour barrier and self adhesive foil tape as required by Sub-section C11.4.

All fibreglass insulation shall be completely sealed at all joints. All holes, tears, punctures, etc. made in the vapour barrier shall be completely sealed with the same specified foil tape. If damage in a defined area exceeding 5% of the insulation surface or duct or pipe, the Contractor shall be responsible for replacement with new one.

When pins are required to use to support the fibreglass blanket, all the pins must be fire resistant and sealed by same specified foil tape after installation.

The material shall be adhered to the ducts with moisture and fire resistant adhesive of an approved type. Where preformed fibreglass slabs are to be adhered to flat surfaces such as ductwork the method of fixing shall be approved by the Engineer before commencing work.

Glass fibre insulation shall be zero ODP and GWP

#### **6.2.3 Flexible Closed Cell Elastomeric Insulation**

The flexible closed cell elastomeric insulation sheet shall be supplied in rolls in dimensions recommended by the manufacturer for application in ductwork so that the top and bottom pieces overlap the sides. Adhesives shall be applied evenly to the entire contact surfaces if the elastomeric insulation sheet is not a self-adhesive sheet.

When shifting large bore flexible closed cell elastomeric tube which has become elliptical during storage, the slit shall be made in the flattened surface.

If the Flexible Closed Cell Elastomeric Insulation is exposed to weather, inside plant room or services duct, protection finish coats recommended by the insulation manufacturer shall be applied.

All coatings must be supplied by the original insulation manufacturer and applied strictly following the manufacturer's installation manual to obtain the required result.

Elastomeric insulation shall be zero ODP and GWP

#### **6.2.4 Polystyrene Insulation**

Unless otherwise instructed by the Engineer, polystyrene insulation shall be covered in galvanised iron wire netting of 25mm mesh, 1mm dia. coated with 15mm cement plaster smoothed and finished with painting completion as Sub-section 11.8.

Polystyrene insulation shall be zero ODP and GWP

#### **6.2.5 CFC, HCFC and HCF free Polyurethane Foam Insulation**

Whenever the polyurethane foam insulation is used for pre-insulated duct system without galvanised iron sheet metal, the following guidelines should be followed:

Wherever necessary, the ducts must be provided with appropriate reinforcements to guarantee sufficient mechanical seal against a maximum internal pressure of 500Pa during operation. The maximum deformation of the duct must not exceed 3% of its width or 30mm in any case.

The joints between one duct and the next shall be performed using flanges with unexposed bayonet coupling and ensure the appropriate pneumatic and mechanical seal. Elbows shall be provided with tuning vanes wherever indicated.

The ducts shall be supported by appropriate supports at intervals of no more than 4m whenever the greater side of the duct is less than 1m, and intervals of no more than 2m whenever the greater side of the duct is more than 1m.

Accessories such as volume dampers, fire barriers or duct coil and etc., shall be provided with independent support in such a way that their weight does not bear on the ducts.

Wherever indicated, the ducts shall be provided with appropriate test points for the sensors and inspection doors for cleaning and inspection all along the route.

Polyurethane insulation shall be zero ODP and GWP

### **6.3 PIPEWORK FITTINGS**

Unless otherwise specified, all valves, flanges, strainers, expansion joints, etc., are to be insulated in conformity with the pipework in which they are incorporated, and to the same thickness. All such items where proper treatment on pipework connected to the puddle flanges in tunnel and trench is required shall be provided with relevant insulation filled 0.8mm thick hammered aluminium split boxes, arranged for easy removal, the box to enclose up to valve handle and to have a lid for valve access. The insulation on the pipes immediately adjacent to flanges, etc., shall be neatly swaged off to allow the insulated boxes to be removed without damage to the pipe insulation.

Valves, flanges, strainers, glands etc. are to be provided with insulation of similar type to that employed on rest of system (if appropriate to this purpose) fitted into galvanised steel or aluminium sheet split boxes arranged for easy removal so that access to the valves, flanges etc. can readily be gained without damaging the general run of insulation.

For all chilled water fittings and accessories such as valves, strainers, etc., there shall be external protection of a box constructed with 0.8mm thick hammer aluminium cladding. The box shall be hinged at a point and fastened together on the other side with a quick action snap catches.

### **6.4 DUCT WORK AND AIR HANDLING PLANT - METHODS OF APPLICATION**

6.4.1 Thermal insulation shall be applied to air distribution ductwork and to components within distribution systems such as fans, heater and cooler casings which convey conditioned air within plant rooms and up to and including all terminal points in the system.

Air distribution systems conveying conditioned, warmed or chilled air through conditioned spaces shall be insulated. Exhaust, ventilation or outdoor air passing any conditioned space should also be insulated.

All ductwork (including re-circulation ductwork) conveying warmed or chilled air through unconditioned spaces or the open air shall be insulated.

Distribution systems conveying untreated outdoor air and exhaust air need not be insulated unless such air distribution passing conditioned space.

6.4.2 Fixing methods for insulation shall provide a minimum of direct metal paths which thermally bridge the insulation, particularly when the insulation is metal faced. The full insulating effect shall be maintained at connections and access openings and panels including the edges of such openings, fasteners and stiffeners either by means of purpose made boxes or by increasing the general thickness of insulation. Where insulation is applied in layers, all joints in all layers shall be staggered.

6.4.3 At all points of support, the insulation and outer covering and vapour seal shall be continuous and shall not be pierced or fouled by the supports. The insulation at supports shall be of the material with sufficient compressive strength to take up the loads transmitted to the supports.

6.4.4 Pre-formed slab insulation shall be applied with adjacent sides lapped to maintain a uniform thickness at corners. The insulation shall be fixed securely with adhesives conforming to ASTM C-1126-Type II and NFPA-120 A and by impaling on fasteners which must be galvanised iron metal studs' split prongs, plastics studs or other approved devices fixed to the thickness and weight of the insulating materials and finishes to be applied and shall be spaced at approximately 300 mm centres. Fastenings shall be finished flush with the surface of the insulation to which they are applied.

Adhesives shall be compatible with the insulation and in their dry state be non-flammable. In no circumstances shall adhesives be used which attack or dissolve the ductwork or insulation.

6.4.5 Aluminium foil or plastics faced pre-formed slab insulating materials shall be placed on the outside of ductwork with adjacent sides lapped to maintain a uniform thickness at corners. All joints shall be sealed with foil tape as indicated in Sub-section C11.4 and held in place with contact adhesive. The adhesive shall be suitable for the range of ambient temperature and humidity encountered.

6.4.6 Reinforcement of self-setting cement shall be 25 mm mesh, 1 mm dia. galvanised wire netting. Cement finishes applied to thermal insulation shall always be completely dry before the application of any sealing primer and final decorative coating. Cement



application shall be planned and executed in sections to avoid joints between wet cement and cement already dried.

- 6.4.7 Where thermal insulation is protected against the effects of weather by plastics sheet or roofing felt, particular care shall be taken to ensure a watertight seal at all joints. The sheet material shall be adhered to the external surface of the insulation and all joints shall be lapped, secured and sealed by adhesives or solvent welding. All jointing and sealing materials and methods of application shall be to the recommendations of the sheet supplier.

Polyisobutylene sheet shall be not less than 0.8 mm thick and have a tensile strength not less than  $3.4\text{MN/m}^2$ .

- 6.4.8 Where an insulated duct passes through an external building element, adequate precautions shall be taken to prevent the entry of rainwater into the building. Details shall be submitted to the Engineer for approval well before the construction starts.

- 6.4.9 Flexible insulation shall have all circumferential and longitudinal joints sealed with tape of the same material or highly compatible with the main insulation facing. The external surface of the insulation shall be wrapped and galvanised wire netting of 25 mm mesh, 1 mm dia. and the netting joints shall be secured with a lacing of 1mm galvanised wire. Care shall be taken to ensure that the insulation material is not crushed during this application.

- 6.4.10 Thermal insulation and/or acoustic insulation materials shall be applied to the inside of ductwork only where indicated. The insulation material shall be cut to accurately fit the internal duct surfaces. The insulation shall be fastened to the duct using adhesive spread over the entire surface in combination with piercing fasteners finished flush with the insulation surface. Particular care shall be taken to ensure that the edges of all internal insulating materials, whether exposed or butted against similar edges, are sealed and secured to the internal surfaces of the duct. They shall be protected with galvanised iron channel sheet metal of not less than 0.8 mm thickness and 12 mm width. Alternatively they may be provided with other approved means of protection to prevent erosion and peeling. All materials shall have adequate strength and ability to resist erosion at the maximum design air velocity and shall not produce dust. The provisions of Sub-section B8.12 and B8.11 shall also apply where applicable.

6.4.11 Unless otherwise specified in Particular Specification, glass fibre insulation with scrim fibre glass cloth face finish or elastomeric insulation shall be used for internal lining material.

## **6.5 PAINTING AND IDENTIFICATION**

6.5.1 Thermal insulation exposed to view (including that within plant rooms) shall be painted the colour of which shall be approved or is acceptable to the Engineer where insulation is protected by aluminium foil or self-coloured sheet, plastics film or a weather-proof finish and is in concealed space, painting will not be required.

An undercoat and not less than two finishing coats shall be applied. Absorbent surfaces shall also receive an initial coat of priming paint. All paints shall be compatible with the surfaces to which they are applied.

6.5.2 Painting shall be carried out generally as detailed in Section A8. The colour(s) of paint(s) shall be to the requirements of Section A8 and/or the instructions of the Engineer and shall be selected from the range contained in BS 4800.

6.5.3 All distribution services shall be colour coded and provided with symbols for identification purposes. Identification coding for ductwork, including thermal insulation, shall be in accordance with HVCA Standard DW/144. For pipework, including thermal insulation, the basic colour and colour coding shall be in accordance with SANS 12140-3 or BS 1712.

6.5.4 Uninsulated pipework or ductwork and thermal insulation which is painted or unpainted shall be identified by bands at least 25 mm wide or colour triangles of at least 150 mm side. The bands or triangles shall be spaced and located to permit ready identification of the services particularly adjacent to equipment positions and at service junctions and wall penetrations.

6.5.5 In addition to colour bands or triangles all pipework and ductwork in plant rooms and service areas, whether insulated or not, shall be legibly marked with black or white letters and triangles to show the type of service and the direction of fluid flow.

## SECTION – 7

### MODE OF MEASUREMENTS

#### UNIT PRICES IN THE SCHEDULE OF QUANTITIES

**7.1. The item description in the schedule of quantities** is in the form of a condensed resume. The unit price shall be held to include everything necessary to complete the work covered by this item in accordance with the specifications and drawings. The sum total of all the individual item prices shall represent the total price of the installation ready to be handed over.

The Equipment, Machinery and Apparatus shall include the following:

- 7.1.1. All equipment, machinery, apparatus and materials required as well as the cost of any tests which MCE may request in addition to the tests generally required to prove quality and performance of equipment.
- 7.1.2. All the labour required to supply and installs the complete installation in accordance with the specifications.
- 7.1.3. Use of any tools, equipment, machinery, lifting tackle, scaffolding, ladders etc. required by the contractor to carry out his work.
- 7.1.4. All the necessary measures to prevent the transmission of vibration.
- 7.1.5. The necessary material to isolate equipment foundations from the building structure, wherever necessary.
- 7.1.6. Storage and insurance of all equipment apparatus and materials.

**7.2. The contractor's unit price** shall include all equipment, apparatus, material and labour indicated in the drawings and / or specifications in conjunction with the item in question, as well as all additional equipment apparatus, materials and labour usual and necessary to make in question on its own (and within the system as a whole) complete even though not specifically shown, described or otherwise referred to.

### **7.3. Measurements of sheet metal ducts, grilles/diffusers etc.**

#### **7.3.1. Sheet metal ducts**

7.3.1.1. All duct measurements shall be taken as per actual outer duct surface area including bends, tees, reducers, collars, varies and other fittings. Gaskets, nuts bolts, vibration isolation pads are included in the duct items of schedule of quantity.

7.3.1.2. The unit of measurements shall be finished sheet metal surface area in square metres. No extra shall be allowed for laps and wastages.

7.3.1.3. All the guide vanes, deflectors in duct elbows, branches, grilles, collars quadrant dampers etc. will be included in unit rates of duct.

No extra payments will be made in this regard.

7.3.1.4. The unit duct price shall include all the duct hangers supports, exposing of concrete reinforcement for supports and making good of the same as well as any materials and labour required to complete the duct frame.

### **7.4. Measurements of Refrigerant Piping**

7.4.1. All pipes shall be measured in linear metres (to the nearest cm) along the axis of the pipes and rates shall be inclusive of all fittings eg.

Tees, bends, reducers, elbows etc.

7.4.2. Rates quoted shall be inclusive of providing and fixing vibration pads and wooden pieces wherever specified or required by the Mechanical Engineer.

7.4.3. Flexible connections, wherever required of specified shall be measured as part of straight length of same diameter, with no additional allowance being made for providing the same.

7.4.4. The length of the pipe for the purpose of payment will be taken through the centreline of the pipe and all fittings (e.g. Tees, bends, reducers, elbows etc.) as through the fittings are also presumed to be pipe lengths. Nothing extra whatsoever will be paid for over and above for the fittings and flanges.

- 7.4.5. The rates quoted shall be inclusive of cutting holes in walls and making good the same and inclusive of all items as specified in the specification and schedule of quantity.

**7.5. Structural supports**

Structural supports including supports fabricated from pipe lengths shall be measured as part of pipe line and hence no separate payment will be made. Rates shall be inclusive of hoisting, cutting, jointing welding, cutting of holes and chases in walls, slabs or floors, painting supports and other items as described in specification, drawings and schedule of quantities or as required by EIC.

**7.6. Painting**

- 7.6.1. Painting of all pipes and fittings shall be measured as part of pipes as installed. Nothing extra shall be paid for this works.
- 7.6.2. Painting of tanks and equipment wherever required shall be measured as part of equipment price.

## SECTION 8

### NOISE AND VIBRATION CONTROL

#### 8.1 GENERAL

The Contractor shall install sufficient noise and vibration control measures on the plant/equipment, the interconnected piping, ductwork and conduit so that when the installed plant/equipment are put into operation, the resulting noise and vibration levels at locations within the building and at adjacent or nearby buildings shall not exceed the acceptable limits.

Unless otherwise specified in the Particular Specification, the total noise level in occupied areas within the building, whether it be airborne, structure-borne or ductwork-borne, shall not exceed the following limits when all the plant/equipment installed by the Contractor are put into operation: -

Table 8.1 Noise Control Criteria

|  |       |
|--|-------|
| Broadcasting and recording studios                     | NC 25 |
| Concert and opera halls                                | NC 25 |
| Theatres, assembly halls and churches                  | NC 30 |
| Cinemas  | NC 35 |
| Hospital wards and operating theatres                  | NC 35 |
| Homes, bedrooms  | NC 35 |
| Private offices, libraries, courtrooms and schoolrooms | NC 35 |
| General offices  | NC 40 |
| Mechanised offices                                     | NC 45 |
| Restaurants, bars, cafeterias and canteens             | NC 45 |
| Department stores and shops                            | NC 45 |
| Swimming baths and sports arenas                       | NC 50 |
| Kitchens   | NC 50 |
| Factories (light engineering)                          | NC 65 |
| Factories (heavy engineering)                          | NC 75 |

The specified noise criteria shall apply to all areas as measured at a level of 1.5 m above the floor, and the measuring points shall be 1.5 m away from the walls or doors of the rooms.

The Corrected Noise Level at potential Noise Sensitive Receiver in the adjacent or nearby building, if so identified in the Contract Documents, shall not exceed the

Acceptable Noise Level stipulated in the SABS and CIBSE Standards.

## ANNEXURES

### ANNEXURE - 1

#### APPROVED MAKES OF MATERIALS

|    |                             |                                 |
|----|-----------------------------|---------------------------------|
| 1  | VRF Systems                 | Mitsubishi / LG/ Daikin/Samsung |
| 2  | Indoors cassette type units | Mitsubishi / LG/ Daikin/Samsung |
| 3  | Exhaust fans                | AMS or Equal                    |
| 4  | Heat Pump                   | LG/Mitsubishi/Daikin            |
| 5  | Starter / contactor         | Siemens or Equal                |
| 6  | Nitrile Rubber insulation   | Armaflex or Equal               |
| 7  | Vibration pads              | Resistoflex or Equal            |
| 8  | Vibration isolation         | Resistoflex or Equal            |
| 9  | Fresh air fans              | AMS or Equal                    |
| 10 | Flexible ducts              | Trox or Equal                   |
| 11 | Electrical Motors           | Siemens or Equal                |





**SPECIFICATION FOR  
KITCHEN EQUIPMENT  
FOR  
*RENNOVATION TO TAUNG HOTEL AND CONVENTION CENTRE.***

## **SPECIFICATION OF KITCHEN EQUIPMENT SECTION-1**

### **GENERAL DESCRIPTION & DESIGN BASIS**

#### **1.1 SCOPE (General)**

This specification, together with the schedule of quantities and tender drawing(s) enclosed, covers the design, manufacture, assembly and testing at manufacturer's works, delivery to site, installation, testing & commissioning into service, carrying out all acceptance tests, for the Kitchen Equipment for Taung Hotel and Convention Centre.

#### **1.2 LOCATION**

The proposed buildings for Taung Hotel and Convention Centre in Taung in North West Province.

#### **1.3 AREAS FOR KITCHEN EQUIPMENT ARE AS PER ENCLOSED DRAWINGS:**

Refer to drawings for KITCHEN EQUIPMENT.

#### **1.4 KITCHEN EQUIPMENT SPECIFICATIONS:**

##### **1.4.1 80L TILTING PAN**

Pedestal mounted tilting fry pan

- Pan manufactured from 2mm type AISI 304 CR-NI stainless steel sides integrally welded to a 10mm boiler plate base (mild steel)
- Heating by means of 6 incoloy sheathed elements clamped to the underside of the pan
- Thermostatically controlled from 50° - 250°C
- Pan suspended on trunnions with bushes providing smooth tilt operation by means of a worm and wheel mechanism
- Spring balanced lid with heat resistant handle

**Dimensions:** 1310 x 785 x 915mm (H)

**Pan Interior:** 765 x 590 x 200mm deep

**Pan Capacity:** 80 litres

**Electrical Load:** 15kW, 400V, 3 Phase, Neutral and Earth

**Weight:** 155kg, **Crated Size & Weight:** 1380 x 860 x 1240mm - 218kg

#### **1.4.2 225L OIL JACKETED BOILING PAN**

##### **FEATURES:**

- Oil jacketed boiling pan
- Inner pan, base and curb manufactured from 2mm type AISI 304 CR-NI stainless steel
- 40mm fibreglass insulation
- Spring balanced lid with safety handle
- Fitted with breather tube, oil filler pipe, oil drain valve and chrome plated draw-off cock
- Stainless steel clad immersion elements
- Thermostatically controlled 50°-160°C - pre-set overriding thermostat 180°C

**Dimensions:** 1009 x 1037 x 1000mm (H)

**Pan Capacity:** 225 litres

**Oil Jacket Capacity:** 60 litres

**Electrical Load:** 18kW, 400V, 3 Phase Neutral and Earth

**Weight:** 125kg

**Crated Size & Weight:** 1280 x 1100 x 1320mm – 185kg

#### **1.4.3 RATIONAL COMBI STEAMER**

##### **ELECTRIC**

**Weight:** 182kg

**Mains Connection:** 3 NAC 400 V

**Fuse:** 3 x 63 A

**“Dry Heat” Connection:** 36 kW

**“Moist Heat” Connection:** 36 Kw

#### **1.4.4 FRYTOP GRIDDLE**

##### **FEATURES:**

- Heavy duty 430 stainless steel construction
- 16mm Griddle plate integrally welded to mild steel back and side skirt
- Fat trough and catch pan fitted
- Tubular incoloy sheathed elements
- Thermostatically controlled from 50° - 250°C

**External Dimensions:** 915 x 735 x 910mm (H)

**Griddle:** 910 x 590mm

**Electrical Load:** 10kW, 400V, 3 Phase, Neutral and Earth

**Weight:** 128kg

**Crated Size & Weight:** 980 x 810 x 1040mm – 168kg

#### **1.4.5 FRYTOP GRIDDLE**

##### **FEATURES:**

- Full or half ribbed-half plain as an option
- Heavy duty 430 stainless steel construction
- 16mm Griddle plate integrally welded to mild steel back and side skirt
- Fat trough and catch pan fitted
- Tubular incoloy sheathed elements
- Thermostatically controlled from 50° - 250°C

**External Dimensions:** 915 x 735 x 910mm (H)

**Griddle:** 910 x 590mm

**Electrical Load:** 10kW, 400V, 3 Phase, Neutral and Earth

**Weight:** 128kg

**Crated Size & Weight:** 980 x 810 x 1040mm – 168kg

#### **1.4.6 ELECTRIC DEEP DOUBLE PAN FRYER**

##### **FEATURES:**

- Stainless steel front, door and side panels
- Pan and surround manufactured from type 430 stainless steel
- Large surge area and effective cold zone
- Each 20 litre pan fitted with 15kW stainless steel tubular steel sheathed elements protected by a perforated stainless steel fish plate
- Each pan thermostatically controlled 100°-180°C with overriding thermostat pre-set 215°C
- Pans fitted with draincocks and unit supplied with oil receivers
- Oil level indicator
- Pan stainless steel bead blasted

**Dimensions:** 1015 x 600 x 915mm (H)

**Pan Capacity:** 2 x 20 litres

**Electrical Load:** 30kW, 400V, 3 Phase, Neutral and Earth

**Weight:** 78kg

**Crated Size & Weight:** 1080 x 680 x 1110mm — 100kg

#### **1.4.7 CHIP STORAGE TABLE C/W RECESSED TOP AND WARMER LAMP**

##### **FEATURES:**

- Manufactured from stainless steel throughout with recessed top fitted with removable chip drain grid
- The recessed section would be fitted with warmer lamp over with toggle switch
- Underside with runners to accommodate 3 x chip storage boxes
- Supported on legs with adjustable foot pieces for levelling and floor fixing

**Dimensions:** 600 x 600 x 915mm (H)

**Electrical Load:** 0.5kW, 230V, 1 Phase, Neutral and Earth

#### **1.4.8 MOBILE FOOD WARMING CABINETS**

##### **FEATURES:**

- All stainless steel construction – inner AISI 304 CR-NI stainless steel, outer 430 stainless steel
- Insulated body and doors
- Recirculating hot air blower and humidifier
- Thermostatically controlled 0-110°C
- Heavy duty 125mm Ø castors
- Removable racks for easy cleaning
- Capacity 16 x 2/1 x 25mm Gastronorm© trays (trays and wire grids optional extra)

**Dimensions:** 660 x 840 x 1725mm (H)

**Capacity:** 16 x 2/1GN x 25mm deep Gastronorm© trays or 32 x 1/1GN pans or wire grids

**Electrical Load:** 2kW, 230V, Single Phase, Neutral and Earth

**Weight:** 175kg

**Crated Size & Weight:** 700 x 910 x 2070mm — 240kg

#### **1.4.9 BREAD MOULDER**

Long loaf moulder suitable for up to 40cm length of loaf.

Adjustable horizontally placed rollers and a wheel adjustable pressure board. 420mm of belt, flexible moulder for all types of dough handling in small and medium size bakeries. On wheels to easy move, easy cleaning.

**Scaling Range** 50 – 1200 Grams

**Dimensions** 1400 x 690 x 1120mm (H)

**Electrical Requirements** 1kW, 400V, 3 Phase

#### **1.4.10 BREAD SLICER**

**Scaling Range** 100 – 800 Grams 20 Part

**Dimensions** 570 x 690 x 1100mm (H)

**Electrical Requirements** 1kW, 400V, 3 Phase

#### **1.4.11 50KG DOUGH MIXER**

##### **FEATURES:**

- Planetary transmission at high speed
- 3 Attachments to suit most confectionary requirements
- Full mechanical drive and reliable performance
- Head can be raised
- Overload protection
- Switch Lock

**Capacity Dough:** 80Kg

**Bowl Capacity:** 134L

**Maxi Flour Capacity:** 50Kg

**Electric requirements:** 2.6 / 5.2 kW 380 V 3 Phase & Earth -25A C/B

**Special features:** Stainless steel bowl, spiral and cutting bar.

Heavy-duty structure. German switchgear, Italian timers, Auto or manual operation.

**Weight:** 385kg

#### **1.4.12 MOBILE CROCKERY RACK**

##### **FEATURES:**

- Mobile
- Removable plate inserts
- Plate inserts plasticised
- Frame epoxy coated

**Capacity:** 400 piece

**Dimensions:** 840 x 610 x 1650mm (H)

**Weight:** 39kg

**Crated Size & Weight:** 910 x 770 x 1900mm – 62kg

#### **1.4.13 ROLLER OUTLET TABLE**

##### **FEATURES:**

- Stainless steel legs with adjustable foot pieces
- Heavy duty galvanised backing sheet with bitumastic sound deadening
- 150mm high splash back to rear

**Dimensions:** 2250 x 650 x 910mm (H)

**Weight:** 66kg

**Crated Size & Weight:** 2320 x 720 x 575mm – 97kg

#### **1.4.14 RACK ADVANCING DISHWATER C/W HEAT RECOVERY AND DRIER**

##### **FEATURES:**

- Compact, state-of-the-art, highly versatile machines created in full compliance with the green philosophy applied by Comenda
- Extremely compact size
- All 304 stainless steel
- Inspection doors with integral balancing springs
- Compact installation dimensions
- Deep drawn tanks with rounded corners
- Fully self-draining vertical pumps
- Door wipe seal for constant cleaning of the inside of the door
- Electronic control panel with digital display temperature read out
- Double wall doors
- 24V control circuit
- Economiser that activates rinsing only when rack passes through

**Output:** 150 racks per hour

**Maximum Length:** 1650mm

**Wash Tank Capacity:** 125 litres

**Water Consumption:** 300 litres per hour



**Electrical Load:** 400V 3N – 50Hz

**Hot Water Supply 55°C:** 23Kw

#### **1.4.15 SINGLE BOWL PRE RINCE 1650 X 620 C/ O/H SPRAY**

**FEATURES:**

- All 430 type stainless steel
- Cold pressed bowl AISI 304CR NI grade stainless steel with 40mm waste outlet hole
- 150mm high splash back to rear
- Stainless steel legs with adjustable foot pieces
- Heavy duty backing sheet with bitumastic sound deadening

**Dimensions:** 1650 x 650 x 910mm (H)

**Bowl Dimensions:** 505 x 505 x 250mm (H)

**Weight:** 49kg

**Crated Size & Weight:** 1720 x 720 x 525 – 68kg

#### **1.4.16 DUMP TABLE 2250 X 930 C/W SCRAP HOLE**

**FEATURES:**

- Stainless steel legs with adjustable foot pieces
- Heavy duty galvanised backing sheet with bitumastic sound deadening

**Dimensions:** 2250 x 750 x 910mm (H)

**Weight:** 69kg

**Crated Size & Weight:** 2320 x 820 x 365mm – 97kg

#### **1.4.17 WORKTOP REFRIDGERATORS 1780 X 650**

##### **FEATURES:**

- Adjustable shelving
- Specially designed for kitchens with high temperature and high humidity – Ambient temperature 40C
- Freezer refrigerators use open type large evaporators, Reducing the refrigeration time by half that of other brands. Fast cooling effect and temperature equalization.
- Evaporators and condensers adopt copper pipes and hydrophilic aluminium foil material – increasing the refrigeration efficiency by 18%
- Microcomputer Temperature Control
- Environmental friendly refrigerant – R404a for freezers and R134a for chillers
- Door frame heaters
- Locks standard
- Rounded corners
- Package refrigeration units

**Dimensions:** 650 X 1780

**Power Supply:** 1KW

**Voltage:** 220V, 50Hz

#### **1.4.18 HEAVY DUTY TROLLEY**

##### **FEATURES:**

- Standard as illustrated
- Various configurations available
- Heavy duty dish containers
- Removable stainless steel shelf
- 100mm Diameter swivel castors
- Robustly constructed - Stainless steel frame

**Dimensions:** 890 x 525 x 940mm (H)

**Weight:** 16kg

**Crated Size:** 960 x 600 x 1150mm

**Crated Weight:** 41kg

#### **1.4.19 MOBILE TABLE 1650 X 750 C/W UNDERSHELF**

##### **FEATURES:**

- Stainless steel legs with adjustable foot pieces
- Heavy duty galvanised backing sheet with bitumastic sound deadening

**Dimensions:** 1650 x 750 x 910mm (H)

**Weight:** 52kg

**Crated Size & Weight:** 1720 x 820 x 365mm – 76kg

#### **1.4.20 BULK FOOD TROLLEY**

##### **FEATURES:**

- Electrically heated bulk food trolley
- Pan AISI 304 CR-NI grade stainless steel
- Outer 430 stainless steel
- Fully insulated body
- 150 Litres capacity
- Drain facility with valve
- Heavy duty castors
- Cord wrap fitted

**Dimensions:** 700 x 880 x 910mm (H)

**Castors:** 2 x fixed, 2 x swivel

**Electrical Load:** 1.2kW, 230V, Single Phase, Neutral and Earth

**Weight:** 85kg

**Crated Size:** 770 x 850 x 1120mm

**Crated Weight:** 125kg

#### **1.4.21 POTATO PEELER**

##### **FEATURES:**

- Peels 30kg Potato's per minute
- Stainless Steel Unit
- Operated with a redactor system. Timer stops the machine automatically when scheduled time is over
- HACCP Compliant
- Evacuation from the front of unit
- Stabilized feet

**Dimensions:** 750 x 900 x 1270mm (H)

**Electrical Load:** 0.55 kW, 400v, 3 Phase

**Weight:** 100kg

#### **1.4.22 VEGETABLE PREP SINK 1850 X 650**

Cold pressed bowl AISI 304CR NI grade stainless steel with 40mm waste outlet hole

- 150mm high splash back to rear
- Stainless steel legs with adjustable foot pieces
- Heavy duty backing sheet with bitumastic sound deadening

**Dimensions:** 1850 x 650 x 910mm (H)

**Bowl Dimensions:** 1 bowl - 605 x 505 x 280mm (D)

1 bowl - 505 x 505 x 250mm (D)

**Weight:** 54kg

**Crated Size & Weight:** 1920 x 720 x 690mm – 85kg

#### **1.4.23 DOUBLE CENTRE BOWL POT SINK**

Cold pressed bowl AISI 304CR NI grade stainless steel with 40mm waste outlet hole

- 150mm high splash back to rear
- Stainless steel legs with adjustable foot pieces
- Heavy duty backing sheet with bitumastic sound deadening

**Dimensions:** 1850 x 650 x 910mm (H)

**Bowl Dimensions:** 505 x 505 x 250mm (D)

**Weight:** 51kg

**Crated Size & Weight:** 1920 x 720 x 525mm – 76kg

#### **1.4.24 MOBILE POT RACK**

##### **FEATURES:**

- Robust construction
- Four tiers
- Mobile rack available
- Grade 304 stainless steel uprights 45mm diameter
- 20mm galvanised tubes to form storage platforms
- Optional all stainless steel construction

**Dimensions:** 1200 x 600 x 1450mm (H)

**Weight:** 52kg

**Crated Size:** 1270 x 670 x 1660mm

**Crated Weight:** 87kg

#### **1.4.25 BAIN MARIE HOT CUPBOARD**

##### **FEATURES:**

- Bain Marie well manufactured from AISI type 304 CR-NI stainless steel
- Surround and closure panels 430 stainless steel
- Thermostatically controlled immersion element 0° - 110°C with low water cut-out
- Swivel waste with gate valve fitted
- Capacity 5 x 1/1 GN pans (pans optional extra)
- Insulation – 15mm Doors only
- Pre-set thermostat 70°C (hot closet)

**Dimensions:** 1785 x 750 x 910mm (H)

**Electrical Load:** 5.5kW, 230/400V, 2 Phase, Neutral and Earth

**Weight:** 190kg

**Crated Size & Weight:** 1870 x 820 x 1150mm – 252kg

#### **1.4.26 TRAY AND CUTLERY TROLLEY**

##### **FEATURES:**

- Accommodates 2 x 4 division cutlery boxes
- Tray capacity approximately 100 items
- Robustly constructed
- Stainless steel tray shelf
- 100mm Diameter castors
- Tubular baked stainless steel frame

**Dimensions:** 1090 x 530 x 970mm (H)

**Weight:** 20kg

**Crated Size:** 1160 x 600 x 1040mm

**Crated Weight:** 44kg

#### **1.4.27 UNHEATED COUNTER**

##### **FEATURES:**

- Manufactured from type 430 stainless steel with single skin uninsulated side and rear panels.

**Dimensions:** 1785 x 750 x 910mm (H)

**Weight:** 134kg

**Crated Size & Weight:** 1870 x 820 x 1150mm - 196kg

#### **1.4.28 TRAY CLEARING TROLLEY DOUBLE**

- Heavy duty dish containers
- Removable stainless steel shelf
- 100mm Diameter swivel castors
- Robustly constructed - Stainless steel frame

**Dimensions:** 890 x 525 x 940mm (H)

**Weight:** 16kg

**Crated Size:** 960 x 600 x 1150mm

**Crated Weight:** 41kg

#### **1.4.29 50L HYDROBOIL**

##### **FEATURES:**

- Interior and exterior construction - 304 Stainless Steel
- Safe and hygienic
- Modern design, easy to clean and maintain

- LED temperature display
- Various sizes available
- Automatic water refill
- Layered heating system saves energy and water boiling time
- Easy to install either on a bench top or wall mounted

**Dimensions:** 520x360x575mm

**Voltage:** -380V

**Power:** 4Kw

**Capacity:** 50L

**Taps:** 2

#### **1.4.30 WASTE DISPOSAL UNIT**

##### **FEATURES:**

- Corrosion resistant body – Permanent moulded from heat treated aluminium alloy
- Teflon lip water seal – Protects motor from damage by water
- Tapered roller bearing – Provides long motor life, quiet operation and shock absorbing
- Water cooled motor – Provides maximum efficiency and longer life
- Quiet operation – Extra thick rubber mounting adaptor and drain isolates sound and eliminates vibration.

**Dimensions:** 689mm (H)

**Electric Load:** 2, 25kW/3 hp, 400V, 3 Phase, Neutral and Earth

#### **1.4.31 VEGETABLE PREPARATION MACHINE**

##### **FEATURES:**

- Slices, dices, shreds, grates, makes julienne and potato chips



- Fast and easy processing – even of large items
- Continuous bulk feeding
- Continuous oriented slicing

**Dimensions:** 520 x 325 x 745mm (H)

**Capacity:** 12kg per minute

**Electrical Load:** One-speed, 1.5 kW, 230V

**Weight:** Machine base – 6.4kg

Vegetable prep attachment – 3.7kg

Cutting discs – 1kg on average

Container trolley – 9.6kg

#### **1.4.32 Upright Double Sliding Door Beverage Cooler**

##### **FEATURES:**

- Adjustable shelves
- LED Digital Temperature display
- Illuminated header with light switch
- Fan assisted cooling
- Equipped with heavy duty castors
- Auto defrost
- Double layered tempered glass doors, with argon injection
- Lockable
- Refrigerant: R134a
- Certification: CB, CE, ETL, RoHS, MEPS
- Temperature Range: 0 - 10°C (Average 5°C)
- 220V

**Dimensions:** 1130 x 750 2100MM (H)

**Capacity:** 744 litres

#### **1.4.35 Stainless Steel Table 1050x650 With Splash back and under shelf**

##### **FEATURES:**

- All 430 stainless steel top (optional 304)
- Stainless steel legs with adjustable foot pieces
- Heavy duty galvanised backing sheet with bitumastic sound deadening
- 150mm high splash back to rear

**Dimensions:** 1050 x 650 x 910mm (H)

**Weight:** 38kg

**Crated Size & Weight:** 1110 x 720 x 575mm – 58kg

#### **1.4.37 Stainless Steel Table 1200x650 With Under shelf**

##### **FEATURES:**

- All 430 stainless steel top (optional 304)
- Stainless steel legs with adjustable foot pieces
- Heavy duty galvanised backing sheet with bitumastic sound Deadening

**Dimensions:** 1200 x 650 x 910mm (H)

**Weight:** 38kg

**Crated Size & Weight:** 1320 x 720 x 365mm – 58kg

#### **1.4.38 Stainless Steel Table 1400x650 With Splash back and under shelf**

##### **FEATURES:**

- All 430 stainless steel top (optional 304)
- Stainless steel legs with adjustable foot pieces
- Heavy duty galvanised backing sheet with bitumastic sound deadening

- 150mm high splash back to rear

**Dimensions:** 1400 x 650 x 910mm (H)

**Weight:** 51kg

**Crated Size & Weight:** 1520 x 720 x 575mm – 76kg

#### **1.4.39 Stainless Steel Table 1500x650 With Under shelf**

**FEATURES:**

- All 430 stainless steel top (optional 304)
- Stainless steel legs with adjustable foot pieces
- Heavy duty galvanised backing sheet with bitumastic sound Deadening.

**Dimensions:** 1500 x 650 x 910mm (H)

**Weight:** 52kg

**Crated Size & Weight:** 1620 x 720 x 365mm – 76kg

#### ***1.4.40 Stainless Steel Table 1840x650 With Splash back and under shelf***

**FEATURES:**

- All 430 stainless steel top (optional 304)
- Stainless steel legs with adjustable foot pieces
- Heavy duty galvanised backing sheet with bitumastic sound deadening
- 150mm high splash back to rear

**Dimensions:** 1840 x 650 x 910mm (H)

**Weight:** 60kg

**Crated Size & Weight:** 1940 x 720 x 575mm – 86kg



**SPECIFICATION FOR  
PASSENGER LIFT  
FOR  
*RENNOVATION TO TAUNG HOTEL AND CONVENTION CENTRE.***

*June 2023*

## **SECTION 1 – GENERAL**

### **1. Intent of Specification**

The lift specification is intended to cover the complete installation of the lift plant. In all cases where a device or part of the equipment is referred to in the singular, it is intended that such reference shall apply to as many devices as are required to complete the installation.

### **2. Standards and Codes**

All work shall be in accordance with the requirements of the SABS1545-1; SABS1545-2; SABS1545-5; SABS1545-10; SABS1543; "Specifications for Lifts, Escalators and Passenger Conveyors" and shall comply with the Occupational Health and Safety Act 85 of 1993 and current regulations of all other codes applicable to this work.

Equipment and materials shall be new and manufactured in accordance with EN-81 standards and approved by the local authorities having the appropriate jurisdiction.

All equipment shall be provided by the same manufacturer.

### **3. Compliance with Regulations**

The installation shall be erected and tested in accordance with the following Acts and regulations:

- a) The latest issue of SABS 0142: "Code of Practice for the Wiring of Premises",
- b) The Occupational Health and Safety Act, 1993 (Act 85 of 1993) as amended,
- c) The Local Government Ordinance 1939 (Ordinance 17 of 1939) as amended and the municipal by-laws and any special requirements of the local supply authority,
- d) The Fire Brigade services Act 1993 Act 99 of 1987 as amended,
- e) The National Building Regulations and Building Standards Act 1977 (Act 103 of 1977) as amended,
- f) The Post Office Act 1958 (Act 44 of 1958) as amended,
- g) The Electricity Act 1984 (Act 41 of 1984) as amended and
- h) The Regulations of the local Gas Board where applicable.

### **4. Scope of Work**

#### **4.1 Work included**

Provide all labour, materials, equipment and services and perform all operations required for lift work as indicated on drawings or specified herein.

Supply and installation of all fixing materials for installation of equipment in the lift shaft.

Supply and installation of the necessary wiring in conduit from the controlling circuit breaker to the power section of the lift controller.

Supply and install conduit and wiring for the car lighting and socket outlets and the termination and connection thereof in the distribution board.

The lift shaft shall be provided with permanently installed electric lighting, which shall be switched from the pit. The highest and lowest luminaires shall be mounted not more than 500mm from the top of the shaft and from the bottom of the pit respectively, with intermediate luminaires mounted at intervals not exceeding 7000mm. The minimum illumination at 1000mm above the car roof and the lift pit shall be 50lux.

The installation of all electrical equipment shall comply with the requirements of the SABS0142 and a Certificate of Compliance shall be issued therefor.

#### 4.2 Work Executed by Other Trades

##### Structural

Lift shafts complete with all access doors and openings as per drawings.

Concrete slabs with up-stands constructed for the lift machine foundations at the top of each lift shaft.

Waterproofing of lift pit after setting of all pit supporting steels and rail inserts. Pit drains or auto draining pumps as required.

##### Electrical

Provision of a 3-phase, 4-wire, 50Hz 400/231V permanent power supply to a surface mounted distribution board for each lift. The distribution board will also be equipped with a separate circuit breaker for the shaft and car lighting as well as a separate circuit breaker with earth leakage protection for the socket outlet in the pit and on top of the lift car.

The normal/standby power indicating circuitry shall include, a delayed normally closed potential free contact at 220 Volts/5 Ampere of the emergency power change over switch gear shall be wired to the lift machine room/s and shall be terminated in a suitable junction box. All wire ways or 25mm minimum conduit required to inter-link the lift motor room for the sequencing of lifts in multi-group installations shall be included under this section.

#### **5. Co-ordinating**

Due to the nature of the installation, a fixed sequence of operation is required to properly install the complete lift system. The work shall be closely scheduled in order not to delay the entire project.

The Lift Contractor shall familiarise himself with the requirements of the other trades and shall examine the plans and specifications covering each of these sections.

The lift space requirements shall be carefully checked with other trades to ensure that the equipment can be installed in the proper sequence in the space allotted.

#### **6. Submittals**

##### Layout and Shop Drawings

Shop drawings are required for car enclosure, landing entrances and signal fixture work showing construction, finish and fastening details. Furthermore, show drawings shall clearly show the motor room construction detail, shaft construction detail including all the required internal supporting beams, pit dividing walls for multi-lift shafts and pit sump pump drains. Composite shop drawings shall be submitted for areas, which require close co-ordination with the work of the different trades.

All special equipment and fixture faceplates shall be submitted for approval. Drawings and samples or brochures shall be submitted for each type of fixture and shall be co-ordinated with the architectural drawings. Final design and material proposed for fixture faceplates and special equipment shall be approved by the Representative/Agent.

##### Samples

All exposed materials and finishes shall be submitted to the engineer for approval in sample form.

The Lift Contractor shall furnish such samples as may be called for and the engineer may reject all materials or workmanship not corresponding with the samples. All approved samples shall be held in safe-keeping until such time as the work to which they apply has been completed.

## **7. Tests Certificates and Inspections**

The Lift Contractor shall carry out all the tests and checks required in terms of the document SABS1545-10 Annex A and/or B and issue the necessary Certificate of Compliance prior to final completion

Upon completion of the installation of all equipment and once being in full operation the Lift Contractor shall completely test the lift equipment to demonstrate that the equipment is provided in compliance with the specification. The total costs for these test shall be included in the tendered amount.

The Lift Contractor shall make arrangements for such tests and shall give at least 72 hours written notice to the engineer, before commencing the test.

In the event of the plant, equipment or installation not passing the test, the engineer shall be at liberty to deduct from the Contract amount all reasonable expenses incurred by the client DPW

Whenever any installation or equipment is operated for testing or adjusting as provided for above, the Contractor shall operate the entire system for as long a period as may be required to prove satisfactory performance at all times in the occupied space served by that system until the system is handed over.

The Contractor shall provide all labour and supervision required for such operation and the Department may assign operating personnel as observers, but such observation time shall not be counted as instruction time.

After completing the installation or system, all equipment shall be tested, adjusted and readjusted until they operate to the satisfaction and approval of the Representative/ Agent.

The Contractor shall submit certificates of tests carried out to prove the efficiency of all equipment, as well as certificates to be obtained from all relevant authorities, statutory bodies, etc.

## **8. Application to Department of Labour**

The Lift Contractor shall submit all the necessary drawings and information to the Regional Director of the Department of Labour and shall submit the necessary application for the erection and use of the lifts, access goods lifts only and escalators.

## **9. Operating and Maintenance Manuals**

The Contractor shall be responsible for the compilation of a complete set of Operating and Maintenance manuals.

This shall be done in accordance with the Additional Specification – Operating and Maintenance manuals.

All information shall be recorded and reproduced in electronic format as well as supplying the Representative/Agent with three sets of hard copies.

Approval of the final Operating and Maintenance Manuals shall be a prerequisite for issuing of a Certificate of Practical Completion of the installation.



## **10. Guarantee**

After first delivery of the installation, there will follow a 12-month free maintenance period.

During this period the lift contractor shall maintain the lift installation as per the requirements of the Occupational Health and Safety Act. This maintenance shall include systematic examinations, adjustments and lubrication of all lift equipment. Electrical and mechanical parts shall be repaired or replaced whenever it is required to maintain optimum performance without additional cost to the Department, unless the condition was caused by misuse or vandalism of the lift equipment or due to acts of God.

The work under this section shall be performed by competent, qualified personnel under the supervision and in the direct employment of the Lift Contractor and shall not be transferred to any non-affiliated agent. Contract maintenance and repair work shall be done during normal working hours and shall further provide emergency call-back service twenty-four (24) hours a day, seven (7) days a week.

During the guarantee period the Department will invite tenders for the comprehensive maintenance of the lift installation, which will commence after the final delivery has taken place, i.e. after the twelfth month guarantee period is over and all defects are corrected.

## **11. Materials and Workmanship**

- (a) The work throughout shall be executed to the highest standards and to the entire satisfaction of the engineer who shall interpret the meaning of the Contract Document and shall have the authority to reject any work and materials, which, in his judgement, are not in full accordance therewith. All condemned material and workmanship shall be replaced or rectified as directed and approved by the Representative/Agent.
- (b) All work shall be executed in a first-class manner by qualified tradesman.
- (c) The Contractor shall be fully responsible for his work and shall replace any of the work which may be damaged, lost or stolen. The Contractor shall protect the building and its contents against damage by him, his employees or sub-contractors and shall make good any damage thereto.
- (d) The Contractor shall indemnify the Employer of all liability for damages arising from injuries or disabilities to persons or damage to property occasioned by any act or omission of the Contractor or any of his sub-contractors, including any and all expenses, legal or otherwise, which may be incurred by the Employer or Representative/Agent in the defence of any claim, action or suit.
- (e) The Contractor shall warrant that the materials and workmanship shall be of the highest grade, that the equipment shall be installed in a practical and first-class manner in accordance with the best practices and ready and complete for full operation. It is specifically intended that all material or labour which is usually provided as part of such equipment as is called for and which is necessary for its proper completion and operation shall be provided without additional cost whether or not shown or described in the Contract Document.
- (f) The Contractor shall thoroughly acquaint himself with the work involved and shall verify on site all measurements necessary for proper installation work. The Contractor shall also be prepared to promptly furnish any information relating to his own work as may be necessary for the proper installation work and shall co-operate with and co-ordinate the work of others as may be applicable.
- (g) The Contractor shall inspect and verify that the existing power feeder system is compatible with the equipment offered and any changes or upgrading of the electrical supply shall be brought to the attention of the Representative/Agent.

- (h) Material and equipment damaged in transit shall be replaced with undamaged material.
- (i) All components and their respective adjustment, which do not form part of the equipment installation work, but influence the optimum and safe operation of the equipment shall be considered to form part of, and shall be included in the Contractor's scope of works.
- (j) All control equipment and serviceable items shall be installed and positioned such that they will be accessible and maintainable.
- (k) The Contractor shall make sure that all safety regulations and measures are applied and enforced during the installation and guarantee periods to ensure the safety of the public and the User Client.
- (l) The Contractor is to include for all scaffolding required to complete the work required.

## **12. Brochures**

Detailed brochures of all equipment offered, including the control, drive, door operator, call buttons and signals, remote monitoring station, intercoms and emergency dial-out system shall be presented together with the tender documents.

## **SECTION 2 – EQUIPMENT REQUIREMENTS**

### **1. Hoisting Machine**

#### **1.1 Traction Drive**

- (a) The brake shall be spring applied and electrically released by direct current. There shall be two shoes actuated by compression springs. The brake shall have sufficient power to hold the car at any landing with the normal amount of counter balancing and with at least 150% of rated load. The brake shall operate in the event of a power failure or any other safety device designed to stop the lift.
- (b) An effective sound reducing material shall be installed between the bed-plate of an overhead or basement driving machine and the beams, the structural concrete slab, shaft structure or the up-stands.
- (c) The driving machine and motor shall have sufficient capacity to operate the lift continuously at 100% of rated speed in both directions without overheating or hunting during levelling.
- (d) The lift machinery shall operate silently and without vibration. The lifts shall constantly operate and shall be maintained at noise levels not exceeding 56 DB (A). The noise level shall be considered acceptable if it does not exceed 56 DB (A) measured on the landing and in the car enclosure.
- (e) Provision shall be made for a safe method of moving the car by hand in the event of a power failure and all the necessary equipment required to carry out this task shall be mounted neatly in the motor room and shall remain on site at all times.
- (f) The Contractor shall supply and install suitable structural steel beams with bearing plates for the mounting of the lift machine on the motor room floor, as well as supporting beams or deflector and secondary pulleys, as required. In the cases where machines are located below, the diverter sheaves shall be secured to the floor slabs and not to the overhead slabs, to prevent the transmission of vibration to the structure.
- (g) Anti-vibration mountings shall be provided to minimise the transmission of vibrations to the structure and to ensure the silent and smooth operation of all the equipment. Tenderers shall describe the methods to be used to achieve the desired results.

### **2. Controller**

- (a) Programmable solid state operation and motion controller shall be provided to control the operation, the starting, the stopping and the speed of the lift motor and also to apply the brake automatically if any of the safety devices operate or the power fails.
- (b) All solid state controllers shall be enclosed in ventilated sheet metal cabinets with integral blowers. All power resistors and heat generating transformers shall be mounted in separate enclosures if necessary to maintain the specified control panel internal temperature. The control cabinets shall be totally enclosed, vermin and insect proof, drip proof and dust proof to at least class IP42 of IEC 144.
- (c) Contacts breaking heavy currents shall be provided with magnetic blowouts and arc chutes. Contact surfaces shall be of silver-to-silver except those for heavy currents, where carbon-to-silver or carbon-to-copper contact surfaces may be used.

- (d) All terminals of the machinery and control gear shall be marked with distinctive letters or numbers, and corresponding markings shall appear on the contract drawings.
- (e) All controllers shall be generic manufactured, assembled and supplied.
- (f) As a standard, PLC lift controllers shall not be accepted. However, if these controllers are considered a generic product by the Representative/Agent and are able to meet the requirements of the specification, PLC controllers may be offered as an alternative if the following requirements are met:
  - Documentation stating that the control system has been subjected to extensive testing and is verified as safe, reliable and fully complies with SABS 1545 and all national, local regulations and by-laws.
  - If requested by the Representative/Agent, the Contractor shall provide the Representative/Agent with a full set of back up software / software module and all associated maintenance related documentation including principle diagrams.
  - Documentation from the PLC supplier is provided to verify the age of the model used, the date it is expected to be removed from the production line and the period the PLC supplier will guarantee parts and repairs.
  - The Contractor shall verify that the PLC supplier is willing to maintain under a fully comprehensive agreement, the entire PLC unit(s) for at least 20 years.

### **3. Control System**

- (a) The control system shall be capable of constantly producing the performance criteria specified.
- (b) The associated control equipment for each control system shall provide smooth acceleration and deceleration. In conjunction with the controller and machine, the system shall consistently provide the performance times specified.
- (c) The drive control system shall be capable of decelerating the lift to stand still without a "levelling in" or "creeping in" phase. Only lifts with direct floor approach capabilities shall be accepted.
- (d) The motor drive unit shall provide a smooth lift performance including acceleration, steady velocity and deceleration plus levelling to various floors within the time allowance and levelling tolerances specified. This performance shall be consistent under all conditions of loading and in either direction of travel.
- (e) The motor drive unit shall be equipped with all necessary monitoring circuits to maintain a safe and reliable operation. These shall include but are not limited to the monitoring of the load, direction of rotation, speed, supply voltage, and operating currents.
- (f) The hoist motor shall be provided with a thermostatically controlled blower if necessary, to dissipate the heat in order to maintain the equipment within the specified operating temperature range.
- (g) The control system shall provide a smooth acceleration and deceleration with the levelling accuracy at all landings from no load to full rated load in the lift. This smooth operation shall be obtained for all lifts under stable conditions. A maximum of 0.8 seconds shall be allowed from door close to car start.
- (h) The equipment shall be designed to operate at plus or minus 15% of normal feeder voltage and plus or minus 5% of feeder frequency without damage or interruption of lift service.

- (i) The control system shall be designed to operate the hoist motor continuously at 100% of rated speed and at 100% of rated load in both directions without overheating or hunting.

#### **4. Machine Room Indicators / Rope Markers, Monitors and Testing Tools**

- (a) Monitor and keyboard or hand held testing instruments for commissioning, re-commissioning and fault analysis of the lift control system shall be provided and shall remain on site at all times. Each group of lifts shall be supplied with its own monitor and keyboard or testing instrument.
- (b) As each lift travels through the lift shaft, a main hoisting rope marker shall indicate its floor level position by means of a mechanical selector attached to the machine control indicator. This indicator shall operate independently to the lift control and shall not be dependent on the lift supply for its operation.
- (c) The lift control system shall be capable of generating error/fault reports. Error logs for each lift showing at least forty (40) of the most recent faults shall be accessible. The error log shall clearly indicate the type of fault, lift number, date and time the fault occurred.

#### **5. Safety Gear and Governor**

- (a) An over-speed governor, driven directly by an independent rope attached to the car, shall be provided in the motor room and shall be designed to operate the safety gear fitted to the car when the speed of the car, due to any cause, exceeds its normal maximum speed by more than a predetermined value. The tripping speed of the governor shall be selected with due regard to the rated speed. The tripping speed shall be approximately inversely proportional to the rated speed and shall for rated speeds ranging from 0,25m/s to 5,0m/s not exceed the rated speed by more than 40% and 20% respectively.
- (b) The safety gear shall be arranged to stop the lift whenever excessive descending speed is attained. Means shall be provided to cut off power from the motor and apply the brake prior to application of the safety gear. The safety gear shall be released by moving the lift in the "UP" direction.
- (c) The governor rope system, including the governor and tension sheave, shall be arranged so that the carrier shall not be released due to system dynamics when the lift is subjected to an emergency stop in the "UP" direction.
- (d) Car and counterweight safety gear shall be provided with a switch to cut off the power from the motor and apply the brake, if the safety gear applies without tripping the governor.
- (e) Rope guards and an electrical contact to monitor the rope stretch shall be provided on the governor tension sheaves.

#### **6. Rope Guards**

Rope guards shall be used to cover machine sheaves, secondary or deflector sheaves and governor sheaves to cover moving sheaves and ropes. Guards are also required on rope hole openings in the machine room and secondary level floors to prevent objects from falling into the lift shaft. Guards shall be provided in secondary level floors where ropes and tapes or selector drives pass through to prevent accidental contact.

#### **7. Machine Data Submittals**

The Contractor shall supply all the relevant machine data to ensure the correct power feeder design, including, but not limited to the following:

- Lift numbers
- Capacity / load      kg
- Speed      m/s
- Supply Voltage      Volts
- Supply Frequency      Hertz
- Number of wires
- Motor kW rating      kW
- Roping
- Full load UP acceleration      Amps
- Full load UP nominal speed      Amps
- Machine heat release per car      BTU/hr/car
- Power Factor      %

## **8. Lift Shaft Requirements**

- (a) In terms of SABS 1545 (Parts 1 and 2) provide the necessary rope or selector tape guards in pit areas and landing door unlocking devices on all landings.
- (b) Provide safe Working Platforms in pits with depths in excess of two (2) metres and if necessary at the top of the shaft to create sheave-room platforms. The working platforms shall comply with SABS 1545 (Parts 1 and 2) safety requirements pertaining to the depth/height and free space of these areas.
- (c) In terms of SABS 1545 (Parts 1 and 2), shaft lights are to be provided and installed by the Contractor.

## **9. Car and Counterweight Guide Rails**

- (a) The guide rails for the car and counterweight shall consist of planed steel tees with milled, tongued and grooved joints. Metal splice plates shall be of a suitable length and fixing brackets for guide rails shall be provided at intervals not exceeding 2,4m. Guide rail fixings shall be located in such positions that when the car is at any landing, the guide shoes on the car will be at a fixing bracket. The bottom end of each guide rail shall be provided with a sole-plate fixed to the pit floor.
- (b) All brackets shall be secured by means of approved expandable concrete anchor bolts of adequate size and length.

## **10. Hoist and Governor Ropes**

- (a) The ends of the hoist ropes shall be properly secured to the car and counterweight cross-head or to the dead-end hitch plates on 2:1 roping, with adjustable rope shackles having approved sockets. Screw adjustment shall permit equalisation of the tension in all ropes.
- (b) The lift car hoisting rope attachment / hitch shall be suitably vibration isolated to prevent rope noise from being transferred to the car enclosure.
- (c) Governor ropes shall be in accordance with SABS 1545 (Parts 1 and 2) and the steel rope shall be specially designed for lift service. The two ends shall be securely fastened together at the lift and shall be attached to the safety operating mechanism. The governor rope shall pass over the governor sheave and over an approved tensioner sheave in the pit. An electrical contact shall be fitted to the pit sheave and shall stop the lift if the governor rope becomes slack or breaks.

## **11. Counterweight**

- (a) Each lift shall be suitably counterbalanced for smooth and economical operation. Cast iron or steel sub-weights shall be contained in a guided structural steel frame. The counterweight shall be equal to the weight of complete lift car plus at least **40%** of the rated load. The weights in the counterweight frame shall be balanced with the weight equally distributed across the width of the frame to equalise guide

pressures. The sub-weights shall be welded or fastened together as necessary to prevent rattling.

- (b) Counterweight screen guards shall be provided at the bottom of the shaft to a height of 2150mm above the floor of the pit and approximately halfway up the shaft at the position where the car and counterweight pass each other.

## **12. Car and Counterweight Guide Rollers or Shoes**

The car and counterweight guide rollers/shoes shall constantly provide the ride quality as specified in Section 3 clause 11 of this specification.

### **12.1 Guide Rollers**

- (a) Each lift shall be provided with car and counterweight rollers guides. Each roller guide shall consist of at least three wheels with a durable resilient material, each rotating on ball bearings having sealed-in lubrication, assembled on a substantial metal base and so mounted as to provide continuous contact of all wheels with the corresponding rail surface under all conditions of loading and operation. The wheels shall run on three machined rail surfaces. The roller guides shall be properly secured at top and bottom on each side of the car frame and counterweight frame.
- (b) The roller guides shall run on dry guide rails. Sheet metal guards shall be provided to protect wheels located on the top of the car and the counterweight. The roller wheels for the car shall not exceed 500-rpm and the roller wheels for the counterweight shall not exceed 1000-rpm at rated speed.

### **12.2 Guide Shoes**

**If the speed and load nominated for a specific lift allows the use of guide shoes:**

- (a) The lift shall be provided with car and counterweight spring loaded guide shoes. The spring tension shall be adjusted so as to maintain the lift in the centre of the rails and provide continuous contact with the corresponding rail surface under all conditions of loading and operation. The guide shoes shall be lined with a durable resilient material, which shall ensure a quite and smooth ride. When oil buffers are attached to the bottom of the counterweight, additional guide shoes shall be installed on each side of the buffer cylinder frame.
- (b) The guide shoes shall run on lubricated rails. The guide rails shall be lubricated by a permanently mounted lubrication reservoir on top of the car and counterweight.

## **13. Electrical Compensation**

A sufficient extra hoisting kilowatt rating in the hoist motor, machine and motor generator capacity and control equipment may be provided so that effective electrical compensation for the weight of the hoist ropes and travelling cables shall be accomplished as the lift travels through the lift shaft.

## **14. Compensation Cables**

If Section 2 clause 14 (Electrical Compensation), cannot be achieved the following shall apply:

- (a) Compensating trailing cables or compensating chains encased in a synthetic sleeve (whisper flex) shall be provided.
- (b) Compensating cable restraining rings shall be provided in each pit and mounted on both the car and the counterweight buffer supports.
- (c) Compensation shall be fixed to the bottom of the counterweight and car in a position which shall allow the counterweight to remain balanced in the guides and exert equal pressure on each face of the guide at the four guide locating positions.

- (d) The fixing of the compensation to the car shall be accomplished by a vibration isolating compensation hitch.
- (e) Where compensating steel ropes are used for compensation they shall be accompanied by a statically balanced compensation pit sheave and shall be mounted centrally between the guides.

#### **15. Buffers**

- (a) Suitable oil, heavy spring or polyurethane buffers shall be provided for the car and counterweight and shall be so adjusted that in the case of over-travel, no parts of the car or counterweight will touch the shaft ceiling and that the retardation of the car does not exceed the limits as laid down in the SABS 1545
- (b) Hydraulic buffers shall be so constructed and shall be installed to allow the fluid level to be checked easily. Easy access to the buffer for testing and maintenance purposes shall be possible without having to remove the counterweight pit screen.
- (c) Energy dissipation type buffers shall have an electrical contact fitted to monitor the stroke (extended position).

#### **16. Pit Switches**

Each lift pit shall be provided with watertight pit safety switches accessible from the entrance to the pits without the necessity of entering the pit and shall also be accessible from the pit while standing on the pit floor. The pit switch shall interrupt the power supply and apply the brake to hold each car so as to permit safe access to the pit. The pit switch shall be clearly distinguished from other switches that may be mounted in the pit area and the on/off position shall be clearly marked.

#### **17. Stopping Devices**

- (a) Normal terminal stopping devices shall be enclosed in dust-proof enclosures for each lift. These devices, once operated, shall bring the lift automatically to a smooth stop at the terminal landing.
- (b) Final terminal stopping devices shall be positioned at the top and at the bottom of each lift shaft. A fixed cam securely attached to the lift shall operate these final limit switches. These limit switches shall be independent of any other stopping devices and shall positively open without the use of springs to cut off all power from the driving machine motor and brake. It shall prevent the operation of the lift in either direction. They shall be so located that they open at the time the lift or the counterweight engages the buffer.

#### **18. Travelling Cables**

- (a) Travelling cables between the lift and the fixed lift shaft wiring shall be flexible and suitably suspended to relieve the strains in the individual conductors. All cables shall contain an approximately equal number of conductors, or shall have equal flexibility.
- (b) Travelling cables shall include two shielded pairs for each lift car to accommodate voice communication.
- (c) The travelling cables shall be positioned in such a manner to eliminate the possibility of interference with the shaft information, selector tape or governor rope and all the necessary travelling cable protection shall be fitted to the shaft wall and shaft trimmers to prevent damage to the outer cover during normal travel.



- (d) The travelling cables shall be neatly and adequately strapped to the side of the car enclosure and all the necessary protection shall be provided where the cables cross over metal extrusions.
- (e) Travelling cables for the counterweight shall comply with the requirements of this section.
- (f) Flat and round trailing cables shall be fixed and shall hang in accordance with the trailing cable manufacturer's requirements.

#### **19. Electrical Wiring and Control Communication**

- (a) All low voltage and control communication cables shall be run in separate ducts, conduits and trailing cables.
- (b) Car top terminal boxes of ample size and car top inspection control units shall be provided.

#### **20. Automatic Self Levelling**

All lifts shall be provided with both a self levelling and a re-levelling feature that shall automatically bring the lift to the floor landings within a tolerance of 3.0 mm under no load to full rated load conditions without hunting. Self levelling shall, within its zone, be entirely automatic and independent of the operating device and shall correct over-travel and rope stretch. The lift shall be maintained level with the landing, irrespective of load and while loading and unloading.

#### **21. Lift Car Construction and Enclosure**

- (a) The lift car shall be an assembly consisting of the sling, the platform and the cabin.
- (b) The sling shall be constructed of rolled steel angle or channel sections bolted or welded together to form a rigid framework, which shall be suitably braced and reinforced to withstand the operation of the safety gear without permanent distortion.
- (c) The car platform shall consist of a 3mm thick mild steel plate or 20mm thick hardwood floor laid on closely spaced steel channel sections welded to a steel frame which in turn shall be laid on rubber pads in a structural steel frame. Load weighing devices shall be incorporated where specified.
- (d) The cabin shall be designed as a fully enclosed car with a flat roof and solid full height panels on the sides and the back.
- (e) The cabin shall be securely fixed to its sling and platform in such a manner that the cabin is not subjected to strain in the event of an unequal distribution of load occurring over the floor area.
- (f) The entire car assembly, including the car frame and the car platform shall be constructed to operate free from objectionable squeaks or metallic sounds, comprising of a rigidly tuned resonance car frame and acoustically treated superstructure.
- (g) The following features shall also be embodied in the lift car:
  - A continuous lighting system shall be provided along each side of the car. The lighting system shall consist of concealed, surface mounted, standard 2-lamp open fluorescent luminaires, providing an illumination level of not less than 200 lux at 1000mm above floor level. Fluorescent tubes shall be 1500mm, 58 Watt or 1200mm, 36 Watt, colour "Warm White". Tubes and control gear shall be of the switch start type and shall bear the SABS mark. The width of the lighting troughs

shall be the same as the front return panels and shall be covered by easily removable low brightness diffusers, mounted in purpose made hinged frames.

- One of the lamps in each trough shall be provided with an emergency battery/inverter unit by means of which the lamp will be operated for at least 60 min. in the event of a power failure. This lamp shall operate at full output under normal conditions.
- Luminous car position indicator and "Up/Down" travel indicators installed above the entrance doors.
- Fixing clips for the attachment of canvas protective coverings which shall be supplied with the lift for the side and rear walls.
- Silent running squirrel cage, centrifugal flow exhaust blowers for passenger and goods/passenger lifts shall be mounted to draw air into car enclosure when doors are open and through door side clearances when doors are closed. The blower shall be mounted on the car top, draw air from the car through the perimeter of the suspended ceiling and exhaust the air into the lift shaft. **The fan shall without exception, be capable of delivering not less than 0.3 cubic meters of free air per minute per square meter of floor area.** The fan shall be switched via a toggle switch mounted in the car operating panel.

## **22. Lift Car Finishes**

### **22.1 Passenger & Goods/Passenger Lift**

- (a) The entire car internal finish including the area above the suspended ceiling shall be installed and finished off to the highest standard. All finished work shall be smooth and free from wraps, buckles, squeaks and rattles and all joints shall be light-proof.
- (b) All wall panelling shall be jointed with a pliable material /silicone to prevent squeaks generated by car panel movement / deflection.
- (c) A robust handrail, consisting of an "Intrad" poly-carbonate bumper rail, spaced 50mm off the panelling, must be provided across the rear and side walls of the lift car. The spacer blocks to which the hand and bumper rails are secured shall be fixed to the panels by means of 2 x M10 bolts with locknuts or other approved method.
- (d) A silvered glass mirror shall be provided at the rear of the cabin in the side walls between the hand rail and the ceiling.
- (e) Goods/Passenger lift car panels shall be manufactured from at least 1.5mm mild or stainless steel with at least two horizontal intermediate stiffening ribs and panels with a width greater than 400mm shall have vertical stiffening ribs at intervals not exceeding 200mm or equivalent construction.

## **23. Fixture Faceplates and Mounting**

- (a) Unless otherwise specified, all landing fixture faceplates shall be surface mounted and shall be manufactured of at least 3.0 mm thickness stainless steel, with bevelled edges for all lifts if square rectangle stainless steel face plates are offered. However, Contractors may offer alternative landing fixture face plates if these faceplates are generic products and aesthetically acceptable to the Engineer.
- (b) The fixture faceplates in the lift car and at the landings shall be mounted with concealed security fastenings or fastenings requiring special tools to remove them,

as approved by the engineer. Exposed fastenings shall match the material and finish of the faceplate.

- (c) The following fixture face plates shall be located and sized in accordance with dimensions approved by the engineer:
  - Car operating panels.
  - Car position indicators.
  - Car direction indicators.
  - Landing push button stations.
  - Landing position indicators and signals.
  - Blanking-off plates
- (d) Without exception the Representative/Agent shall approve the final design of the fixture faceplates before placing the order or manufacturing of this equipment.

#### **24. Car and Landing Door Operator**

- (a) Only door operators with the capabilities of coping with medium to heavy traffic shall be accepted and the type of door operator offered shall be clearly shown in the tender submitted. The door system shall be capable of controlling the position of the doors at any given moment and shall constantly produce a smooth, accurate and efficient operation.
- (b) The doors on the lift car and at each landing opening shall be opened and closed quietly and smoothly by an electric operator.
- (c) The motion of the door operator shall be accomplished with arms and appropriate linkages to the approximate centre of gravity of the driven door panel.
- (d) Each landing door shall be equipped with Electro-mechanical interlocks so that the lift can operate only when the interlock circuit is established. Landing door locks shall meet the SABS 1545-1 safety requirements. All work and material related to this Sub-Section shall form part of the Contractor's scope of works.
- (e) An independent auxiliary self-closing device shall close each landing door panel whenever the door is not in the closed position and the equipment relating to the car and landing door system does not restrain it.
- (f) An electric contact for the lift car door shall be provided which shall prevent the lift moving away from a landing unless the door is in the closed position.
- (g) An electrical contact shall be fitted to the non-driving car door if its linkage is dependent on a wire rope or chain.
- (h) Emergency Triangle access key mechanisms shall be provided on each entrance.

#### **25. Lift Door Hangers**

Hangers shall be equipped with ball bearing adjustable rollers to take the up-thrust of the doors. The hangers and rollers shall be designed to accommodate the size and weight of the doors operated with a high speed door operator.

## 26. Car Door Control

### 27.1 Car Door Motion Controllers

- (a) Car door motion controllers dependent on resistors, rheostats or switches to control the opening and closing motion shall not be accepted. The car door motion controller shall be capable of controlling the position of the doors at any given moment and shall constantly produce a smooth, accurate and efficient operation.
- (b) **(For Group controls only)** Adjustable hardware or software timers shall be provided to hold the doors open for the dwell times specified below. The tabulated dwell times are initial adjustment standards. Further adjustment to suit specific traffic movement capabilities and the arrangement of car and landing stations shall also be possible. The first passenger dwell times are those measured from door fully open to door start-to-close. The second and succeeding dwell times are from restoration of the light beam to door start to close from its fully reopened position.

| Passenger<br>Conditions      | Stops for<br>Car Call | Stops for<br>Landing Call |
|------------------------------|-----------------------|---------------------------|
| <hr/>                        |                       |                           |
| <b>First Passenger</b>       | <b>2.0 sec.</b>       | <b>3.0 sec.</b>           |
| <b>Succeeding Passengers</b> | <b>1.0 sec.</b>       | <b>1.0 sec.</b>           |
| <hr/>                        |                       |                           |

Stops at the high or low car call reversal floors shall be considered as landing call stops.

- (c) If doors are held open for an adjustable period of time by a passenger standing in the entrance or by constant pressure of the door open button, a buzzer shall sound and the doors shall start to close at a reduced speed and force level. When the doors touch an obstruction, they shall re-open.

### 27.2 Door protection devices

- (a) A non-retractable electronic infra-red/ultra-sonic protective leading edge shall be provided and shall extend at least 2100-mm above the platform and its active surface/area shall project beyond the front edges of each leading car door panel. Should this device come in close proximity, or touch a person or object whilst the car doors are closing, the car and shaft doors shall return to their open position. Manual reversal of the doors while the lift is on automatic operation shall be accomplished by pressing a door open button in a car-operating panel. Should this device be activated while the car doors are closing, the car and shaft doors shall return to their open position.
- (b) Without exception the Contractor shall demonstrate on the day of Completion that the door closing pressures comply in full with the SABS 1545 Part 1 and Part 2 under normal and forced closing conditions.
- (c) The door protection device shall have the capabilities of detecting metal/plastic trolleys.

## 27. Car Platform

The car platform with enclosure of each lift shall be balanced by arranging balancing weights to equalise the guide pressure (front to back and side to side) so that the pressure on any guide shoe roller does not exceed 18kg without load in the car. (Statically balanced).

## 28. Landing Entrances

- (a) Each lift shaft landing entrance assembly shall consist of unit frame, door panels, fascia, sill, hanger, closer and interlock. The installation shall comply with the applicable code requirements.

- (b) As a standard all lift landing equipment including doors, signal faceplates shall have a two (2) hour fire rating. The Contractor shall provide the relevant SABS test certificates for Class “C” type landing door equipment.

## **29. Door Panels**

- (a) The door panels for all openings shall be constructed of at least 1.5 mm thick mild or stainless steel. Continuous stiffener channels must be provided to the top, bottom and edges at the faceplates. The bottom of each door panel shall be provided with removable laminated phenolic guides, which run in the sill slots.
- (b) Door panels shall be constructed to operate free from squeaks or metallic sounds and shall be adequately treated with a sound deadening material to produce a quiet door operation under all operating conditions.
- (c) The leading edge of the car and landing doors shall have an interlocking profile with rubber stoppers (top and bottom) to prevent the door panels closing metal to metal. Add on rubber profiles shall not be accepted.
- (d) All landing door site guards shall have a stainless steel box type construction for added rigidity.
- (e) Goods/Passenger Lift and Access, Goods Only Lift Car Doors
  - (i) Car and landing sills shall have additional angle iron supports (reinforced sills) to accommodate the applicable point loads.
  - (ii) Landing and car door panels shall have reinforced sliding shoe supporting sections.
  - (iii) Only reinforced sliding door panels shall be accepted. Door panels shall be at least 1.5 mm thick Mild Steel or Stainless Steel with at least two horizontal intermediate stiffening ribs.

## **30. Sills and Support Angles**

The landing sills for all openings shall be of narrow extruded aluminium. Grooves in all sills for the door guides shall be machine planed with minimum clearances for the guides. The sills shall be supported on steel angles provided by the lift Contractor and securely fastened to the building floor construction.

## **31. Toe Guards**

Toe guards shall be of at least 1.5 mm thick steel and shall be installed on all landings. They shall extend the full width of the door opening and be gradually bevelled to the wall. The straight vertical portion of the guards shall at least be 400 mm long or as in the case of the lowest landing shall equal the distance travelled by the car sill from the bottom terminal landing to when the car is on the fully compressed buffer.

## **32. Car Position Indicators**

- (a) Electronic LED digital readout position indicators shall be incorporated in each lift car operating panel at a height of not less than 2100 mm above the floor. As each lift travels through the lift shaft, its position shall be indicated continuously by the illumination of the numeral or letter corresponding to the landing that the lift is stopped at or is passing.
- (b) The digital readout shall be at least 50 mm in height.

## **33. Car Operating Panel (COP) for Passenger and Goods/Passenger Lifts**

- (a) The operating device for each lift shall include a series of buttons, numbered to correspond to the active landings served and various additional buttons and key

switches, including emergency alarm, intercom, door open and door close buttons, independent control, fire control and rear door control key switches.

- (b) The car call buttons shall be numbered to correspond to the landings served or the numbers shall be engraved with recessed background adjacent to the car buttons.
- (c) Car, landing and emergency buttons shall be of the Micro push operation type and shall be approved in terms of the Occupational Health and Safety Act. Each button shall be clearly marked with its corresponding floor position. The demarcation shall either comprise a raised or recessed numeric or alphabetic character. Car call buttons shall have Braille incorporated into the button unit.
- (d) The car operating station shall be paraplegic friendly and shall be located so that all operating and emergency buttons are located between 1500 mm and 900 mm above the car platform. The emergency buttons and switches shall be mounted at the bottom and the call buttons in numerical order starting above the emergency button and numbering from left to right.
- (e) Swing front return panels used in the passenger car enclosures shall be arranged so that the call buttons and the control and signal devices are substantially flush to the vertical surface and shall be mounted on the return panel. The wiring to the individual components shall permit the panel to swing open for maintenance purposes.
- (f) A second rear door car-operating panel for lifts with two entrances shall operate independently to the front panel and shall comply in full with this section.
- (g) As a standard the lift signage shall include No Smoking, Load, Passengers, Certificate Number and Lift Number / Designation, as required by the applicable standards and regulations. All signage shall be engraved into the Car Operating Panel.
- (h) Without exception the Representative/Agent shall approve the final design of the car-operating panel before placing the order or manufacture of this equipment.
- (i) The number of Car Operating Panels per lift shall be as nominated by the Representative/Agent.
- (j) The button markings/engraving shall be such that it does not fade or wear with continuous operations. The markings, whether engraved or raised shall remain clearly visible and the coloured epoxy shall remain intact throughout the life of the button.
- (k) All key switch cylinders in the fixture faceplates of landing stations, car stations and supervisory control stations shall be master keyed with removable core cylinders (KABA type or equivalent).

### **34. Call Acknowledging Lights**

All car and landing buttons shall be of the call acknowledging type. The registering of a call button shall illuminate the button to acknowledge that a call has been registered. Incandescent indicator lamps shall not be accepted.

### **35. Landing Call Buttons**

#### **35.1 Passenger and Goods/Passenger Lifts**

- (a) A riser of landing micro push button stations shall be provided. Terminal floors shall contain a single button station and intermediate floors shall contain both up and down buttons. Pressure on the button in one fixture shall cause the electronic

illumination of the corresponding button unit in the other fixture at the same landing. Incandescent button illumination shall not be accepted.

- (b) Landing push buttons shall be of the Micro push operation type and shall be approved in terms of the Occupational Health and Safety Act.
- (c) The location of the centreline of each landing micro push button fixture shall be located at 1050 mm above the floor.
- (d) Each button shall be clearly marked with its corresponding direction of travel. The demarcation shall either comprise a raised or recessed approved symbol.
- (e) The button markings/engraving shall be such that it does not fade or wear with continuous operations. The markings, whether engraved or raised shall remain clearly visible and the coloured epoxy shall remain intact throughout the life of the button. Buttons shall have Braille incorporated into the button unit.

### **36. Waiting Passenger Lanterns and Gongs**

- (a) Provide an up and down, LED digital readout electric indication waiting passenger lantern at each intermediate landing and an up or down single indication lantern at a terminal landing of all lifts. The lanterns shall be mounted above the head jamb or beside the side jamb of each typical entrance. Incandescent indicator lamps shall not be accepted.
- (b) Supply and fit adjustable electronic arrival gong to each entrance. The fixture face plate shall contain an approved pattern of slots to enable the transmitting of the sound from within the shaft to the lift foyer. In terms of the paraplegic/blind person's requirements the gongs shall have a different tone when announcing cars travelling in the up and down directions - two "gongs" for down and one "gong" for up.
- (c) As soon as a lift has reached a predetermined distance from a landing and is going to stop at that landing, the corresponding waiting passenger lantern shall be illuminated and the gong shall sound whether or not a landing call has been registered. The waiting passenger lantern shall remain illuminated until the lift leaves the landing or if the car becomes filled, whichever occurs first.
- (d) The type and design of the landing signals shall take into account long lift lobbies associated with groups of lifts installed adjacent to each other. After installation the landing direction and/or announcing arrows shall be clearly visible from any position within the lift lobby. It shall be the Contractor's responsibility to inform the Representative/Agent if the selection of landing signal design is not going to achieve the visual requirements detailed under this section.
- (e) As an exception and if specifically requested by the Contractor and accepted in writing by the Representative/Agent, adjustable gongs may be fitted to the car. Gongs fitted to the car shall be positioned in the header section of the car and the sound shall be contained and directed towards the entrance so as not to be transmitted to the floors above and below the lift. The gongs shall further only sound when the lift is within 200 mm from the landing level.
- (f) As an exception and if specifically requested by the Contractor and accepted in writing by the Representative/Agent, announcing arrows may be fitted in the side jambs or incorporated in the push button unit. However, this option shall be restricted to Simplex and Duplex units with a single riser of buttons.

### **37. Landing Position Indicators**

- (a) Electronic LED digital readout position indicators shall be provided over the architrave of each lift in the main lift lobby. As the lift travels through the lift shaft, its position shall be indicated continuously by the illumination of the numeral or letter corresponding to the landing that the lift stopped at or is passing.
- (b) The final number of landing indicators required for each lift and their locations shall be as approved by the Representative/Agent.
- (c) The digital readout shall be at least 50 mm in height.
- (d) Landing position indicators shall not illuminate if the lift can no longer respond to calls as a result of a fault condition or when undergoing routine maintenance.

### **38. Landing Doors and Architrave Finishes**

- (a) All stainless steel landing doors and architraves shall be cleaned prior to final acceptance and receive a coat of an approved stainless steel polish.
- (c) When spray painting the landing doors and frames, the Contractor shall ensure that the landing door panels are satisfactorily prepared before the final coat of Duco is applied.
- (d) Floor designation shall be permanently marked on the inside of the landing doors (shaft side).

### **39. Lift Intercom System**

- (a) Provide an intercommunication system complete with talk-back speakers with all required auxiliary equipment, wiring and a six (6) hour minimum back-up power supply.
- (b) Lift travelling cables shall contain two (2) shielded pairs of conductors for each car for the intercommunication system.
- (c) Terminal strip boxes for all wiring shall be provided.
- (d) All wires in the wiring system shall be shielded without exception.
- (e) Wiring between all master stations in the building shall comply with manufacturer's recommended standards.
- (f) Provide one sub-station in each lift car, one master station for each motor room and one master station for the security control room.
- (g) The voice link shall constantly produce a sound/speech quality comparable to that of the normal Telkom telephone network. All provisions to adequately address interference in the lines shall be included. The intercom master stations shall include an indicator system/panel to indicate the lift car initiating the emergency call and an "All Call" feature to allow for communication to all lifts at the same time.
- (h) The lift intercoms for all the lifts shall be wired back to a common security/control room centrally located.
- (i) The Master Stations shall be capable of accommodating all the lifts covered under this Specification. The individual lift's designation and its call code shall be clearly and neatly displayed on the Master Station.



#### **40. Load Switches**

All load switches and sensors which influence the control and the drive shall be adjusted in order to achieve an optimum operation, and their operating loads documented for future reference on the data sheet or certificate of compliance SABS1545. These load contacts may include but are not limited to the over-load, minimum load and the landing call by-pass functions.

#### **41. Car Top Requirements**

##### **42.1 Car Top Working Platform**

Securely fitted working platforms of adequate strength shall be provided on the top of the car roof to create a level and safe working area. The platform shall be free of any electrical cabling and lift equipment. The car roof shall not be regarded as a working platform.

##### **42.2 Car Top Guard Rails**

In terms of SABS 1545 the car top shall be provided with a balustrade (guard-rail) where the free distance in the horizontal plane beyond and perpendicular to its outer edge exceeds 300 mm.

## SECTION 3 – OPERATIONAL REQUIREMENTS

### 1. Simplex Selective-Collective Automatic Operation

#### 1.1 Passenger & Goods/Passenger Lifts

- (a) The operation of lifts shall be from the landing buttons and from the call buttons in the car-operating panel. Single call buttons shall be mounted at each terminal landing and "up" and "down" buttons at each intermediate landing.
- (b) The operation shall be such that momentary pressure on one or more car or landing buttons, other than those for the landing at which the lift is standing, shall start the lift, provided the interlock circuits are established and cause the lift to stop at the first landing for which a car or landing call is registered corresponding to the direction calls registered and these stops shall be made in the order in which the landings are reached, irrespective of the sequence in which the calls are registered provided the call for a given landing is registered sufficiently in advance of the arrival of the lift at that landing to permit the stop to be made.
- (c) If there are no car calls and the lift starts up in response to several down calls, the lift shall proceed to the highest down call and then reverse to collect the down calls. Up calls shall be collected similarly when the lift starts down in response to such calls. If the lift stops for a landing call the direction of travel shall be anticipated and maintained for a predetermined interval and independent of additional car and landing calls registered in the opposite direction of the anticipated travel.
- (d) If down landing buttons are pressed while the lift is travelling up, the lift shall not stop at these landings, but these calls shall remain registered. After the highest car and landing calls have been answered the lift shall reverse automatically and respond to car and landing calls registered below the lift. When travelling down, the lift shall not respond to up landing calls, but these calls shall remain registered and be answered on the next up trip.
- (e) After the lift has answered the last call and after a pre-set time period, normally **20-seconds**, the lift shall be dispatched to a nominated Boarding Floor. Provision must be made to have this automatic return feature disabled if required.

#### 1.2 Access Goods Lifts Only and Dumbwaiters

- (a) Each landing shall be provided with the number of buttons corresponding to the number of landings served.
- (b) The lift shall have a call and send operation. The lift shall respond to one call at a time and this call shall be the first call registered.
- (c) As the lift arrives at a landing a gong or buzzer shall sound for an adjustable time. The adjustable time shall be pre-set to 30 seconds.
- (d) Should the lift be standing at a landing with open doors and it is called from another floor, a gong or buzzer shall sound on the landing that the lift is standing for an adjustable time before the doors close and the lift moves to answer the call. The adjustable time shall be pre-set to 30 seconds.

## **2. Group Automatic Operation – Two or More Lifts in a Group**

### **2.1 Automatic Operation**

- (a) The operation of passenger lifts shall be group automatic operation arranged, dispatched and controlled by a group supervisory system. The system shall be supervised by a re-programmable minicomputer or microprocessor system.
- (b) Each lift shall be arranged for automatic operation without attendant through the car and landing buttons in conjunction with a group supervisory system that is re-programmable by the replacement of pre-programmed EPROM's. This re-programming shall be possible without making changes to the lift hardware or shaft or machine room fixed wiring.
- (c) Group, lift, car and drive control commissioning parameters shall be software "switches" and it shall be possible to fine tune these variables using a permanently installed terminal or test tool.
- (d) The starting of a lift shall be contingent upon the establishing of its door interlock circuit. The lifts shall automatically slow down and stop level at the floors in response to car and landing calls. A landing call shall be automatically cancelled as the lift slows down and while stopped to prevent other lifts from responding to the same call.
- (e) Whenever a lift is returned to group automatic operation after being operated on for inspection, independent, or firemen service, the lift shall immediately take its place in the group.
- (f) Car doors shall be prevented from closing or may be reversed while closing by the electronic door control system, the protective leading edge on the car door or by pressing the door open button in the car operating panel.
- (g) The door open dwell times shall be software adjusted so that the open time for a car call is shorter than that for landing calls.
- (h) All car and landing calls shall be cancelled as they are answered.

### **2.2 Group Supervisory System**

Each group of lifts shall be provided with a software programmable automatic supervisory group system arranged to co-ordinate effectively the movement of the individual lifts of the group so as to provide the maximum efficiency in serving the passenger service requirements.

### **2.3 Group Control Dispatching System**

The dispatching system or group control system shall be de-centralised and the lifts shall not be dependent on a central control system for its effective group operation. Each lift control shall be capable of taking over the function of the group control.

### **2.4 Group Control Up Peak Mode**

The Up Peak Mode shall be initiated automatically by recognising or anticipating traffic patterns or when a pre-determined number of cars with a loading above a predetermined weight level leave the main landing in the up direction. Cars shall be permitted to depart from the main landing without predetermined timing. During the Up Peak, down calls shall be served by cars not immediately needed to serve up traffic.

The Up Peak shall be discontinued once a predetermined number of cars with a loading below a predetermined level leave the main landing in the up direction. To suit individual building requirements, it shall be possible to alter the variables, which activate and deactivate the Up Peak without making changes to prints, hardware, the main program or fixed wiring.

## **2.5 Group Control Down Peak Mode**

The Down Peak condition shall be detected by monitoring the number of down landing calls, down boarding rates and down lobby arrival loadings. Under heavy Down Peak traffic, landing calls shall be grouped in sequence of registration and assigned to be served in this sequence in an approximate "first in / first out" pattern. To suit individual building requirements, it shall be possible to alter the variables, which activate and deactivate the Down Peak without making changes to prints, hardware, the main program or fixed wiring.

## **2.6 Group Control Distribution of Free Cars**

If no car call has been assigned after the lift has answered the last call, the car and landing doors shall close and the lift shall park at this landing awaiting a further assignment of a landing call or assignment to another zone or parking floor. Cars having completed service shall be dispatched after a software adjustable time period to designated floors so that possible future calls shall not keep passengers waiting for long periods of time. The free cars shall not open their car doors when arriving at a parking floor and the doors shall remain closed until required to respond to an assigned call. The distribution of free cars shall take into account additional main landings and priority floors in the following order of priority, unless otherwise specified:

## **2.7 Automatic Landing By-pass**

When a car load exceeds a predetermined weight level, it shall automatically bypass all landing calls in the direction of service and shall respond only to car calls. The default setting for this predetermined level shall be 65% of rated load.

## **2.8 Car Held Up at a Landing**

Should a lift be delayed at a typical floor beyond a pre-set software adjustable time period initially set at **thirty (30) seconds**, the lift shall be disconnected from the group automatic operation and the assigned landing calls shall be re-assigned to an alternative operational lift.

## **2.9 Car Call Cancelling**

When the car has responded to the last call in the up or down direction, the car calls shall automatically be cleared from the system to maintain optimum efficiency.

## **2.10 Load Weighing**

Each lift shall be provided with a strain gauge load weighing device to ensure optimum service. This device shall be capable of constantly monitoring the load on the car platform with an accuracy of  $\pm 5.0$  kg.

## **2.11 Anti-nuisance Control**

When a lift with a loading level of less than 20 kg arrives at a landing, all car calls shall be reset automatically.

## **2.12 Motor Generator Set Time-out**

When a lift does not receive a group demand dispatch at the dispatching landing for a software adjustable time period up to 10 (ten) minutes, set initially at 5 (five) minutes, the motor generator set, if provided, shall stop and shut down the car lighting and ventilation automatically after it has opened the car and landing doors. If solid-state motion control is provided, timing devices shall be provided to accomplish this shutdown.

When a dispatch demand is received from the supervisory system by a lift whose generator is stopped, its motor generator shall automatically restart and re-energise the car lighting and ventilation circuits.

### **3. Operation with Independent Service**

- (a) A two position key operated switch, with removable cylinder as approved by the Representative/Agent and master keyed to the building system, shall be mounted in the main car operating station of each lift specified for Independent Service Operation. When this switch is in the on position, the removal of the key from the barrel shall be prevented and the lift shall be operated from the car buttons only and independent of all other automatic or special operation modes.
- (b) The power operated car and lift shaft doors shall remain open when a lift is at a landing until a car call for another landing is registered and the door close button is pressed. If another car call has been registered, it shall be necessary, after each stop, to repress the door close button to affect the closing of the doors.
- (c) It shall further be possible to activate and de-activate this service through the remote monitoring control station.

### **4. Operation with Inspection**

A two position switch shall be provided on top of the car enclosure to operate each lift manually during adjustment, inspection, maintenance and repair. The operating buttons shall be of the continuous pressure type and the speed of the car shall not exceed 0.63 m/s. It shall operate the car only when the car doors and all lift shaft doors are closed and all safety circuits made.

### **5. Emergency Operation**

A two position switch shall be provided to operate each lift manually during emergency conditions, adjustment, inspection, maintenance and repair. The operating buttons shall be of the continuous pressure type and the speed of the car shall not exceed 0.63 m/s. Emergency operation shall operate the car only when the car doors and all lift shaft doors are closed and when the inspection control on top of the car is switched to normal operation. However, it shall be permitted to override the final limits, safety contacts and governor contacts.

### **6. Fireman's Operation**

#### **6.1 Fire Recall – Level-1**

- (a) All lifts shall be equipped with Fire Control Level-1 and each group or single lift shall be equipped with a common Fire Control switch to recall the lifts (non-stop) to the nominated evacuation landing, where it shall remain parked with open doors. The switch shall be mounted in a box with a break-glass front marked "Lift Fire Control".
- (b) When the switch is activated, cars travelling away from the designated landing, shall reverse at the next served floor without opening its doors, and return non-stop to the designated ground floor.
- (c) An illuminated indicator fitted inside the car shall instruct the passengers to evacuate the lift at the designated evacuation floor.
- (d) When on Standby Power the Fire Control operation shall operate as detailed under this section in conjunction with the Emergency Control sequenced evacuation shown under Section-3 Clause 7 (Operation with Standby Power) of this Specification.

## **6.2 Fire Recall – Level-2**

- (a) A Fire Service Key Switch mounted in the car operating panel shall be provided in each lift operating as a Fireman's Lift.
- (b) A lift operating on Fire Service shall respond only to its own car call while ignoring all landing calls. When the lift arrives at a landing not being the main landing, its car and landing doors shall remain closed. If the door open button is pressed, the doors shall open and continue opening. If the door open button is released, the doors if not yet fully open, shall immediately reverse direction and close. Once the doors have been fully opened via the door open button, they shall remain open until a further car call has been registered and the door close button has been pressed.
- (c) If more than one car call has been registered, all the remaining car calls shall be cancelled once the lift stops at the nearest car call in the direction of travel.
- (d) If the lift remains stationary at a selected floor away from the main landing with the doors closed for an adjustable time initially set at 30 (thirty) seconds, the lift shall return to the fire recall floor automatically. When the lift returns to the main landing, the doors shall open automatically and remain open awaiting a further car call.
- (e) All the car door horizontal and vertical light rays, ultrasonic and infrared detectors, shall be made inoperative during the firemen's service operation.
- (f) It shall further be possible to initiate the fire control operation through the remote monitoring control station or fire detection system. The Fire and Security Sub-Contractor shall provide a potential free contact in each lift motor room to indicate a fire condition.

## **7. Operation with Standby Power**

### **7.1 Emergency Recall to Main Landing – Level-1**

- (a) Provide a standby power operation which recognises the feeder arrangement and the standby power operation which automatically evacuates all lifts on each affected feeder by operating 1 (one) lift at a time to the main dispatching landing without responding to car or landing calls. The system shall subsequently permit automatic and manual selection of any lift to be released for normal operation with standby power. If any lift fails to return to its main landing within 90 (ninety) seconds, it shall automatically be disconnected from the automatic return feature.
- (b) The standby power supply shall be sized to run a predetermined number of lifts simultaneously. The Electrical Sub-Contractor shall provide the number of lifts to run and the maximum kVA available for emergency operation.
- (c) In the event of a total failure of normal power, the feeder or feeders in each group shall be transferred to the standby power source. A potential free normally closed contact shall be provided in the lift motor rooms to indicate the transfer to the standby power source. The potential free contact supplied by the Electrical Sub-Contractor shall open (fail to safety) when on standby power and the lifts will commence their sequenced evacuation.
- (d) The lifts shall be capable of operation on standby power at minimum of 100% of rated speed in both directions and at a maximum load of 100% of rated capacity for a period of 10 (ten) minutes without overheating.
- (e) All connections to the lift controls for standby power operation shall be provided in the appropriate machine rooms and all the necessary interlocking interconnection wiring among machine rooms shall be provided under this section.

## **7.2 Manual Release – Level-2**

- (a) Once all the lifts have been evacuated in sequence to the selected main landing, a predetermined lift or lifts shall be released for normal operation automatically or manually via a remote monitoring station. All manual or automatic release shall be prevented until the automatic evacuation covered under Section-3 Clause 7.1 has taken place.
- (b) The cars nominated / selected to run on emergency power shall not be fixed and it shall, furthermore, be possible to change the lift / lifts selected to run on emergency operation without making major changes to the lift wiring or control circuitry.
- (c) In all instances the fireman's lift shall have priority when selecting a lift or lifts to run on emergency power.

## **8. Door Operation and Control**

- (a) The car and landing doors shall open and close quietly and smoothly. Doors shall be capable of being operated by hand.
- (b) Each landing door shall be equipped with an electro-mechanical interlock so that the lift can only operate when the interlock circuit is established.
- (c) Each car door/gate shall be equipped with a mechanical lock so that the lift can only operate when the car door is locked.
- (d) An electric contact for the car door shall be provided that shall prevent the lift from moving away from a landing unless the door is in the fully closed position

## **9. Overload Protection**

Without exception, overload protection shall be provided (SABS1545-Part-1 1999 & EN81 Code 1997). When the load in the car enclosure exceeds the rated load, a buzzer shall sound, an overload indicator shall illuminate in the car operating panel and the lift doors shall remain open and the lift blocked from travelling. The overload device shall not be active during the travel.

## **10. Drive Control**

- (a) A fully regulated distance dependant closed loop VVVF, DC Ward Leonard, DC Direct Drive control system shall be provided and shall constantly maintain the floor levels and ride quality as specified. Lift acceleration, nominal speed and slowdown phases shall constantly be monitored and controlled against, and with reference to, distance, speed, current and voltage feedback loops. The lift drive shall be capable of bringing the lift to a standstill after a travel without a "creeping in" or "levelling in" phase i.e. a direct approach.
- (b) Driving machine and motor shall be controlled to operate the lift continuously at 100% of rated speed in both directions without overheating or hunting during levelling.

## **11. Ride Quality and Performance Criteria**

### **11.1 Ride Quality Objective**

The main objective is to be able to determine a ride standard and to maintain that standard by routine measurement and adjustment as necessary. The standards nominated are for lifts with rated **speeds of 5 m/s** or higher. Lower speed lifts should be

able to perform better in terms of ride quality, and at worst the same parameters should be applied.

(a) Vibration

Vibration, also sometimes referred to as “quaking”, is measured in three dimensions:

- Lateral quaking from front to back.
- Lateral quaking from side to side.
- Vertical vibration (up and down).

The vibration levels are measured as acceleration levels of the car floor using an accelerometer. Measurements are expressed in terms of mm/s<sup>2</sup>, milli-g or LAL. - 9.81 mm/s<sup>2</sup> = 1 milli-g or LAL.

Recording accelerometer tests in the horizontal plane shall be conducted prior to practical completion on each lift travelling at rated speed the full length of the shaft between terminal landings in both up and down directions with a maximum load of 230 kg located in the centre of the platform. Recordings shall be taken on the platform in the plane of the car guide rails and perpendicular to the plane of the car guide rails.

One set of recordings for each lift shall become the property of the Employer as a permanent record. If these tests show that the equipment is in any way defective, at variance with the specified requirements, or objectionable in any operation, the Contractor shall make any change necessary to remedy these defects. All expenses for carrying out this remedial work and the costs of all subsequent tests including labour, material, test equipment, on site observations, etc, shall be for the Contractor's account.

Notice of all tests shall be given to the Representative/Agent in writing at least 96 hours prior to conducting the test.

(b) Noise Levels

Noise levels in the car are measured during operation of the lift. Maximum and mean dB (A) figures are measured.

## 11.2 Performance Criteria

After practical completion the Contractor shall confirm that the lift equipment performs in accordance with the contract documents and shall provide documentation to substantiate accordingly.

The lifts shall be adjusted as required to, at least meet the following performance requirements within a 10% tolerance:

(a) Ride quality

Acceleration / Deceleration: max 1.0 m/s<sup>2</sup>  
Jerk Rate: max 2.0 m/s<sup>3</sup>  
Stack changes: nil  
Shooting Off or Rollback: nil  
Car Noise: max 56 dB (A)  
Car Noise: mean 52 dB (A)

(i) Lateral Quaking ISO X & ISO Y (Velocity m/sec to Time / Drive Curve)



ISO Y = Side to side movement  
ISO X = Front to back movement

Peak to peak: max 15 milli-g  
Peak to peak: mean 5.0 milli-g  
RMS: mean 1.7 milli-g

(ii) Vertical Vibration ISO-Z (Velocity m/sec to Time / Drive Curve)

Peak to peak: max 10 milli-g  
Peak to peak: mean 3.0 milli-g  
RMS: mean 1.2 milli-g

(iii) Vertical Vibration Start and Stop Kicks

Peak to peak: max 18 milli-g

(b) Levelling Tolerance

Re-levelling: max. 3 mm  
Levelling Accuracy: max. 3 mm

(c) Cycle Time

Times specified are for a typical floor-to-floor run of 3400 mm with a balanced load.

Door close to car start: max. 0.8 sec

| Rated Speed | Car Start<br>to<br>Car Stop |
|-------------|-----------------------------|
| >1.6 m/s    | <5.0 sec.                   |
| 1.0 m/s     | 5.6 sec.                    |
| 0.63 m/s    | 10.5 sec.                   |

(d) Door Dwell Times

| Passenger Conditions  | Stops for Car Call | Landing Call |
|-----------------------|--------------------|--------------|
| First Passenger       | 2.0 sec.           | 3.0 sec.     |
| Succeeding Passengers | 1.0 sec.           | 1.0 sec.     |

(e) Door Open and Close Times

| Door Opening | Type | Door Open    | Door Closed  |
|--------------|------|--------------|--------------|
| 900 mm       | C/O  | max. 2.2 sec | max. 3.0 sec |
| 1100 mm      | C/O  | max. 2.2 sec | max. 3.0 sec |
| 1200 mm      | C/O  | max. 2.4 sec | max. 3.2 sec |
| 1400 mm      | C/O  | max. 2.7 sec | max. 3.5 sec |

(f) Door Pre-Opening

Max. 3/4 open when lift is within 5 mm of floor level.

## SECTION 4 – DETAILED LIFT REQUIREMENTS

### 1. General Requirement

Tenderers shall offer lifts designed to comply with the technical requirements and the as described in Sections 2 and 3 of this specification.

The equipment offered shall be suitable for continuous operations under the following conditions:

(a) Electricity Supply

3-phase, 4-wire, 50HZ, AC with nominal voltage of 400/231V varying between 95% and 105% of the nominal voltage.

(b) Ambient Air Conditions

|                        |       |
|------------------------|-------|
| Max. Temperature       | :32°C |
| Min. Temperature       | :15°C |
| Max. relative humidity | : 85% |

(c) Altitude of site

2000m above sea level

All equipment of the lift installation shall be Y2K compliant in all respects.

All lifts shall comply with the latest edition of SABS1545-1 and SABS-1545-2 specifications.

Copies of ISO9002 accreditation shall accompany the tenders submitted.

The lift installation shall comply in all respects with the requirements of the Occupational Health and Safety Act, Act 85 of 1993 as amended.

## **2. Technical Requirements**

### **2.1 General**

| <b><u>Item</u></b> | <b><u>Description</u></b> | <b><u>Detail Requirements</u></b> |
|--------------------|---------------------------|-----------------------------------|
|                    |                           |                                   |
| (a)                | Number of Units           | 1                                 |
| (b)                | Type of Lift              | Passenger                         |
| (c)                | Load                      | 13 Passenger                      |
| (d)                | Speed                     | 1.0 m/s                           |
| (e)                | Lift Numbers              | L1                                |
| (f)                | Total Travel              | 8m                                |
| (g)                | Number of Stops           | 2                                 |
| (h)                | Car Entrances             | One per Lift                      |

### **2.2 Machine**

| <b><u>Item</u></b> | <b><u>Description</u></b> | <b><u>Detail Requirements</u></b> |
|--------------------|---------------------------|-----------------------------------|
|                    |                           |                                   |
| (a)                | Drive                     | Traction, VVVF or Hydraulic       |
| (b)                | Machine                   | Gearless                          |
| (c)                | Roping                    | 1:1 or 2:1                        |
| (d)                | Automatic Self-Levelling  | Yes,                              |
| (e)                | Compensation              | Yes,                              |

### **2.3 Control Operation**

| <b><u>Item</u></b> | <b><u>Description</u></b> | <b><u>Detail Requirements</u></b>              |
|--------------------|---------------------------|--|
|                    |                           |  |
| (a)                | Operation                 | Group Automatic Operation                      |
| (b)                | Up/Down Peaks             | Yes, As Specified                              |
| (c)                | Fireman's Floor           | Ground Level                                   |
| (d)                | Evacuation Floor          | Ground Level                                   |
| (e)                | Independent Control       | Yes, As Specified                              |
| (f)                | Load Measuring            | Over Load, Landing Call By-pass, Anti-Nuisance |

## 2.4 Landing Equipment

| <u>Item</u> | <u>Description</u>         | <u>Detail Requirements</u>                             |
|-------------|----------------------------|--|
| (a)         | Landing Doors Clear Height | 2300mm   |
| (b)         | Door Operation             | Single Speed, Centre Opening                           |
| (c)         | Door Control               | VVVF Motion Control                                    |
| (d)         | Position Indicator         | Digital Indicators on Main Landing (Ground Level) Only |
| (e)         | Waiting Lanterns           | Yes,   |
| (f)         | Gongs                      | Yes,   |
| (g)         | Call Buttons               | Approved, Vandal Proof Mechanical Micro-Push Button    |
| (h)         | Direction Arrows           | Yes, – Above all Landing Entrances                     |

## 2.5 Car Equipment

| <u>Item</u> | <u>Description</u>   | <u>Detail Requirements</u>                          |
|-------------|----------------------|---|
| (a)         | Number of COP's      | One per Lift  |
| (b)         | Protection Drapes    | No  |
| (c)         | Position Indicators  | Yes, As Specified on COP                            |
| (d)         | Direction Arrows     | Yes, As Specified on COP                            |
| (e)         | Intercom             | Yes, – Master Station - Security Control            |
| (f)         | Call Buttons         | Approved, Vandal Proof Mechanical Micro-Push Button |
| (g)         | Door Detectors       | Yes, Ultrasonic Proximity Detectors                 |
| (h)         | Signage              | Yes, As Specified                                   |
| (i)         | Emergency Light      | Yes,  |
| (j)         | Braille Call Buttons | Yes   |

## 2.6 Shaft Dimensions and Equipment

| <u>Item</u> | <u>Description</u> | <u>Detail Requirements</u> |
|-------------|--------------------|----------------------------|
| (a)         | Head Room          | 4100mm                     |
| (b)         | Pit Sump           | 1300mm                     |
| (c)         | Shaft Lighting     | Yes, As Specified          |

## 2.7 Finishes

| <u>Item</u> | <u>Description</u> | <u>Detail Requirements</u>  |
|-------------|--------------------|---|
|             |                    |   |
| (a)         | Fixture Faceplates | <i>Minimum 3mm thick Stainless Steel (SST) with bevelled edges and a brushed finish</i> |
| (b)         | Car COP Faceplates | <i>Full height next to car door SST with brushed Finish</i>                             |
| (c)         | Car Side Walls     | <i>SST – Brushed Finish</i>   |
| (d)         | Car Rear Wall      | <i>SST – Brushed Finish</i>   |
| (e)         | Car Front          | <i>SST – Brushed Finish</i>   |
| (f)         | Car Floor          | <i>Normament – Principal Agent to Specify Colour</i>                                    |
| (g)         | Car Ceiling        | <i>High Quality Suspended Ceiling with recessed Fluorescent Luminaires</i>              |
| (h)         | Hand Rails         | <i>At a height of 900mm above car floor on sides and rear of car</i>                    |
| (i)         | Car Doors          | <i>SST – Brushed Finish</i>   |
| (j)         | Landing Doors      | <i>SST – Brushed Finish</i>   |
| (k)         | Landing Frames     | <i>SST – Brushed Finish</i>   |
| (l)         | Landing Signals    | <i>Fitted above landing entrances</i>   |

## SECTION 5 – SCHEDULE OF TECHNICAL INFORMATION

### 1. GENERAL

Tenderers are required to complete the following Schedule of Technical Information and shall in addition, under separate cover, give full particulars of the equipment and installations offered as well as detailed descriptions of the various methods of control and operation.

### 2. TECHNICAL INFORMATION SCHEDULE

| Item | Description  | Details |
|------|--|---------|
| 1.   | Manufacturer's name  |         |
| 2.   | Country of origin  |         |
| 3.   | % South African manufacture  |         |
| 4.   | Performance  |         |
| a)   | Car speed in m/s   |         |
| b)   | Average round trip time  |         |
| c)   | Maximum carrying capacity of each lift car                             |         |
| d)   | Average waiting time after registration of a landing call              |         |
| 5.   | Main Hoist Motor   |         |
| a)   | Maker's name   |         |
| b)   | Type   |         |
| c)   | Rated output (kW)  |         |
| d)   | Time rating (starts/hr)  |         |
| e)   | Manufacturing standard and safety codes                                |         |
| f)   | Maximum speed (RPM)  |         |
| g)   | Rated voltage (Volts)  |         |
| h)   | Full load current (Amps)   |         |
| i)   | Starting current (Amps)  |         |
| j)   | Type of bearings   |         |
| k)   | Maximum line current with lift starting with full contract load (Amps) |         |
| 6.   | Type of Brake  |         |
| 7.   | Gearing (If Applicable)  |         |
| a)   | Material of worm   |         |
| b)   | Material of worm-wheel   |         |
| c)   | Type of thrust bearings  |         |
| d)   | Ratio of gearing   |         |

| Item | Description  | Details |
|------|--|---------|
| e)   | Type of worm-shaft bearings  |         |
| f)   | Worm above or below wheel  |         |
| 8.   | Drive  |         |
| a)   | Diameter of traction sheave (rope centres)                                       |         |
| b)   | Type of grooving used on traction sheave   |         |
| c)   | Type of bearing for sheave shaft   |         |
| d)   | Diameter of smallest deflector pulley used                                       |         |
| e)   | Type of grooves provided on deflector pulleys                                    |         |
| f)   | Type of bearings for deflector pulleys   |         |
| g)   | Means provided for absorption of vibration                                       |         |
| 9.   | Switch gear and Control System   |         |
| a)   | Make of main circuit breaker   |         |
| b)   | Rupturing capacity of main circuit breaker (kA)                                  |         |
| c)   | Type of control system   |         |
| d)   | Control voltage  |         |
| e)   | Make of contactors   |         |
| f)   | Make of control relays   |         |
| g)   | Contact materials used for auxiliary and main contacts of controller switch gear |         |
| h)   | Type of selector   |         |
| 10.  | Car and Doors  |         |
| a)   | Mass of complete car with doors and operating gear (kg)                          |         |
| b)   | Net inside dimensions(width x depth x height) in mm                              |         |
| c)   | Thickness of material of car and landing doors                                   |         |
| d)   | Finish of car and landing doors  |         |
| e)   | Clear width and height of car and landing entrances                              |         |
| f)   | Type of door drive mechanism offered   |         |
| g)   | Type of suspension used for car and landing doors                                |         |
| h)   | Type of proximity detectors  |         |
| (I)  | For passengers approaching from landing  |         |
| (II) | For passengers leaving lift car  |         |
| i)   | Type of material used for inside finishes of car (i.e. panels, ceiling trim)     |         |
| j)   | Thickness and type of floorboards and floor covering                             |         |

| Item | Description   | Details |
|------|---|---------|
| k)   | How is car and platform isolated from supporting structure? |         |
| l)   | Are car panels treated externally for sound absorption?     |         |
| m)   | Door speed:   |         |
| (I)  | Normal (m/min)  |         |
| (II) | On force closing (m/min)                                    |         |
| 11.  | Ropes   |         |
| a)   | Maker's name  |         |
| b)   | Diameter of ropes (mm)                                      |         |
| c)   | Number of main ropes  |         |
| d)   | Breaking load of each rope (kN)                             |         |
| e)   | Maximum working load of each rope                           |         |
| f)   | Factor of safety  |         |
| g)   | Tensile strength of steel used (MPa)                        |         |
| h)   | Number of strands in rope                                   |         |
| i)   | Number of wires per strand                                  |         |
| j)   | Construction and lay of rope                                |         |
| k)   | Type of rope fastening used                                 |         |
| l)   | System of roping (i.e. 2:1 or 1:1, single or double wrap)   |         |
| 12.  | Counterweight   |         |
| a)   | Total mass (kg)   |         |
| b)   | Percentage of live load counter balanced (%)                |         |
| 13.  | Guide Rails   |         |
| a)   | Type and section  |         |
| b)   | Mass per metre-length (kg) for:                             |         |
| (I)  | Car   |         |
| (II) | Counterweight   |         |
| 14.  | Roller Shoes  |         |
| a)   | Type  |         |
| b)   | Material of tyres for roller type guides                    |         |
| 15.  | Buffers   |         |
| a)   | Type  |         |
| b)   | Length of stroke  |         |



| Item | Description  | Details |
|------|--|---------|
| c)   | Reactions on pit floor when buffers are hit at 115% of contract speed whilst car is carrying contract load                           |         |
| (I)  | Car buffers  |         |
| (II) | Counterweight buffers  |         |
| 16.  | Safety Gear  |         |
| a)   | Type   |         |
| b)   | Type of governor   |         |
| c)   | Stopping distance at overspeed with:   |         |
| (I)  | Car empty (mm)   |         |
| (II) | With contract load (mm)  |         |
| d)   | Percentage over-contract speed when governor trips safety (%)  |         |
| e)   | Percentage over-contract speed at which governor trips motor supply  |         |
| f)   | Is safety still effective if governor rope breaks after application of safety device?  |         |
| 17.  | Steelwork at Top of Shaft  |         |
| a)   | Number and type of sections used   |         |
| b)   | Reactions on structure must be submitted with tender by indicating position, magnitude and direction of all reactions on a drawing   |         |
| 18.  | Levelling  |         |
| a)   | Levelling speed (m/s)  |         |
| b)   | Levelling tolerance guaranteed (Maximum) (mm)  |         |
| c)   | Will car and landing doors be fully open when car reaches floor level?   |         |
| d)   | What is distance of levelling zone above and below floor level?  |         |
| 19.  | Selector Type  |         |
| 20.  | Deviations from Specification as an Alternative Offer:<br>Does the equipment offered comply strictly with the specification (Yes/No) |         |

**3. Deviations from Specification as Alternative Offer**

If answer to 20 above is NO, tenderers shall give full details of all deviations between the alternative offered and specified equipment hereunder:

.....

.....

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.....

.....

TENDERER'S NAME AND ADDRESS

.....

Signature of Tenderer's  
Authorised Signatory

.....

.....

.....

TEL NO. ....

DATE : .....

## **SPECIFICATION FOR LIFT INSTALLATION**

### **ADDITIONAL SPECIFICATION**

### **OPERATING AND MAINTENANCE MANUALS**

#### **CONTENTS**

1. SCOPE
2. PROCEDURE FOR SUBMISSION OF MANUALS
3. FORMAT OF OPERATING AND MAINTENANCE MANUALS
4. CONTENTS

#### **1. SCOPE**

The Contractor shall be responsible for the compilation of complete sets of Operating and Maintenance Manuals. A separate Operating and Maintenance Manual shall be supplied for each installation.

#### **2. PROCEDURE FOR SUBMISSION OF MANUALS**

##### **2.1 Submission Of Draft Manuals**

A draft copy of each Operating and Maintenance Manual shall be submitted to the Engineer prior to safety inspection of the installation. Approval of the draft Operating and Maintenance Manuals shall be a prerequisite for commencement of the safety inspection in terms of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The manuals will be reviewed and checked by the Engineer and returned to the Contractor with comments, where necessary. The Contractor shall make the necessary changes and amendments to the manuals to incorporate the Representative/Agent's comments.

##### **2.2 Development Of Final Manuals**

A final draft copy of each Operating and Maintenance Manual shall be submitted to the Representative/Agent at least one week prior to commencement of Day 1 tests on commissioning. This set of manuals will not be accepted without the Contractor's verification of the information contained in the manuals and the professional language editing thereof. The Representative/Agent shall return the manuals to the Contractor, who shall make the final corrections. The Representative/Agent will, however, not be responsible for the quality control on manuals. Approval of final Operating and Maintenance Manuals shall be a prerequisite for issuing of a Certificate of Practical Completion for repair of the installation.

After the Engineer has approved the final Operating and Maintenance Manuals, the Contractor shall provide the Engineer with seven (7) sets of the manuals. Approval of the final Operating and Maintenance Manuals shall be a prerequisite for issuing of a Certificate of Completion.

#### **3. FORMAT OF OPERATING AND MAINTENANCE MANUALS**

- (a) Manuals shall be bound in hardcover lever-arch files with plastic coatings. The files shall be clearly labelled on the front cover, as well as on the back band, with the following information:
  - (i) The title "Operating and Maintenance Manuals"
  - (ii) Name of the project
  - (iii) Name of the contract and contract number
  - (iv) The Contractor's name, address and contact telephone number and fax (logo optional)

- (v) Month and year in which the manuals are finally handed over to the Employer
  - (vi) Name of the User Client.
- (b) Pamphlets and bound leaflets/booklets from suppliers or manufacturers shall be placed in plastic pockets.
  - (c) Drawings and diagrams larger than A3 shall be folded and placed in plastic pockets to be easily removed or stored.
  - (d) The sections of the manuals specified below shall be clearly partitioned.
  - (e) Cross-referencing between drawings/diagrams and text shall be in a clear and consequent format.
  - (f) The Operating and Maintenance Manuals shall be supplied in English.

## **2.3 Technical equipment manuals**

For each piece of equipment and/or machine forming part of the installation the following information shall be included in this section of the Operating and Maintenance Manuals:

- (a) The supplier or reconditioning manual and/or standards of operating and maintenance instructions;
- (b) illustrated parts breakdown and/or group assembly drawings as agreed with the engineer;
- (c) parts lists and data sheets, including all characteristic curves for machines indicating operation point, efficiency, power consumption, etc;
- (d) calibration charts, and
- (e) test certificates for hydraulic pressure tests, flame-proof grading, materials, non-destructive examinations, coating and lining details, etc.

Each detailed description shall be accompanied by a set of engineering drawings. From the drawings the functionality of each part or component used, as well as the special characteristics associated with the part or component shall be very clear.

### **4.4.3 Parts and components list**

A detailed description shall specify all the parts and components used for the duration of the Contract. This description shall include new parts and components, as well as existing parts and components that have either been reconditioned or used as specified in the Contract.

The description shall state at least the part or component number, part or component name, the size of the part or component, an explanatory description, the quantity used, the material of which the part or component is made, the coating (if any), date of purchase, as well as any relevant remarks as to the application thereof.

Details of the manufacturer of the part or component shall also be listed. This shall at least state the name, address, telephone number, fax number and name of a contact person.

The supplier of the part or component shall also be stated and shall include at least the name, address, telephone number, fax number, name of a contact person and an alternative supplier (if available).

#### **4.4.4 Drawings**

Drawings shall contain a descriptive heading, an explanatory key and relevant comments. Drawings shall be done on a computer-aided design package approved by the Representative/Agent.

A compound drawing for all subassemblies shall clearly indicate how and where the various parts fit in the subassembly. The compound drawing shall be linked to the equipment data sheets and parts and components list and shall clearly specify the parts or components used, their model numbers, their sizes and the quantities used. The compound drawings shall also be accompanied by a short description explaining the workings of the subassembly, as well as the assembly of the parts or components to complete the subassembly.

#### **4.5 Operating Procedures**

The operating instructions shall be a step by step description of the manual start-up and shut-down procedure for every piece of equipment and/or process reconditioned, repaired or supplied with references to the MFDs. For automatic operation the operators shall be referred to the automatic control manual (if applicable).

The functioning of the installation shall be clearly described, using a flow diagram depicting the interrelationships among the various subassemblies. The subassemblies shall be described by descriptive drawings.

Each mechanical or process flow diagram shall contain at least a heading, relevant comments and a key.

Every subassembly shall also have its own flow diagram explaining the operation of the subassembly, as well as the application of each part and component. The application of the subassembly shall also be very clear. The flow diagram shall consist of at least a heading, relevant comments and an explanatory key.

A detailed description shall be given of all operational systems forming part of the installation, explaining the operation and functioning of the system and the number of operations personnel required for performing the operation successfully.

The preparations, which are required before the system can be operational, shall be clearly stated and explained.

The operation tasks shall be clearly explained with reference to dangerous situations that might occur. Hazardous operations shall be explained in great detail and cover all the applicable safety precautions.

#### **4.6 Maintenance**

##### **4.6.1 Purpose of maintenance**

The maintenance process shall be explained and the main responsibilities described.

##### **4.6.2 Preventative maintenance**

A preventative maintenance and lubrication schedule shall be included in this section. This schedule shall be in table format and shall include a summary of all the maintenance actions required for each different system and/or functional unit covered by this manual, in order to give a single summary of all routine preventative maintenance actions required for the complete installation.

The schedule shall indicate daily, weekly, fortnightly, monthly and yearly maintenance actions. A lubrication schedule summary shall also be included under this section.

The frequency of routine preventative maintenance actions shall be indicated very clearly.

The Contractor shall provide the maintenance requirements as prescribed by the manufacturer. The type of maintenance shall be clearly indicated. The description of the maintenance to be performed shall include at least the part name, location of the part in either the assembly or subassembly, the model number, the quantity of the particular part or component to be maintained, the type of maintenance, and notes on the maintenance procedure.

A brief description shall accompany the maintenance schedule, indicating special tools to be used, maintenance and test equipment required for the test procedures. Any special tools necessary for maintenance shall be specified in terms of name, model, size, manufacturer, supplier (name, telephone number, fax number, contact person), coating (if any) and notes on the use of the equipment.

Remarks on the system readiness checks of each subassembly shall be explained in detail. Routine inspection and maintenance processes shall be described. It shall be very clear what needs to be done, how to perform the necessary task and any dangers that are present.

#### **4.6.3 Trouble-shooting**

An explanation shall be given to assist the maintenance personnel in analysing and resolving malfunctions that might occur. Various scenarios with possible causes and rectification procedures shall be explained.

The scenarios shall be accompanied by drawings indicating the position of the part that is faulty. Each of these drawings shall have a heading, comments and an explanatory key.

### **4.7 Breakdown Maintenance And Repair**

The Contractor shall describe the complete procedure to be followed in the event of a breakdown. It shall be very clear what the operating personnel should look for, how to eliminate any dangers due to the breakdown (e.g. electricity must be shut off in the event of problems with the wiring) and who should be contacted. The Contractor shall supply the names and telephone numbers of at least two contact persons who may be contacted in the event of a breakdown.

Repair instructions shall provide the maintenance personnel with detailed instructions for the removal and/or replacement of any item requiring replacement due to malfunctioning. Contact numbers shall also be given to assist maintenance personnel, should a breakdown occur.

The Contractor shall specify the actions expected of maintenance personnel in the event of a breakdown.

The Contractor shall also specify the testing procedures to be followed before the system can be put into operation again. Every procedure shall be described clearly and all the potential dangers pointed out, as well as the precautions that have to be taken.

The testing procedures shall be accompanied by drawings illustrating the process to be performed. Every drawing shall have a heading, comments and an explanatory key.



**SPECIFICATION FOR  
FIRE SERVICES  
FOR  
*RENNOVATION TO TAUNG HOTEL AND CONVENTION CENTRE.***

*June 2023*



# **Technical** **Specifications**

For The

Installation of Fire Protection

## **1.0 SECTION ONE**

### **GENERAL DESCRIPTION & DESIGN BASE**

#### **1.1 SCOPE (General)**

This specification, together with schedule of quantities and tender drawings enclosed, covers the design, manufacture, assembly & testing of manufacturer's works, delivery at site, installation, testing & commissioning into service, carrying out all acceptance tests, for fire protection systems. This specification covers fire detection and firefighting equipment for the Taung Hotel and Convention Centre

#### **1.2 LOCATION**

The proposed building for the Taung Hotel and Convention Centre is located in Taung in North West Province, South Africa.

#### **1.3 Base of Design & system proposed**

Based on SANS 10400-part T the systems are installed on the areas shown on the attached plans, refer to drawings

- Fire Fighting
- Fire Detection:
- Gas Suppression

#### **1.4 Site conditions**

The weather parameters for the town of Taung shall be used on the project:

## **SECTION 2**

### **FIRE PROTECTION SPECIFICATION GENERAL SPECIFICATION**

#### **2.1 SCOPE**

This scope under general conditions together with the tender drawings, covers the design, manufacture, assembly and testing, packing for transport to site, transport, loading and unloading, handling of equipment at site, erection, testing and commissioning into service, carrying out all the acceptance tests and handing over the fire protection systems to Client.

#### **2.2 BUILDING CONSTRUCTION**

The building details are available with the Client. Agency may collect relevant data for reference.

#### **2.3 MATERIALS AND WORKMANSHIP**

All materials used shall conform to the requirements of materials specified in this specification and Green Building Council of South Africa (GBCSA). Where material requirements are not specified they shall conform to the applicable standards and codes approved by the Client. All materials shall be new free from defects and first class in all respects. Parts shall be free from flaws and objectionable imperfections and shall be machined true in a workman like manner. No deviations from the specified materials are permissible. Wherever materials are not specifically called out, they shall be properly selected by the contractor to the best standards for the particular application and with the prior approval of the Engineer.

#### **2.4 STANDARDS & CODES**

The design, manufacture and performance of equipment shall comply with all currently applicable statutory regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the requirement of the latest editions of applicable SANS 10400 part T and SANS 10287. The contractor shall refer the relevant sections of this specification for equipment standards and codes. Nothing in this specification shall be constructed to relieve the contractor of his responsibility.

## **2.5 TENDER DRAWINGS**

2.5.1: List of Drawings are enclosed which have been prepared by the Fire system's design Engineer showing the locations and systems equipment layout & schematic diagram for fire protection systems.

2.5.2: The equipment layout and pipe work shown on the drawings represent a feasible scheme based on space available and services routes. The contractor may rearrange the space allocated subject to the approval by the engineer and Client.

2.5.3: Where the drawings and specification conflict, the most stringent shall be followed. The instruction of the consultant shall be final & binding. The Tenderer shall point out all deviations from the drawings and specifications in their offer and shall specifically confirm works not included in the scope. Nothing extra shall be payable on any account thereafter unless instructed by the Engineer or client.

## **2.6 INSTRUCTIONS**

The contractor's proposal must include everything required to make a complete working of the system with all statutory approval whether specifically shown and specified or not including all labour and material, transportation etc. necessary for the complete installation of everything described and provided to complete the system and ready for Owner's use. It shall be the responsibility of tenderer to check the suitability & site constraints for installing the system at site.

Any apparatus, appliance material and labour which may be necessary to complete the work in accordance with the intent or purpose of these specifications and as instructed by the engineer. The execution of the project shall be furnished by the contractor without extra cost irrespective of specifically specified in and / or shown on the drawings, or not.

The work shall be done in conformity to the specifications, accompanying drawings and with the requirement of the general, architectural and structural plans & other regulatory & statutory bodies including DPW if required.

## **2.7 INSPECTION AND TESTING (GENERAL)**

The contractor shall perform all tests and inspection necessary to ensure that the material and workmanship conform to the requirements of the contract including fabrication drawings approved by the Department or their authorized representatives.

- 2.7.1 The contractor shall perform all tests and inspection necessary to ensure that the material and workmanship conform to the requirements of the contract including fabrication drawings approved by the Engineer or his authorized representative.
- 2.7.2 The Engineer or his authorized representative shall have access to the contractor's or sub-contractor's works at all reasonable time to determine compliance with the provisions of this specification and /or to witness the contractor's inspection and tests.
- 2.7.3 All tests covered by this specification shall be subject to inspection and approval by the fire system's engineer.
- 2.7.4 The contractor shall maintain records of all inspection works carried out in his works or in his sub-contractor's works. Copies of such records shall be made available to the client upon request and shall become the property of the Client. A procedure for the repair of defects shall submit to the Client for approval, prior to any repair modifications being made.  
If the previous quality test and inspection are impaired by the subsequent repairs, the work shall be re-inspected and re-tested to the satisfaction of the Purchaser or his authorized representative. Equipment found unsatisfactory as to workmanship or material shall be removed by the contractor and replaced to the satisfaction of fire systems engineer at no extra cost.
- 2.7.5 All materials of components, castings, equipment, piping, instruments etc. shall be tested & inspected in the presence of the engineer or his authorized representative. Test certificates of all imported components shall be made available for approval of the Mechanical Engineer.

- 2.7.6 Final acceptance will be after the equipment is installed and tested at site to give satisfactory performance.
- 2.7.7 The Contractor shall provide the fire systems engineer, necessary equipment and tooling instruments, drawings and personnel etc. required for inspection of the work if applicable.
- 2.7.8 Strict measures of quality control shall be exercised throughout the work.
- 2.7.9 The contractor shall submit the following documents before acceptance six (6) sets.
- 2.7.9.1. All the tests observations & calculation.
  - 2.7.9.2. All the operation & maintenance manuals.
  - 2.7.9.3. Leaflet & literature
  - 2.7.9.4. Test Certificate
  - 2.7.9.5. Guarantee Certificate
  - 2.7.9.6. Person to be contacted during Guarantee period.
  - 2.7.9.7. As-built drawings with soft copy.

## **2.8 TESTS AT SITE**

**2.8.1** During site fabrication, the pipe branches, elbows etc., shall be inspected and the joints and connections are to be checked before they are assembled in position. After assembly, the system shall be checked for leakage, vibration and noise.

**2.8.2** After the complete erection of the system with all accessories are installed at site, these shall be tested as per applicable codes (unless otherwise specified) to check and access their functional performance. The test to be conducted at site in the presence of the fire system's engineer or his representative shall include but not limited to the following:

- (a) To check capability of piping systems to deliver rated capacities after the installation of the valves & entire piping networks along with required capacities.
- (b) To check proper and continuously reliable operation of the system equipment & controls regulating the equipment for a period of minimum seventy two (72) hours, after the complete installation of system.

- (c) Leak testing of the pipework, fittings, connections etc. as applicable.
- (d) Any other tests as required to check compliance with specification and system requirements by statutory bodies & DPW & any other local authority for these systems in services.

**2.8.3** All required instruments consumables & services for the above tests shall be provided by the contractor.

## **2.9 TESTING AND COMMISSIONING**

Comprehensive pre-commissioning, commissioning as well as quality monitoring shall be done on all the fire systems including pipes and equipment. Commissioning shall be done in accordance with the supplier's recommendations as well as the standards including SANS 10287, ASIB, NFPA 13 and CIBSE code M section 8. Water loss must be kept to a minimum during construction and this will be achieved by using the water from the sprinkler system for building works and irrigation when construction is complete. After completion of the contract, the contractor shall be required to provide training and system knowledge to the building owner/manager by submitting documented design intent, As-built drawings, Operational and Maintenance Manuals as well as Commissioning Reports. In addition, the contractor shall provide training on all the systems to the building owners' building management staff. Full testing and commissioning procedures for individual equipment and for the entire systems shall be submitted.

Training provided must include:

- a) Review of controls set up, alarms and troubleshooting;
- b) Review of O&M manuals;
- c) Building Operation (start up, normal operation, unoccupied operation, shutdown);
- d) Measures that can be taken to optimize energy efficiency;
- e) Occupational Health and Safety (OH&S) issues;
- f) Maintenance requirements and sourcing replacements; and
- g) Obtaining and addressing occupant satisfaction feedback.

## **2.10 SPARES AND TOOLS**

### **2.10.1 Spares:**

The contractor shall offer a complete list of recommended spare parts for the equipment supplied along with the item wise costs for the three years satisfactory maintenance of the System.

### **2.10.2 Tools:**

All special tools required for operation and maintenance of the system shall be supplied by the contractor at agreed cost.

## **2.11 GUARANTEES**

### **2.11.1 Equipment Guarantee:**

The contractor shall guarantee the trouble free & efficient performance of the System for design capacity. One year period (excluding shut down period due to fault) from date of acceptance will be treated as guarantee period. Contractor will have to attend all the faults and replace all material (including consumables) free of cost during guarantee period. Major equipment parts will have to be guaranteed for further one year, from the date of replacement. Any leakage of lubricants due to defective manufacturing or bad workmanship shall also be made good by the contractor free of charge.

2.11.2 The contractor shall further guarantee that the system for optimum operation.

2.11.3 No inspection & clearance either in verbal or written shall relieve contractor of his responsibility & guarantee.

## **2.12 TECHNICAL DATA**

Technical data of all equipment shall be furnished as required.

### **2.12.1 AFTER SALE SERVICE**

The contractor shall ensure adequate and prompt after sales service in the form of maintenance personnel and spares as and when required with a view to minimizing the break down period. Particular attention shall be given to ensure that all spares are easily



available during the normal life of the system.

#### **2.12.2 INSURANCES**

The bidder shall insure at his own cost all the men and materials during transit from his factory to the execution site till the systems are handed over to the client including damage done to others as per work order specification and Schedule of quantity, drawings. The most stringent shall only be followed.

## **SECTION - 3**

### **FIRE PROTECTION SPECIFICATION**

#### **3.1 FIRE EQUIPMENT INSTALLATION**

##### **3.1.1. Fire Hose-reels**

The supply and installation of fire hose reels shall form part of this contract. Each hose reel will be of the manually operated type and consist of 30m of 20mm plastic hose complete with a 25 mm stop valve situated immediately below the hose reel. All fire hose reels shall be comprehensively services in compliance with SANS 1475-2, SANS 543:2004, relevant departmental specification and all other relevant specifications.

##### **3.1.2. Fire Hydrants**

The design, supply and installation of fire hydrants 65mm hydrants on indicated positions on drawings.

##### **3.1.3. Fire Extinguishers**

| <b><u>Location</u></b> | <b><u>Size</u></b> | <b><u>Type</u></b> |
|------------------------|--------------------|--------------------|
| All areas              | 4.5kg              | DCP                |
| Service area           | 5 kg               | Carbon dioxide     |

Fire extinguishers shall be supplied, installed and commissioned complete with mounting plates and mounted at 1500mm AFFL as shown in project drawings unless otherwise stated. All fire extinguishers shall comply with the relevant SANS code.

#### **3.2 PIPEWORK**

All above ground pipework up to and including 150mm diameter, installed inside buildings will be of Medium Quality Black Steel Piping to SABS 62/1971.

Pipework in excess of 150mm diameter will be of Medium Quality Black

Piping to SABS719 having a wall thickness of 6mm.

Any other forms of piping, i.e. Heavy Quality, Galvanised, Stainless Steel, etc. have not been included, unless stated within the covering letter to this quotation.

All above ground pipework up to and including 150mm diameter installed In normal pick able soil will be of either Medium Quality Black Piping to SABS 62/1971 bitumen coated as a protection against corrosion or uPVC piping to SABS 966. Pipework in excess of 150mm diameter will be of Medium Quality Black Piping to SABS719 bitumen coated as a

protection against corrosion or uPVC piping to SABS 966. Denso wrapping of pipework has not been included, unless specifically stated within the covering letter to this quotation.

### **3.3 PIPE FITTINGS**

Screwed pipe fittings up to and including 150mm diameter will be malleable cast iron to SABS 509/1975 or BS 143/1952.

Flanges up to and including 150mm diameter will be steel plate flanges to SABS 1123/1600/4 or BS 4505/16/4.

Welded pipe fittings up to and including 300mm diameter will be of steel butt-welded type to JIS B2304-72.

Weld flanges between 100mm and 300mm diameter will be steel plate flanges to SABS 1123/1600/3 or BS 4504/16/3.

Coupling type joints such as “Klambon” or “Victualic” will be used where deemed necessary.

### **3.4 WELDING**

Welding will be to BS 2971 – Specification for Arch Welding of carbon steel pipework for carrying fluids without radiography and stress relieving.

### **3.5 HANGING MATERIAL**

Purpose made pipe brackets in accordance with the requirements of the Fire Hoses-reels Inspection Bureau will be used in this project.

### **3.6 PAINTING**

One coat of Red Oxide Primer shall be applied at the workshop prior to delivery to site followed by one finished coat of red gloss enamel to all exposed pipework only.

### **3.7 SIGNAGE**

Firefighting equipment signage shall be installed in accordance of S.A.B.S.

### **3.8 WATER SUPPLIES**

Water Supply to fill Tank. The water supply for the hydrants and hose reels will be from storage tank and will comprise booster connections for both fire hydrants and fire hose-reels.

### **3.9 SCHEDULES OF PARTICULARS AND INFORMATION**

All schedules which accompany the mechanical work specification form an integral part of it and shall be duly completed in every detail: FAILING which, the tender in question may be rendered ineligible for consideration.

Under no circumstances will statements such as:

- See attached pamphlets
- Refer to catalogue
- Data to follow
- As given by the supplier, etc. be acceptable to the Department.

The principal contractor shall ensure that the equipment offered and listed on the schedules shall be capable of performing the specified duties and complying with the Specification requirements in all respects: SHOULD it transpire that such equipment, even when offered by make, model and/or type, is unsuitable or incapable of meeting, or performing in accordance with the specification requirements in any respect, the Principal Contractor shall nevertheless be responsible for any additional costs incurred in providing the required or suitable equipment.

Whenever a specific make, model or type of equipment has been prescribed in the specification and the tenderer offers an alternative or equal make or type of equipment in his tender, the Department will on acceptance of such a tender inform the prospective contractor in writing as to the make, and/or type of equipment accepted.

## **Section 4 Detail Specifications**

### **4.1 FIRE HYDRANT**

The norm is usually to provide 1 fire hydrant per 1000m<sup>2</sup> or part of total floor area and not less than one per storey of such building or occupancy.

Any fire hydrant required shall comply with the requirements contained in SANS 1128 Part 1.

The minimum diameter of the supply pipe to any fire hydrant not to be less than 65mm internal diameter, and should this supply pipe to the hydrant be further than 50 meters this supply pipe should be increased to at least 100mm internal diameter. Internal fire hydrants shall be installed as indicated on the construction drawings.

### **4.2 FIRE HOSE REEL**

Fire hose reels for the purpose of firefighting shall be installed in any building of two or more storey in height or in any single storey building of more than 250m<sup>2</sup> in floor area at a rate of one (1) hose reel for every 500m<sup>2</sup> or part thereof of the floor area of any storey. Any fire hose reel installed in any building shall comply with the requirements contained in SANS543.

The minimum diameter of any pipe providing water to the fire hose reel will not be less than 25mm in diameter.

The fire hose reel will be robustly constructed and with brackets that will fix the hose reel against a wall.

This hose reel rotates on a center pin that allows the user to unwind the fire hose reel unobstructed in case of a fire.

The standard dimensions and characteristics of a fire hose reel are as follows:

- The fire hose reel drum is 850mm in diameter
- A guide will prevent the fire hose reel from jamming
- The maximum length of a fire hose reel is 30m

The diameter is 20mm

### **4.3 FIRE EXTINGUISHERS**

Portable fire extinguishers for the purpose of firefighting shall be installed in the building at a rate of 1 fire extinguisher for every 200m<sup>2</sup> in floor area.

It is a standard practice to provide 2 x 4.5kg Dry Chemical Powder fire extinguishers with every 30m fire hose reel location and for storage areas the size will be increased to 9kg. Dry Chemical Powder is a highly versatile Class 'A' 'B' and 'C' firefighting medium for dealing with electrical hazard, flammable liquids and gas fires.

Features:

- Multipurpose extinguisher
- Simple method of operation
- Unique tamper – evident safety pin
- Corrosion – resistant high quality durable finish
- Rapid flame knock-down is achieved
- Controlled discharge ensures firefighting efficiency

Any approved portable firefighting extinguisher shall comply with the requirements contained in SABS 890, 889 or SABS 1151 and shall be installed, maintained and serviced in accordance with SANS 0105.

### **4.4 FIRE SIGNS**

Such signs are to be minimum size of 190 x 190mm and are to be SABS approved photo luminescent signs.

Every sign will be located and of such size, distinctive colour and design as to be readily visible. All signage must stand out from the surroundings and be visible.

Externally and internally illuminated signs will be visible in both the normal and emergency lighting mode. Every sign required will provide evenly illuminated letters having a minimum luminance of 0.21cd/m<sup>2</sup>. Exit signs will be illuminated by the emergency lighting facilities

## **4.5 SMOKE DETECTION – L1 SYSTEM**

The smoke detection system will comply with SABS 0139. This system will be fully addressable and will include break glass units. The main smoke alarm panel will be located in a secure area and will be monitored 24/7. The system shall contain

- Optical smoke detectors
- Heat detectors ( for Kitchen areas)
- Multicriteria detectors (Where applicable)
- Ceiling void optical smoke detectors (where ceiling space height is equal to or greater than 800mm)

The proposed method of operation for the fire protection / detection within the entire building is based on a double knock system comprising of smoke detection / pressure switch / flow switch.

Each zone will be provided with intelligent mimic panels, sirens and manual call points. The number and positioning will be in accordance with SANS 0139 and the prescriptions of public works. The fire detection installation shall be linked via the building management system to other services such as the air conditioning.

### **4.5.1 General specifications of smoke detection systems**

#### Control and indicating equipment

The Control Panel shall be of the Analogue Addressable type with built in power supply and complying with EN 54 part 2 and 4. The control and indicating equipment must have local support.

#### Printer

A printer shall be supplied with the control panel so that a permanent record of all events can be kept. The printer must be supplied by the manufacturer of the control and indicating equipment and be mounted in the control panel.

#### Batteries

The batteries that are supplied must be National Panasonic, Yuasa or Sonnenchein and be of the sealed lead acid type.

### Loop wiring

All loops shall be Class "A" loops. Bridging of a loop in the Control Panel is forbidden as is running a spur from a loop. A spur is only allowed where detailed on the drawings.

### Loop isolators

A loop isolator shall be located at the beginning and end of every zone in order to minimize disruption of the loop in the event of a cable fault.

### Manual call points

All call points shall be surface mounted and where located outside a building shall be of the weatherproof type. All call points shall be of the addressable type and be red in color.

### Detectors

All detectors shall be of the addressable type and have an operational range of 20 square meters. Detectors of the I.S. type shall be conventional. The ZENER BARRIER shall be suitable and installed as per the detector manufacturer's specifications. The client will provide a suitable high integrity earth. Alternatively a GALVANIC ISOLATOR may be used if recommended by the I.S. detector manufacturer. The Zener barrier or galvanic isolator must be located in a safe area and be housed in a suitable polycarbonate box. The Zener barrier must be mounted on din rail. The cabling to this unit must not be located on the same side of the housing.

### Zoning

No zone shall exceed more than 1500m<sup>2</sup>. Should there be any confusion, the engineer is to be consulted before work commences.

### Remote power supplies

All remote power supplies shall be monitored for "mains fail" and "battery fail", by means of a contact monitoring device located on the loop. The circuit between the device and the contact in the power supply shall be a monitored circuit.

### Sounder modules

These modules are an addressable device which shall be located adjacent to the remote power supplies. They shall have a 24vdc supply connected to them and provide power to a monitored sounder/strobe circuit in the event of an alarm.



### Audible alarms

The type of audible alarm shall be the electronic sounder, and electronic sounder strobe type when used in noisy areas. The audible alarms shall be red in colour and be manufactured from "Bay blend" fire retardant plastic. The sound shall be distinguishable from any other sound.

Sounders located outside of a building shall be of the weatherproof type. As part the handover sound pressure testing will be carried out. The contractor must prove that a minimum of 65db or 5db above the ambient noise level exists. The contractor shall provide a db meter for the testing. Test dates to be coordinated with the client.

### Visual alarms

The frequency setting shall be from 500 to 1000Hz. The flash rate shall be from 30 to 130 flashes per minute. The flash rate shall be distinguishable from any other visual device. The visual alarms must be located so as to provide maximum visibility when operated. If there is any confusion the engineer must be contacted. The engineer's decision will be final. They shall be red in colour. Should the contractor be using a sounder/strobe other than the AST model, the contractor shall be responsible for the correct sizing of the cable.

### Cabling

All cabling shall be installed in accordance with SANS 1042. Where cabling is to be installed underground, armoured cabling is to be installed. Should a loop go underground a 4core cable is not to be used. It must consist of 2 armoured cables each containing 2 cores. The size of a cable core must be a minimum of 1.5m<sup>2</sup>.

Cable segregation must be observed, care must be taken not to locate fire detection cabling next to high voltage cables. It is compulsory for the contractor to confirm with the equipment manufacturer that the cable specified is suitable for the loop lengths and number of devices involved. Fire resistant cabling shall be used. FR 20 is unacceptable. All cabling is to be inside steel conduits. Cable of 2cl.0mm may be used where it can be shown not to exceed its specification.

All cable inside buildings must be housed in conduit to provide a neat appearance.

### The installation

The installation shall be installed, tested and commissioned in accordance with SANS 10139. The installing technician will sign off his portion of the work. Upon completion of the contract the installing company undertakes to service the system for 3 quarterly services and 1 complete service.

### Fire Escape Doors

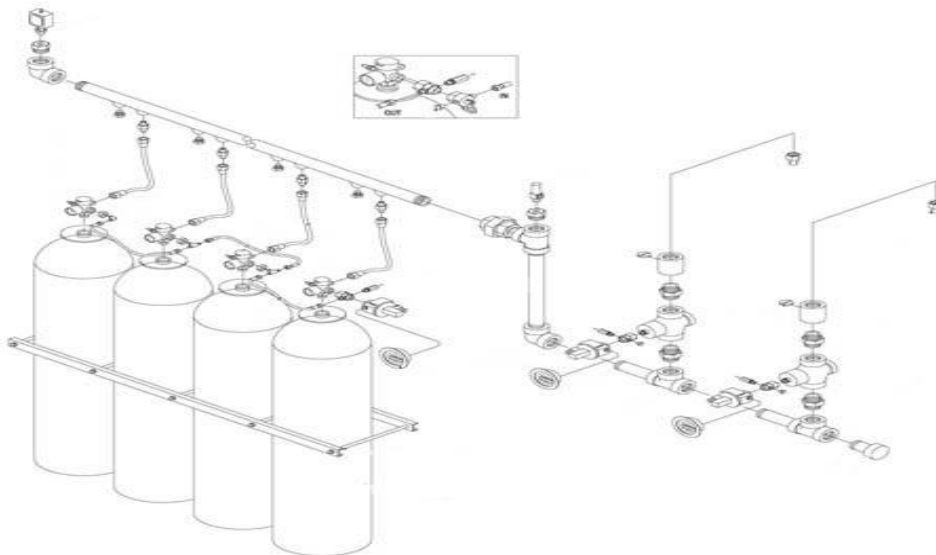
All doors in the fire escape route shall be linked to the fire detection and sprinkler system. If any one of the mentioned system is actuated the fire escape doors shall remain in an open position and also have a fail open mechanism.

## **4.6 FIRE GAS SUPPRESSION SYSTEM**

In addition to the fire detection system being installed in the offices, a gas fire suppression system will be installed in the archives room, server room and strong room. FM 200 Suppression Gas and wall mounted cylinders complete

FM 200 Suppression Gas is a low pressure, nontoxic, non-corrosive and environment friendly gas. The installation of the Gas Fire Suppression system will be done to the satisfaction of the engineer.

The gas suppression system is linked to the optical smoke detector in the archives room which in turn activates the system. A conventional gas control panel shuts off the HVAC system upon actuation by the smoke detector which is also linked to the main control panel in the control room and opens up the 8 port nozzles in the archives room. The installation of the Gas Fire Suppression system will be done by a certified company with an excellent track record. Steel pipework shall be used. Refer to drawing for further detail. The gas change over panel shall be robust and the engineer shall inspect and approve it before being procured.



## 4.7 AIR-CONDITIONING SYSTEMS AND ARTIFICIAL VENTILATION SYSTEMS

An air-conditioning system or artificial ventilation system in a building shall be so designed as to prevent the distribution of products of combustion in the event of a fire in such building. An air shaft or duct used for air conditioning or artificial ventilation, including any internal or external insulation thereto and any flexible joint, shall be constructed of non-combustible material in accordance with SANS 10177-5, provided that

1. Combustible flexible connections may be used where the length of such connection does not exceed 1,5 m and such connection does not pass through any wall or floor which is required to have a specified fire resistance, and
2. Combustible flexible joints not more than 200 mm in length can be used in any plant room where such plant room is equipped with a smoke detection system, designed, installed and maintained by competent persons in accordance with SANS 10139.

A fire damper, which shall comply with the requirements of SANS 193, shall be provided in an air duct in any position where such duct passes through a required division or occupancy-separating element or any element required for the enclosure of an emergency route, or passes into any duct.

Any such fire damper shall

- a) Close automatically upon the operation of a sensing device activated by the presence of smoke or heat in the air duct,
- b) Be provided with access, the position of which shall be clearly marked, for inspection, maintenance and resetting of the mechanism,
- c) Be so installed as to remain in position at the protected opening even if the air duct distorts during a fire,
- d) Be provided with an overriding fusible or resettable link, and
- e) Have the same fire resistance rating as the elements of construction through which it passes.

A plenum, the supports of which shall be non-combustible (excluding return-air intakes), that forms part of an air-conditioning system or artificial ventilation system, shall be constructed of non-combustible material or material which has been evaluated in accordance with SANS 10177-5.

Where the sum of the areas of all air supply and return-air intake grilles in such plenum is not more than 5 % of the area of surface of such plenum exposed to the room below and no individual grille has an overall area of more than 0,09 m<sup>2</sup>, such grilles may be of combustible material.

No plenum system shall be used for storage or for the accommodation of persons.

## **4.8 FIRE WATER**

### **FIRE FIGHTING EQUIPMENT**

This will be provided with the combined domestic and fire water supply reservoir.

The minimum water pressure for firefighting will be designed and calculated on 300 kPa. The reason for this figure of 300kPa is that this is the only maximum pressure the municipal can guarantee.

A non-return valve will be installed in each exclusive hose reel supply pipe to prevent hose reel water from returning to the domestic supply. Although it is known that the municipal water pressure in the Greater Metropolitan area is adequate for fire installations, we are required to base our calculations on an available pressure of 300 kPa.

All fire and domestic water tanks shall be constructed as indicated on the drawings complete with shutoff valves, non-return valves, flow meters, and pressure switches and strainers as indicated in the drawings. The water Tanks shall be Sectional steel plates to be used 1.2mx1.2m with thickness of 5mm. Partitioned inside separating fire water and domestic water With aluminium ladder.

### **CONCISE EXPLANATION OF SANS 10400 OF 2011 - PART A**

A19 - The new regulation under this section is clear and well defined. The emphasis of the responsibilities on the professional engineers or competent persons are now more intense and require us to be more involved with the design of a project relating to any fire aspects. This is not a guide line, it is the law and it must be adhered to as we will be held responsible for any shortfalls in a design.

The new SANS 10400 of 2011 states that when a rational assessment (rational fire design) is done and submitted to the local authority, the person must either be registered or be a competent person.

### **Competent Person**

A competent person is qualified by virtue of his education, training, experience and contextual knowledge. Such person is therefore competent to make a determination regarding the performance of a building or part thereof in relation to a functional regulation or to undertake such duties as may be assigned to him in terms of the National Building Regulations.

#### Rational Assessment

The definition used in the new SANS 10400 of 2011 refers:

Assessment by a competent person of the adequacy of the performance of a solution in relation to requirements including as necessary, a process of reasoning, calculation and consideration of accepted analytical principles, based on a combination of deductions from available information, research and data, appropriate testing and service experience.

#### Rational Design

The definition used in the new SANS 10400 of 2011 refers:

Design by a competent person involving a process of reasoning and calculation and which may include a design based on the use of a standard or other suitable document.

The appointment of a competent person to do a rational assessment or rational design in accordance to the prescribed framework must be done by the client.

#### Category 1 Building

Plans prepared in respect of category 1 buildings will ensure that all of Part T – Fire Protection must be adhered to, and to be done and prepared by a competent person.

#### Appointment of a Competent Person [A19]

1. In terms of these Regulations and in respect of the erection of any building –

(a) A rational design or rational assessment is required in terms of:

(i) Regulation AZ4(1)(b)(ii)

(1) The requirements of the National Building Regulations shall be complied with by -

(b) Satisfying all functional regulation by -

- (ii) Reliably demonstrating, or predicting with certainty, to the satisfaction of the appropriate Local Authority, that an adopted building solution has an equivalent or superior performance to a solution that complies with the requirements of the relevant part of SANS 10400.

The owner of any building who is required by these regulations to appoint an approved competent person, shall state in terms of the appointment of the competent person that such person undertakes all duties and responsibilities required by these regulations. The competent person shall declare his or hers acceptance of such responsibilities as contained in Form 2 of A19.

Where in a building any element of structural, fire protection, ventilation or any aspect relating to a fire installation, is required to be subjected to a rational assessment or rational design. The person appointed to be an approved competent person shall assume the responsibilities of satisfying the functional Regulation to that particular system in its entirety.

Where an approved competent person is required in terms of sub-regulation (7) to assume responsibilities for the system in its entirety and where parts of the system are to be undertaken by another competent person, then the approved competent person shall assume overall responsibilities of the entire design, and shall ensure that:

- The rational assessment or rational design is to be done in accordance with the new SANS 10400 of 2011 – Fire Protection/Installation Part T.

It is the responsibility of the Local Authority (Fire Department) to ensure that the person submitting the rational assessment or rational design is deemed to be a competent person as stipulated in SANS 10400 of 2011 part A19.

On completion of the structural fire protection or fire installation system for which an approved competent person appointed in terms of sub-regulation (1) & (2) such competent person shall complete and submit to the local authority a fully completed Form 4 as contained in SANS 10400-A in respect of each system for which such person has accepted responsibilities in terms of 14(2A) of Act 103.

**SPECIFICATION FOR THE  
WATER, PIPING AND DRAINAGE  
  
FOR  
*RENNOVATION TO TAUNG HOTEL AND CONVENTION CENTRE.***

*JUNE 2023*

# **Technical** **Specifications**

For The

Installation of Water, Piping and Drainage

For

TAUNG HOTEL AND CONVENTION  
CENTRE



## 1 SCOPE

This specification covers the material, installation and testing requirements for copper and steel pipe installations for the conveyance of water within the following working temperature and pressure limits:

|            | Temperature max<br>(degreesC) | pressure max<br>(kPa) |
|------------|-------------------------------|-----------------------|
| Cold water | 65                            | 1000                  |
| Hot water  | 100                           | 1000                  |

## 2 REFERENCED STANDARDS

The latest issue, (including all amendments) of the following standards are referred to in this specification.

|           |   |  |
|-----------|---|--|
| SABS 62   | : | Steel pipes and pipe fittings up to 150 mm nominal bore          |
| SABS 162  | : | Red lead based primers for structural steel                      |
| SABS 460  | : | Copper tubes for domestic plumbing services                      |
| SABS 509  | : | Malleable cast-iron pipe fittings                                |
| SABS 630  | : | Decorative high gloss enamel paint for interior and exterior use |
| SABS 679  | : | Zinc chromate primers for steel                                  |
| SABS 681  | : | Undercoats for paints  |
| SABS 719  | : | Electric welded low carbon steel pipes                           |
| SABS 763  | : | Hot-dip (galvanized) zinc coatings                               |
| SABS 912  | : | Calcium plumbate primers   |
| SABS 1109 | : | ISO pipe threads for pipes and fittings                          |
| SABS 1123 | : | Steel pipe flanges   |
| SABS 1217 | : | Painted and powder coated steel pipes                            |
| BS 534    | : | Steel pipes and specials for water and sewage                    |

|                |   |   |
|----------------|---|---|
| BS 1460        | : | Steel butt-welding pipe fittings for the petroleum industry         |
| BS 1780        | : | Bourdon tube pressure and vacuum gauges                             |
| BS 5235        | : | Dial-type expansion thermometers                                    |
| BS 6759 Part 1 | : | Safety valves for steam and hot water                               |
| BS 6759 Part 2 | : | Safety valves for compressed air or inert gases                     |
| SIS 05 59 00   | : | Pictorial surface preparation standards for painting steel surfaces |

### **3 MATERIALS**

#### **3.1 Selection of materials**

3.1.1 All equipment of one type installed under one contract shall be of the same manufacture, supported by a well-established South African organization. Other makes may only be used with the Engineer's written permission.

3.1.2 The SI system of units shall be used throughout in all documentation and for the calibration of equipment supplied.

#### **3.2 Pipes**

3.2.1 Pipes up to 150 NB shall comply with SABS 62 and pipes over 150 NB with SABS 719.

3.2.2 Unless otherwise specified, pipes up to 150 NB shall be galvanized inside and outside. Pipes over 150 NB shall be uncoated unless a coating is specified.

3.2.3 Screw threads shall comply with SABS 1109

#### **3.3 Fittings**

3.3.1 All fittings up to 150 NB shall comply with SABS 509 and fittings larger than 150 NB with BS 534.

3.3.2 Unless otherwise specified, fittings up to 150 NB shall be galvanized inside and outside. Fittings over 150 NB shall be uncoated unless a coating is specified.

3.3.3 Screw threads shall comply with SABS 1109.

### **3.4 Flanges**

3.4.1 Flanges shall comply with SABS 1123 and shall be of the type and rating specified.

3.4.2 Flanges shall have a raised face.

3.4.3 Unless otherwise specified, flanges shall be uncoated.

### **3.5 Gaskets**

Unless otherwise specified gaskets shall be 1,5 mm thick, full face, compressed asbestos composition and shall be suitable for use with SABS 1123 flanges.

### **3.6 Galvanizing**

Galvanizing shall comply with SABS 763 for general application.

### **3.7 Pressure and vacuum gauges**

3.7.1 Gauges shall be of the heavy duty, Bourdon tube type with adjustable pointer and span.

3.7.2 Gauges shall comply with BS 1780.

3.7.3 Gauge dials shall have a diameter of at least 75 mm.

3.7.4 Gauges for hot water shall be provided with a gauge cock and syphon tube.

3.7.5 Gauges shall be calibrated in SI units to a maximum reading of between 50 % and 75 % higher than the system working pressure or vacuum.

3.7.6 Gauges shall have an accuracy of at least 1 % of reading for the upper 80 % of the range.

3.7.7 A red line shall be provided on the dial at the maximum system pressure or vacuum.

### **3.8 Flow Meters**

3.8.1 Flow meters shall be of the orifice plate type fitted between flanges.

3.8.2 The complete flow meter, including flanges, shall be of stainless steel and shall be supplied by a reputable manufacturer.

3.8.3 Corner pressure tapplings or flange tapplings shall be used, as specified.

3.8.4 The take-off connections shall have built-in check valves.

3.8.5 Flow meters shall be suitable for the system working pressure and temperature.

3.8.6 The position of flow meter orifice plates shall be as indicated on the diagrams.

3.8.7 A differential pressure gauge, complete with tubes, shut-off cocks, air vents and a carrying case shall be supplied for the flow meters. Graphs or charts on which the flow quantities are plotted against pressure differential across the flow meter, shall be supplied. Alternatively, and if so specified in the Project Specification, the differential pressure gauge shall be matched to the orifice plates and shall give a direct flow reading.

3.8.8 If so specified, the differential pressure gauge shall have a set of 5A, 24V changeover contacts which will open/close at a selected flow.

### **3.9 Thermometers and thermowells**

3.9.1 Thermometers shall be of the straight glass type or of the dial type, as specified.

3.9.2 Glass thermometers shall have bronze casings and a scale length of at least 170 mm.

3.9.3 Dial thermometers shall be of the bottom or rear connection type as specified, shall have a diameter of at least 75 mm and shall comply with BS 5235.

3.9.4 The casing material, type of fixing required and, in the case of remote reading thermometers, the capillary length, shall be as specified.

3.9.5 Thermometers shall be calibrated in degrees C, and shall have an accuracy of at least 1 % of reading for the upper 80% of the range. The scale range shall be suitable for the particular application.

3.9.6 Thermometers shall be installed in such a position that they are easily readable.

3.9.7 Thermometers shall be installed in loose thermo wells that screw into the pipe by means of SABS 1109 threads.

The thermowell shall project into the pipe for at least 65% of the pipe diameter for pipes up to 80 NB and at least 50 mm for pipes over 80 NB.

3.9.8 Pipes up to 50 NB shall be enlarged at the points where the wells are installed.

3.9.9 Wells shall be oil-filled and shall be installed vertical or at an angle.

### **3.10 Calibrated balancing valves**

3.10.1 Calibrated balancing valves shall either be of the plug cock type with bronze or cast iron valve bodies, bronze discs and internal seals. or of the globe type with bronze or cast iron valve bodies.

3.10.2 They shall have screwed ends for nominal sizes up to 50 NB and flanged ends for sizes over 50 NB.

3.10.3 Valves shall be provided with take-off connections to which a pressure differential gauge can be coupled and provided with check valves in the take-offs.

3.10.4 A valve position indicator shall form an integral part of the valves.

3.10.5 Portable differential pressure gauges with connections to match those on the valves shall be supplied with the valves, complete with all necessary tubing, shut-off and vent cocks and carrying cases. At least one differential pressure gauge shall be supplied for each project and one additional gauge for every 20 valves after the first 30 valves.

3.10.6 Graphs and charts showing the flow quantities against valve openings and pressure differential across the valves shall be supplied for each portable pressure differential gauge.

### **3.11 Pressure reducing valves**

3.11.1 Pressure reducing valves shall be selected in accordance with the manufacturer's recommendations for the specified inlet pressures and shall be designed to give a constant downstream pressure with varying upstream pressure.

3.11.2 Pressure reducing valves up to 32 NB for steam, air or water shall have bronze bodies, stainless steel working parts and built-in stainless steel strainers. Valves shall be direct acting and shall be suitable for the system pressure and fluid characteristics.

3.11.3 Pressure reducing valves of 40 NB and over for steam, air or water shall have cast steel or malleable iron valve bodies, stainless steel working parts and built-in stainless steel strainers. Valves shall be pilot operated.

3.11.4 See 4.1.1.1(d) and 4.1.1.2(c) for connections (screwed or flanged) of pressure reducing valves to piping.

### **3.12 Safety relief valves**

3.12.1 Safety relief valves for hot water shall comply with BS 6759, Part 1.

3.12.2 Safety relief valves for compressed air shall comply with BS 6759, Part 2.

3.12.3 Safety relief valves shall be of the spring loaded type with side outlet and screwed connections. Valve bodies shall be of bronze or cast iron and working parts and trim or bronze.

3.12.4 The outlet of safety relief valves for hot water and steam shall be piped to a safe position.

### **3.13 Strainers**

3.13.1 Strainers shall be of the angle or Y-type.

3.13.2 Strainers for cold water shall have bronze or cast steel bodies and bronze or stainless steel screens.

3.13.3 Strainers for hot water shall have cast steel bodies and stainless steel screens.

3.13.4 Screens shall be perforated as follows:

| Strainer size (mm) | Perforation dia. (mm) |
|--------------------|-----------------------|
| 10 - 50 NB         | 1,0 max               |
| 65 - 150 NB        | 1,5 max               |
| 200 NB             | and over 2,0 max      |

3.13.5 The screen perforation area shall be at least 3 times the pipe area served.

## **4 GENERAL INSTALLATION REQUIREMENTS**

### **4.1 General**

#### **4.1.1 Joints**

##### **4.1.1.1 Ungalvanised pipes**

Unless otherwise specified

- (a) Joints in pipes of all sizes may be welded
- (b) Joints in pipes up to 80 NB may be screwed
- (c) Joints in pipes larger than 80 NB shall be welded or shall have welded flanges
- (d) pipes connected to components (such as valves and pumps) may be screwed for sizes up to 50 NB but shall be flanged for sizes over 50 NB

##### **4.1.1.2 Galvanized pipes**

Unless otherwise specified

- (a) Joints in pipes up to 80 NB may be screwed.
  - (b) Joints in pipes larger than 80 NB shall have welded flanges.
  - (c) Pipes connected to components may be screwed for sizes up to 50 NB but shall be flanged for sizes larger than 50 NB
- Pipes with welded flanges shall be galvanized after welding.

#### **4.1.2 Alignment**

The difference in the bores of abutting pipes and the misalignment of abutting pipes shall not exceed 0,8 mm for pipes up to 40 NB and 1,5 mm for pipes larger than 40 NB.

#### **4.1.3 Sleeves**

Sleeves of at least 0,15 mm thick galvanized sheet metal shall be provided where pipes pass through walls or partitions. A gap of 10 mm shall be left between the pipes and the sleeve.



#### **4.1.4 Cleanliness**

Pipes and components used shall be clean and rust-free. Pipes shall be blown through before connection to terminal points.

#### **4.1.5 Flange bolting**

Flanges shall be bolted together with the correct size bolts and nuts (as specified in SABS 1123) and packings. Bolts used on the same flange shall be of the same length and shall protrude between one and five threads beyond the nuts.

### **4.2 Provision for expansion**

4.2.1 Pipes shall be installed in such a way that undue stresses are not caused on flanges or equipment due to thermal effects, the weight of the pipe or its contents, misalignment or any other cause.

4.2.2 Where pipe loops or changes in direction of piping cannot be employed to absorb the expansion and contraction, expansion joints shall be provided.

4.2.3 Guides shall be provided on both sides of all expansion joints and loops and in additional positions recommended by the expansion joint supplier.

4.2.4 Expansion joints, connecting piping, anchors and guides shall comply with the manufacturer's requirements.

### 4.3 Hangers

4.3.1 The maximum horizontal support spacing and hanger rod diameters shall be as follows:

| Nominal pipe size mm | Hanger rod dia. mm | Other pipes Span(m) |
|----------------------|--------------------|---------------------|
| 15 - 32              | 10                 | 2,5                 |
| 40 - 65              | 10                 | 3,0                 |
| 80 - 100             | 12                 | 3,5                 |
| 125 - 150            | 16                 | 4,0                 |
| 200 - 300            | 22                 | 5,0                 |
| 350 - 500            | 25                 | 6,0                 |

4.3.2 Hangers shall be provided at a maximum distance of 1 m from each pipe fitting.

4.3.3 In plant rooms spring hanger mountings shall be used for vibration damping. The hangers shall be selected and installed in accordance with the supplier's recommendations.

4.3.4 Hangers shall be constructed to allow for the expansion and contraction of pipes, except where an anchor point is used.

4.3.5 Hangers shall be adjustable in height to set the pipe gradient.

4.3.6 Horizontal and vertical pipe guides shall be installed where required to control thermal movement, to prevent undue stresses on components and to prevent overloading of hangers and supports.

4.3.7 All flexibly supported piping shall be sway-braced without interfering with proper thermal movement of the piping.

4.3.8 Before manufacture or installation, details shall be submitted of anchors, supports, expansion loops, guides and load calculations and a statement that the work has been reviewed by the manufacturers of such equipment.

#### **4.4 Connections to vibrating equipment**

4.4.1 Stainless steel, bellows type, or rubber flexible connectors shall be used for connections to vibrating equipment or where shown on the drawings including pumps.

4.4.2 All flexible connectors shall have flanged joints and be designed for 1000 kPa or 1,5 times system working pressure, whichever is the higher value.

4.4.3 Rubber-isolated tension members shall be provided to prevent excessive elongation.

#### **4.5 Welding**

Welding shall comply with the requirements of Section 43 of this General Specification.

#### **4.6 Coatings**

If so specified pipes shall be coated as follows:

4.6.1 Pipes other than hot water pipe

4.6.1.1 External protection

Above ground

(a) Galvanizing

Pipes shall be galvanized to SABS 763 for general applications. One coat of red lead to SABS 312, Type II, grade 2 shall be applied to exposed pipe threads after all traces of grease or cutting oils had been removed by the application of a solvent cleaner.

(b) Painting

Uncoated pipes shall be treated as follows:

Surface preparation

The surfaces shall be wire brushed to remove loose rust and loose mill scale to a St 3 finish to Swedish Standard SIS 05 59 00-1967.

Priming

One coat zinc chromate primer to SABS 679, Type I shall be applied to a dry film thickness of 30-40  $\mu\text{m}$ .

Undercoat

One coat of universal undercoat to SABS 681, Type II shall be applied to a dry film thickness of 25-35  $\mu\text{m}$ .

Finishing

One coat of high gloss enamel to SABS 630 in the specified colour shall be applied to a dry film thickness of 25-35  $\mu\text{m}$ . The total dry film thickness for the coating system shall not be less than 90  $\mu\text{m}$ .

### (c) Galvanizing and painting

If the Project Specification requires galvanized pipes to be painted (for decorative, identification, or other purposes) the following procedure shall be followed:

- Ensure that the galvanizing is clean and that all traces of corrosion preventative (protection against white rust) have been removed.
- Apply one coat of calcium plumbate primer to SABS 912 to a dry film thickness of 25 to 35  $\mu\text{m}$ .
- Apply an undercoat and finishing coat as specified in b above.

### Underground

#### (a) Pipes up to 80 NB

Wrap the pipe with Denso (or similar) tape in accordance with the following procedure and the supplier's specification.

### Surface preparation

Clean the pipe by brushing or scraping to remove all foreign matter.

### Priming

Apply Denso priming solution over the entire surface by brush or spray (Spread rate approximately 9  $\text{m}^2/\text{l}$ ).

### Tape application

- Use as wide a width of tape as practical.
- Wrap the tape in spirals with a 13 mm overlap.
- Apply sufficient tension to give constant adherence, but do not stretch the tape.
- As application proceeds, press out all folds and air pockets.
- Ensure that overlaps are completely sealed.

On irregular surfaces use Denso Mastic to present an even contour for the subsequent application of the tape. The tape must not bridge a gap but should be in intimate contact with the metal or mastic.

(b) Pipes larger than 80 NB

Remove any oil or grease from the surface to be treated with rags soaked in "Carboline Thinner No 2, or Toulon or a similar degreasing agent.

Abrasive blast clean the surface to SA 2,5 of SIS 05 59 00:1967.

Apply 3 coats of "Carbomastic 200" (or equivalent) to the surface to an average total dry film thickness of at least 400 µm and a spot thickness of not less than 350 µm.

The mixing of components and application shall be strictly in accordance with the manufacturer's instructions. Where existing coats have been damaged during installation, all 3 coats shall be applied.

#### 4.6.1.2 Internal protection

(a) Galvanizing

Pipes shall be galvanized to SABS 763 for general applications. If so specified electrical resistance welded pipes shall be normalized before galvanizing.

(b) Epoxy coating

Apply 3 coats of Copon EP 2 300 (or similar) epoxy to a total dry film thickness of at least 225 µm. The material and method of application shall comply with SABS 1217 for type JYA 1 or JYA 2 coatings, as relevant.

## **5 SPECIFIC SYSTEM REQUIREMENTS**

### **5.1 Cold water systems**

#### **5.1.1 Pipe class**

Pipes shall be of the medium class.

#### **5.1.2 Packings**

Flange packings shall be of 3 mm thick reinforced rubber insertion.

#### **5.1.3 Screwed joints**

Screwed joints shall be made with PTFE tape or a combination of hemp and thread compound approved by the Engineer. Sealing compounds shall only be applied to external threads.

#### **5.1.4 Insulation**

Hot water pipes shall be insulated as specified in this General Specification.

#### **5.1.5 Valves**

##### **5.1.5.1 Valve materials**

Valve materials shall be suitable for the particular application.

##### **5.1.5.2 Gate valves**

(a) Gate valves shall only be used as isolating or shut-off valves.

(b) Gate valves up to 50 NB shall have bronze valve bodies with screwed bonnets, non-rising copper alloy stems and solid tapered wedge type discs of bronze.

(c) Gate valves of 65 NB and over shall have cast iron valve bodies. Bonnets and yokes shall be bolted. Rising brass or bronze stems with outside screw and yoke shall be utilized. Wedge discs shall be solid cast iron with bronze seat rings on body and disc. Trim shall be bronze.

#### 5.1.5.3 Globe and angle valves

(a) Globe valves shall be used for throttling or balancing purposes.

(b) Globe and angle valves up to 50 NB shall have bronze bodies with screwed bonnets. Stems shall be rising with inside screws and shall be of copper alloy. Trim shall be bronze.

(c) Globe and angle valves over 50 NB shall have cast iron bodies, bolted bonnets and yokes, rising bronze stems with outside screw and yoke, replaceable bronze seats, replaceable discs and bronze trim.

#### 5.1.5.4 Butterfly valves

(a) Butterfly valves shall only be used for throttling or balancing purposes for sizes over 50 NB.

(b) They shall have cast iron bodies with a suitable lining inside. Lever operation is acceptable but gearbox operation shall be provided for sizes above 200 NB operating at pressures above 300 kPa. Both lever and gearbox operated valves shall have position indication and a locking mechanism.

#### 5.1.5.5 Diaphragm valves

(a) Unless otherwise specified, diaphragm valves shall be used as shut-off valves only.

(b) Bodies may be of cast iron.

#### 5.1.5.6 Ball valves

(a) Ball valves may be of the full bore or reduced bore types.



- (b) The valve body, end cap and stem shall be of brass and the ball of chrome-plated brass or stainless steel.
- (c) The seats shall be of teflon.

#### 5.1.5.7 Plug cocks

- (a) Plug cocks shall be used for balancing purposes.
- (b) Plug cocks up to 50 NB shall have bronze bodies and plugs and square heads.
- (c) Plug cocks of 65 NB and over shall have cast iron bodies, bronze plugs and square heads.

#### 5.1.5.8 Non-return valves

Non-return valves shall be one of the following types:

- (a) The non-slam, spring loaded, completely guided or swing flap type suitable for horizontal or vertical installation. Non-return valves shall have cast iron or steel bodies. The working parts shall be of stainless steel or bronze with non-metallic seats.
- (b) The perforated cone and resilient, conical diaphragm type. They shall be flange mounted (all sizes). The cone shall be of stainless steel and the diaphragm shall be suitable for the system fluid.

#### 5.1.5 Float valves

- (a) Float valves up to 50 NB shall have bronze bodies and working parts. They shall be capable of closing against the system pressure.
- (b) Float valves larger than 50 NB shall have cast iron bodies and bronze seat rings and shall be fitted with single or twin ball floats.
- (c) Ball floats shall be of copper or polystyrene.

### **5.1.6 Flow meters**

Flow meters shall comply with Section 3.8.

## **5.2 Hot water systems**

### **5.2.1 Pipe class**

Pipes shall be of the heavy class copper.

### **5.2.2 Coatings**

Pipes and fittings shall be Ungalvanised.

### **5.2.3 Valves**

#### **5.2.3.1 Valve materials**

Valve materials shall be suitable for the particular application.

#### **5.2.3.2 Gate valves**

(a) Gate valves shall be used as isolating or shut-off valves only.

(b) Gate valves up to 50 NB shall have bronze valve bodies with union bonnets, rising copper alloy stems with inside screw, nickel alloy or solid bronze wedge discs and bronze or stainless steel seats.

(c) Gate valves of 65 NB and over shall have SG cast iron or cast steel valve bodies, bolted bonnets and yokes, rising stainless steel or bronze stems with outside screw and yoke, solid SG cast iron or cast steel wedge with replaceable stainless steel or bronze seats and discs.

### **5.2.3.3 Globe and angle valves**

- (a) Globe valves shall be used for throttling or balancing purposes.
- (b) Globe and angle valves up to 50 NB shall have bronze, SG cast iron, forged or cast steel bodies with union bonnets, rising stems and copper alloy, replaceable bronze or stainless steel discs and body seats.
- (c) Globe and angle valves of 65 NB and over shall have SG cast iron or cast steel bodies with rising stems of stainless steel or bronze with outside screw and yoke, bolted bonnet and yoke, stainless steel or bronze trim, and replaceable stainless steel or bronze discs and seats.

### **5.2.3.4 Ball valves**

- (a) Ball valves may be of the full bore or reduced bore types.
- (b) The valve body and end cap shall be of forged brass and the stem or brass.
- (c) The ball shall be of ASTM 304 stainless steel.
- (d) The seat shall be of teflon.

### **5.2.3.5 Non-return valves**

- (a) Non-return valves shall be of the non-slam type.
- (b) Non-return valves up to 50 NB shall have forged steel or bronze valve bodies.
- (c) Non-return valves of 65 NB and over shall have cast steel valve bodies. Working parts shall be spring loaded and completely guided and shall be of stainless steel. Elastic seats shall be suitable for the temperature and application. Valves shall be suitable for horizontal installation or vertical installation with flow upwards. Valves may also be of the double swing flap type with spring loading on the swing plates. Springs and swing plates shall be of stainless steel.
- (d) The stainless steel cone and diaphragm type non-return valves are not acceptable.

### **5.3 Condenser, drain and soft water systems**

5.3.1 Pipes shall be of the heavy class.

5.3.2 Flange packings shall be of a material and thickness approved by the Engineer.

5.3.3 Screwed joints shall be made by means of teflon tape or a combination of hemp and a compound approved by the Engineer.

5.3.4 Valves shall comply with the requirements of Clause 5.2.3.

#### **5.4.1 Rating**

Pipes and fittings shall be suitable for the pressure and temperature specified and shall be Ungalvanised.

#### **5.4.2 Valves**

Valves shall comply with Clause 5.1.5. Globe and angle valves up to 50 NB shall have bronze seal rings and replaceable composition or bronze discs.

#### **5.4.3 Reducers**

Where the size of horizontal piping changes, eccentric reducers shall be used with the straight side at the bottom.

#### **5.4.4 Drainage**

5.6.4.1 Pipes shall be installed with a fall of at least 1:100 in the direction of flow.

5.6.4.2 A drain point shall be provided at least every 30 m and at all low points in the system.

5.6.4.3 Each drain point shall be fitted with a float type air trap, preceded by a strainer and shut-off valve.

5.6.4.4 Water released by the trap shall be piped to a suitable drain point.

5.6.4.5 Branch pipes shall be taken off the tops of main lines.

#### **5.4.5 Water separators**

Water separators shall have cast steel bodies.

### **6 TESTING**

6.1 Pressure systems shall be tested hydrostatically to a pressure of 1 000 kPa or 1,5 times the design pressure whichever is the higher value.

6.2 The Contractor shall notify the Engineer in writing at least seven working days prior to the test.

6.3 Vacuum systems shall be tested as in 6.1 or at a pressure of 3 kPa (abs), as specified.

6.4 The system may be tested as a whole or in sections, as long as all the pipes, connections and components are subjected to the test pressure.

6.5 Unless otherwise specified and except for testing under vacuum, the testing medium shall be water. If, for practical reasons, it is not allowable to wet the pipes, nitrogen or air shall be used at a pressure of 1,1 times the design pressure.

6.6 Tests shall be conducted before painting of the pipes or the application of insulation.

6.7 All equipment required for the tests shall be supplied by the Contractor.

6.8 Pressure gauges used to verify the pressure shall have an accuracy of at least 1,0 % of reading. A calibration certificate issued by an authority acceptable to the Engineer shall be submitted on request.

6.9 The test pressure shall be maintained for at least 30 minutes during which period there shall not be any leaks and/or a noticeable drop in pressure on the pressure gauge.

6.10 Leaks in screwed joints shall be corrected by remaking the joints. Leaks in welded joints shall be corrected by cutting out the defect and rewelding.

6.11 The Engineer will certify acceptance of all tests. Such certification does not in any way affect the responsibilities of the Contractor.

## **7 COLOUR CODING**

If so specified the contents of pipes shall be identified by means of colour coding in accordance with this General Specification.

## **8 Storage Tanks**

### **8.1 Cold and hot water Supply**

The Hot and Cold Water installation design is to ensure adequate and efficient reticulation of domestic water supplies to the building. Storage tank is used for both the combined purposes of domestic water and fire water.

#### **8.1.2 Hot water**

According to SANS 204:2011 Energy efficiency in buildings minimum of 50 % by volume of the annual average hot water heating requirement shall be provided by means other than electrical resistance heating, including, but not limited to, solar heating, heat pumps, heat recovery from other systems or processes. Heat pumps shall be used for Tuang Hotel and Convention centre.

#### **8.1.3 Storage tanks details**

The storage tank fulfils the purpose of attenuation of peaks in the water supply system and also provides an emergency supply during mains failure.

All Storage tanks shall be

- watertight and vermin proof,
- properly covered and ventilated,
- Sized to make provision for the usable capacity of a storage tank, which is the volume of water between the upper and lower operating water levels in the tank under normal operating conditions.

The following design guidelines to be used for tanks exceeding 2 000L in capacity

- An Access cover has been provided with a minimum diameter of 600mm at the top of the sectional 30m<sup>3</sup> tank. The design of the access cover shall open outside and be so that it cannot be left in an opened position unattended. This means no single person can do maintenance to the sectional steel tank hence at least 2 persons should be present in the event that the other is cleaning/ maintaining the inside of the tank.
- The access opening shall be covered by either a screwed-on cover or a tightly fitting lid that is hinged and has an overlapping rim of depth at least 40 mm.
- A sampling tap shall be installed at a height of 100mm above the domestic water line in accordance with SANS 10252-1

#### **8.1.4 Materials, pipes, fittings, components and fixtures**

The following factors were considered for the materials, components, fittings and fixtures to be used

- effect on water quality
- internal and external corrosion
- compatibility of different materials
- aging, fatigue and temperature effects
- availability
- serviceability

All materials, components, fittings and fixtures in every part of the water installation shall withstand, without damage or deterioration, sustained temperatures of

- Up to 40 °C in the case of cold water installations, and
- Up to 60 °C and occasionally up to 100 °C in the case of hot water installations (in order to allow for malfunctions of heated water fittings or components) or to allow for periodic high temperature flushing as part of Legionella control regimes.

Hot water storage containers to be of protected steel. Since a backup element of 6KW is used in the water storage tank, the risk of corrosion in water heaters can be reduced by cathodic

protection. This is achieved by the immersion of a sacrificial anode consisting of magnesium in the tank. As high temperatures promote rapid anode consumption and routine replacement of the anode is important to prolong the life of the heater. The anode should be appropriately earthed to the tank and system. Therefore once the installation is done a procedure will be produced for this purpose.

All Steel storage tanks used to be protected by galvanizing that is they should be galvanised steel tanks.

### **Gate valves, ball valves and butterfly valves**

Valves that comply with the following criteria will be used

- copper alloy gate valves that comply with the requirements in SANS 776 and SANS 1857, as relevant for isolating purposes only, not for dispensing or flow control;
- ball valves that comply with the requirements in SANS 1056-3;
- butterfly valves that comply with the requirements in SANS 1849; and
- Cast iron valves shall comply with SANS 664-1 SANS 664-2, SANS 664-3, and SANS 665-1, SANS 665-2 and SANS 665-3.
- Pressure gauges that comply with the requirements in SANS 1062 shall be deemed to be acceptable.

These valves shall not be used to control the flow-rate of water as this could cause damage to the seats of the valves, which, in high pressure systems, could be of a serious nature.

### **Flexible connectors**

Flexible connectors shall comply with SANS 1808-5 and shall only be used for connecting to terminal fittings that have sufficient access for maintenance. They shall not be used in-line or for connecting to fixed water heating units.

### **Check non-return valves**

Check valves shall comply with SANS 1808-10. Swing type check valves with metal-to-metal seats shall not be used on hot and cold water systems in buildings.



### 8.1.5 Capacity of water storage tanks

Water feeding both the fire hose reels and the fire hydrants will be drawn for the same tank as the domestic water line but at different elevations.

Capacity of water storage tanks for fire-fighting purposes for a combined installation where provision is made for the storage of water where the storage tank serving the building shall be divided into two self-contained compartments or into two separate tanks.

#### Technical Requirements of Pumping systems

- All materials in contact with the water must be specified in the offer. The preferred materials are metals (stainless steel or Aluminium) Viton, PTFE or similar.
- The pumps must be fully lubricant free.
- All electrical equipment inside or around the pump must be protected following the IEC-79-10 standard for zone 2.
- The pumps shall have an electromagnetic compatibility complying with the Following standards:  
  
EN 50081-1, EN 50081-2 and EN 55011.

#### 4.2. Cleanliness Requirements

- All parts of the pump in contact with water should be cleaned and degreased before assembly, following a protocol comparable to the one given in the example bellow. The mounting of the pumps shall be made in clean conditions to avoid any contamination of the cleaned pieces. Tests of the pumps shall be made with a clean water or air (Nitrogen shall not be used).
- All hardware parts of pumps in contact with the gas should be at no stage of fabrication, assembly, packing or transport in contact with Si containing lubricant.
- Every bidder shall provide (together with the offer) test samples of all critical materials to be approved by the mechanical engineer before procuring the whole lot or/and installation.
- Mechanical engineer reserves the right to refuse offers

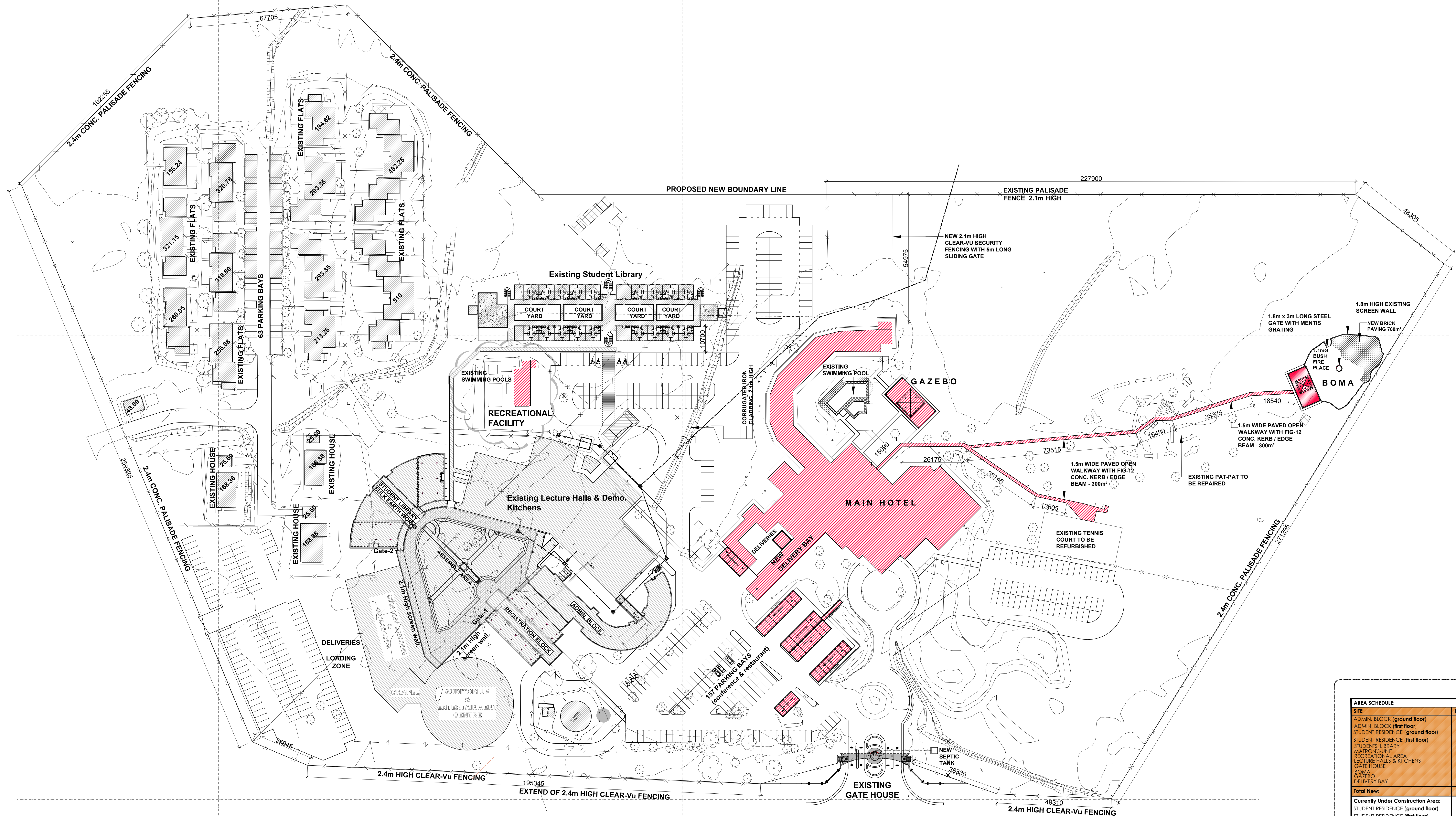
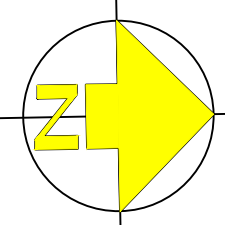
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# Drawings

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| DRAWINGS |  |            |
|----------|--|------------|
| ITEM NO. | DESCRIPTION  | APPLICABLE |
| 1        | Site Plan  | Y          |
| 2        | Demolition Plan                                      | Y          |
| 3        | Schedules and Finishes                               | Y          |
| 4        | Tiling Lay-out                                       | Y          |
| 5        | Ceiling Layout                                       | Y          |
| 6        | Ceiling Layout - Corridor                            | Y          |
| 7        | Boma, Gazebo, Delivery Bay and Recreational Facility | Y          |
| 8        | Door Schedule  | Y          |
| 9        | Window Schedule                                      | Y          |





**BUILDING LEGEND:**

NEW WORKS

EXISTING BUILDINGS

DESCRIPTION: **SITE PLAN**

SCALE: **1:500**

**NOTES:**

- GENERAL:**
  - 1.1 THIS DRAWING IS NOT TO BE SCALED. USE FIGURED DIMENSIONS ONLY. ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED AND VERIFIED BEFORE ANY WORK COMMENCES ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY. ALL LEVELS HEIGHTS OF FINISH, DEPTH OF EXCAVATIONS AND NUMBER OF STEPS TO BE FINALLY CHECKED BY CONTRACTOR ON SITE.
  - 1.2 THE SITE TO BE TREATED IN ACCORDANCE WITH SABS CODE OF PRACTICE NO. 0124-1977 WITH "SHELL ORBIT" THERMOPHILIC SOL POCORNER.
  - 1.3 TOP OF FOUNDATIONS TO BE A MINIMUM OF 300mm BELOW NATURAL GROUND LEVEL.
  - 1.4 BACKFILL TO ALL FOUNDATIONS TO BE WELL COMPACTED.
  - 1.5 TOP OF 75mm CONCRETE SURFACE BED TO BE MINIMUM OF 150mm ABOVE FINISH GROUND LEVEL.
  - 1.6 75mm THICK CONCRETE SURFACE BED TO BE ON "GUNPLAS" USB GREEN DAMP PROOF MEMBRANE ON SAND BRINDING ON WELL COMPACTED FILL.
  - 1.7 "GUNDLE" BRICK/GRP SABS SUBSIDED DPC 375kPaC. UNDER ALL WALLS, WINDOW CILLS AND CHANGES IN FLOOR LEVELS.
  - 1.8 STORM-WATER SHALL FLOW AWAY FROM THE BUILDINGS AND THE SITE.
  - 1.9 ELECTRICAL INSTALLATION SHALL BE ACCORDING TO ELECTRICAL ENGINEER'S SPECIFICATION.
  - 1.10 ALL BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITIES BUILDING BY-LAWS AND REGULATIONS.
- FOUNDATIONS:**
  - 2.1 ALL FOUNDATIONS, FOUNDATION WALLS, STRUCTURAL CONCRETE WORK AND SUB-SOIL STORM-WATER DRAINAGE TO CIVIL ENGINEER'S SPECIFICATIONS.
  - 2.2 ALL SOIL COMPACTION TO CIVIL ENGINEER'S SPECIFICATIONS.
  - 2.3 230 x 700mm CONCRETE FOUNDATIONS FOR 230mm BRICK WORK.
  - 2.4 300 x 100mm PAD FOUNDATIONS FOR 400 x 400mm BRICK PILLARS.
  - 2.5 ALL FOUNDATIONS TO BE REINFORCED AS REQUIRED BY ENGINEER.
- FLOORS:**
  - 3.1 MINIMUM 25mm CEMENT SCREED TO ALL FLOORS.
- WALLS:**
  - 4.1 230mm BRICK WALLS WITH WITH GUNDLE BRICK/GRP DPC.
  - 4.2 BRICK FORCE EVERY 4 COURSES AND EVERY COURSE FOR 2 COURSES OVER OPENINGS.
  - 4.3 ALL BRICK WORK MIN. 7MPa CLASS II.
  - 4.4 WINDOWS BUILT IN WITH GUNDLE BRICK/GRP DPC.
  - 4.5 ALL PAINTWORK TO COMPLY WITH MANUFACTURER'S SPECIFICATIONS WITH NECESSARY UNDERCOATS.
- ROOFS:**
  - 5.1 ROOF PITCH AS SHOWN.
  - 5.2 2.0mm GUP-GRK 700 SHEETING ON 50 x 75mm TIMBER PURLINS AT MIN. 2.1m c/c's. 152 x 38mm KING POST ON 152 x 38mm LAMINATED BATTENS ON 152 x 38mm WALL PLATE BED DOWN WITH GALV. HOOP IRON THREADED THROUGH 4 COURSES OF BRICK WORK.
  - 5.3 INSULATION MEMBRANE AS SHOWN.
  - 5.4 RHINOITE CEILING BOARDS ON 38 x 38mm TIMBER BRANDBERINGS AT 400mm c/c's FIXED TO TRUSSES AND 50mm COVERED CORNICES.
- DRAINAGE:**
  - 6.1 Ø100mm UPVC SEWER PIPE DRAIN WITH A MIN. FALL OF 1:60.
  - 6.2 Ø100mm OVER AT HEAD OF DRAIN PIPE AS SHOWN.
  - 6.3 RODDING EYES ARE TO BE LOCATED AT HEAD OF DRAIN, AT ALL CHANGES OF DIRECTION AND AT MAX. OF 30m INTERVALS.
  - 6.4 INSPECTION EYES ARE TO BE LOCATED AT ALL JUNCTIONS OF DRAIN AND TO HAVE MAILED COVERS AT GROUND LEVEL.
  - 6.5 DRAIN PIPES UNDER BUILDING TO BE PROTECTED AGAINST ANY LOAD.
  - 6.6 ALL WASTE PIPES UNDER FLOOR SLABS TO BE SLEEVED.
  - 6.7 ALL WASTE PIPES TO HAVE 60mm RESAL. BARS. ALL WASTE PIPES TO BE ACCESSIBLE OVER ENTIRE LENGTH FOR CLEANING AND REPAIRS.
  - 6.8 ALL SOIL FITTINGS WITH VERTICAL DISCHARGE GREATER THAN 1200mm TO HAVE ANTI-SIPHON VENT PIPES.
  - 6.9 RAIN WATER DOWN PIPES TO DISCHARGE A MIN. OF 2400mm FROM ANY OPEN GULLY.
  - 6.10 ALL DRAINAGE WORK TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITIES DRAINAGE BY-LAWS AND REGULATIONS.
- STAIRS:**
  - 7.1 ALL CONCRETE STAIRS TO BE: TREADS = 300mm RISES = 160mm
  - 7.2 ALL HANDRAIL / BALUSTRADES TO BE 1000mm HGT.

**FOR INFORMATION**

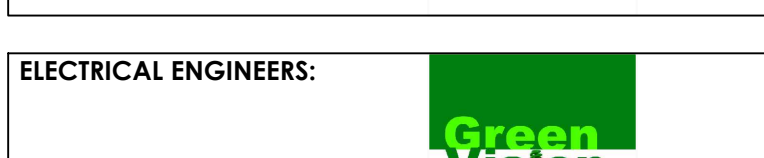
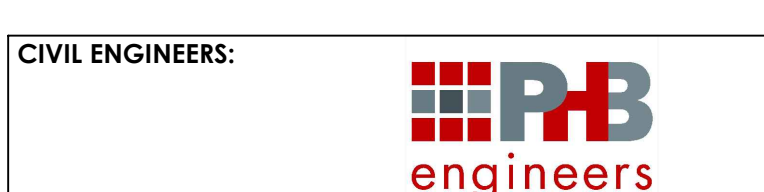
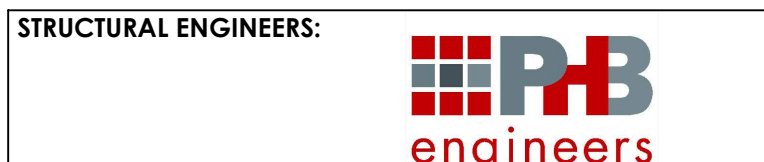
| Rev. | Date       | Revision  | Name  |
|------|------------|---|-------|
| c    | 29.07.2023 | Recreational Facility added.  | Alpha |
| B    | 03.07.2023 | Control room added.<br>Barra added.<br>Delivery Bay added.<br>Open Walkway added.<br>New Clear Vu Security Fencing added. | Alpha |
| A    | 03.02.2023 | Issued for Client's Copying   | Alpha |

**Project:**  
Proposed Refurbishment and Upgrading of  
Taung Hotel School & Convention  
Centre for the North West Parks &  
Tourism Board

**Description:**

**-SITE PLAN-**

Scale: As shown



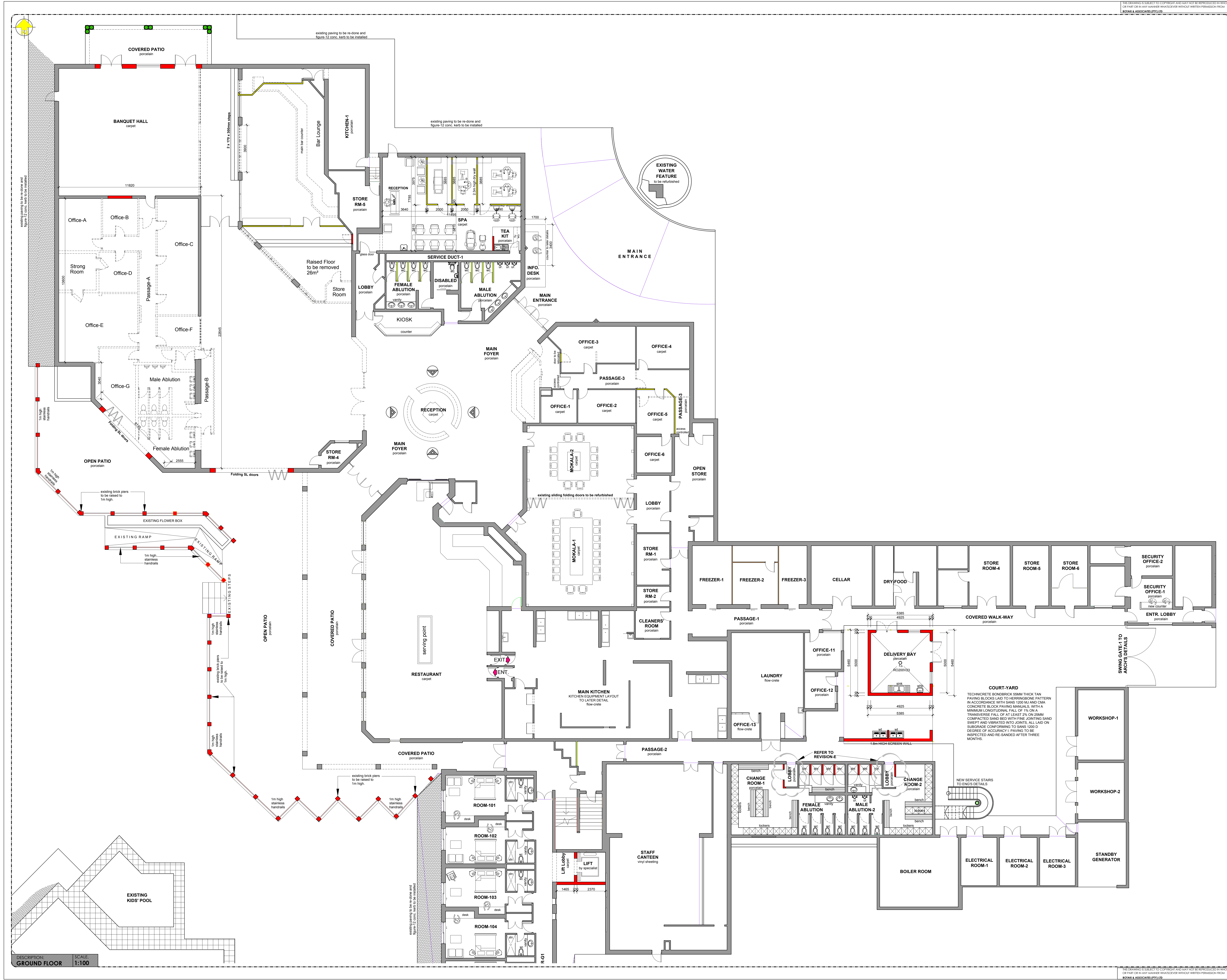
**MAIN CONTRACTOR:**

|           |                  |                     |                      |             |
|-----------|------------------|---------------------|----------------------|-------------|
| DRAWN: MS | DATE: 15.04.2018 | DRWG No.: THS-100/H | COMP. No.: THS-100/H | REV. No.: c |
|-----------|------------------|---------------------|----------------------|-------------|

| AREA SCHEDULE:  |                     |
|---|---------------------|
| <b>SITE</b>   | 133 525.45sqm       |
| ADMIN. BLOCK (ground floor)                               | 1 768.85sqm         |
| ADMIN. BLOCK (first floor)                                | 514.60sqm           |
| STUDENT RESIDENCE (ground floor)                          | 1 431.62sqm         |
| STUDENT RESIDENCE (first floor)                           | 1 372.27sqm         |
| STUDENTS LIBRARY  | 1 403.35sqm         |
| MATRON'S UNIT   | 56.86sqm            |
| RECREATIONAL AREA   | 175.29sqm           |
| LECTURE HALLS & KITCHENS                                  | 2 785.56sqm         |
| GATE HOUSE  | 12.88sqm            |
| BOMA  | 141.12sqm           |
| GAZEBO  | 23.69sqm            |
| DELIVERY BAY  | 24.08sqm            |
| <b>Total New:</b>   | <b>9 912.17sqm</b>  |
| <b>Currently Under Construction Area:</b>                 |                     |
| STUDENT RESIDENCE (ground floor)                          | 1 431.62sqm         |
| STUDENT RESIDENCE (first floor)                           | 1 372.27sqm         |
| MATRON UNIT   | 56.86sqm            |
| RECREATIONAL AREA   | 175.29sqm           |
| LECTURE HALLS & KITCHENS                                  | 2 785.56sqm         |
| <b>Total (currently under construction)</b>               | <b>5 821.60sqm</b>  |
| <b>Existing Area:</b>                                     |                     |
| HOTEL (ground floor)                                      | 4 481.14sqm         |
| HOTEL (first floor)                                       | 926.86sqm           |
| STAFF VILLAGE   | 4 251.47sqm         |
| GATE HOUSE  | 12.88sqm            |
| <b>Total EXISTING:</b>                                    | <b>9 672.35sqm</b>  |
| <b>Total (New, Current &amp; Less Existing)</b>           | <b>19 584.52sqm</b> |
| <b>Total Coverage (Total floor area less first floor)</b> | <b>16 768.79sqm</b> |
| <b>Coverage (%)</b>                                       | <b>12.51%</b>       |
| <b>P.A.R.</b>   | <b>0.12</b>         |
| <b>Total Parking Bays required</b>                        | <b>394</b>          |
| <b>Total Parking Bays provided</b>                        | <b>554</b>          |

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    - 1.2 THE SITE TO BE TREATED IN ACCORDANCE WITH SABS CODE OF PRACTICE No. 0124/1977 WITH 'WELL-DRIED' TERMITE-PROOF SOIL POISONER.
    - 1.3 TOP OF FOUNDATIONS TO BE A MINIMUM OF 300mm BELOW NATURAL GROUND LEVEL.
    - 1.4 BACKFILL TO FOUNDATIONS.
    - 1.5 TOP OF 75mm CONCRETE SURFACE BED TO BE MINIMUM OF 150mm ABOVE FINISH GROUND LEVEL.
    - 1.6 75mm THICK CONCRETE SURFACE BED TO BE ON 'GUNPLAS' USE GREEN DAMP PROOF MEMBRANE ON SAND BINDING ON WELL COMPACTED FILL.
    - 1.7 'GUNPLE' BRICK/GRIP SABS EMBOSSED DPC 375 MIC. UNDER ALL WALLS. WINDOW CILLS AND CHANGES IN FLOOR LEVELS.
    - 1.8 STORM-WATER SHALL BE REMOVED FROM DWELLING, YARD AND SITE.
    - 1.9 ELECTRICAL INSTALLATION SHALL BE ACCORDING TO ELECTRICAL ENGINEER'S.
    - 1.10 ALL BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITY BUILDING BY-LAW AND REGULATIONS.
  - FOUNDATIONS:**
    - 2.1 ALL FOUNDATIONS, FOUNDATION WALLS, STRUCTURAL CONCRETE WORK AND SUB-SOIL STORM-WATER DRAINAGE TO CIVIL ENGINEER'S SPECIFICATIONS.
    - 2.2 ALL SOIL COMPACTION TO CIVIL ENGINEER'S SPECIFICATIONS.
    - 2.3 200 x 700mm CONCRETE FOUNDATIONS FOR 230mm BRICK WORK.
    - 2.4 300 x 100mm PAD FOUNDATIONS FOR 460 x 460mm BRICK WORK.
  - FLOORS:**
    - 3.1 25mm CEMENT SCREED TO ALL FLOORS.
  - WALLS:**
    - 4.1 230mm BRICK WALLS WITH GUNDE BRICK/GRIP DPC.
    - 4.2 BRICK FORCE EVERY 4 COURSES AND EVERY COURSE FOR 4 COURSES OVER OPENINGS.
    - 4.3 ALL BRICK WORK MIN. 7 MPa CLASS.
    - 4.4 WINDOW BUILT IN WITH GUNDE BRICK/GRIP DPC.
    - 4.5 ALL PARTWORK TO COMPLY WITH MANUFACTURER'S SPECIFICATIONS WITH NECESSARY UNDERCOATS.
  - ROOF:**
    - 5.1 10° ROOF PITCH.
    - 5.2 0.6mm KLP/LOC-700 SHEETING ON 50 x 75mm TIMBER PURLINS AT 1.3m C/C'S. 152 x 38mm RING POST ON 122 x 38mm LAMINAR BATTENS ON 14 x 38mm WALL PLATE TIED DOWN WITH GALV. HOOP IRON. THREADED THROUGH 4 COURSES OF BRICK WORK.
    - 5.3 40mm INSULATION BLANKET.
    - 5.4 RHINOULITE CEILING BOARDS ON 38 x 38mm TIMBER BRANDBERGS AT 400mm C/C'S TIED TO TRUSSES AND 50mm COVER COVINGS.
    - 5.5 CONCRETE SLAB TO ENGINEER'S DETAILS.
    - 5.6 50mm CHIPS - STONE LAYER.
    - 5.7 FINE BIRD MESH OVER ALL FULBROKE OUTLETS.
    - 5.8 BION CLOTH.
    - 5.9 BUTHTENE WATERPROOFING MEMBRANE TO MANUFACTURER'S SPEC. ACCORD TO FALL 1:40.
  - WINDOWS & DOORS:**
    - 6.1 ALUMINIUM FRAME WINDOWS AS PER WINDOW SCHEDULE.
    - 6.1a. ANY PANE OF GLASS WHICH IS TO BE INSTALLED WITHOUT A SUPPORT FRAME SHALL BE IN ACCORDANCE WITH SABS 0137.
    - 6.1b. THICKNESS OF PANE IN RELATION TO THE AREA SHALL BE IN ACCORDANCE WITH SABS 0137.
    - 6.1c. GLAZING TO BE AS PER SABS PARTIAL.
    - 6.2 ALL DOORS & FRAMES TO BE AS PER DOOR SCHEDULE.
  - DRAINAGE:**
    - 7.1 Ø100mm UPVC SEWER PIPE DRAIN WITH A MIN. FALL OF 1:40.
    - 7.2 Ø100mm OVP AT HEAD OF DRAIN PIPE AS SHOWN.

| FOR INFORMATION |            |   |       |
|-----------------|------------|---|-------|
| Rev.            | Date       | Revision  | Name  |
| F               | 28.07.2023 | Entire layout revised to reflect accurate measurements and no. of rooms.  | Thato |
| E               | 27.04.2023 | Delivery Bay added.   | Mpho  |
| D               | 21.04.2023 | Column spacing reduced at Terrace.  | Mpho  |
| C               | 15.04.2023 | Bar Lounge counter relocated.<br>No. of male ablutions increased.<br>Door added to Private Bar & size increased.<br>No. of sliding folding door reduced at Bar Lounge.<br>Cinema replaced with SPA.<br>Info. Desk added to Main Entrance. | Mpho  |
| B               | 22.05.2023 | Issued for Cladding   | Mpho  |
| A               | 03.10.2022 | Issued for Client's Comments  | Mpho  |

**Project:**  
Proposed Refurbishment & Upgrade of  
Taung Hotel School & Convention  
Centre for the North West Parks &  
Tourism Board

**Description:**  
- GROUND FLOOR LAYOUT -  
DEMOLITION PLAN

Scale: AS SHOWN

**EMPLOYER:**  
Tourism  
WEDO TOURISM  
NDP

**IMPLEMENTING AGENT:**  
idt  
Independent Development Trust

**ARCHITECTS:**  
Botani & Associates (Pty) Ltd  
21 Knapelton street  
Midrand  
Johannesburg 2009  
Tel: 011 768 1827  
Fax: 011 768 1880  
email: info@botanika.co.za

**QUANTITY SURVEYORS:**  
BOTANIKAL

**STRUCTURAL ENGINEERS:**  
MPB engineers

**CIVIL ENGINEERS:**  
MPB engineers

**MECHANICAL ENGINEERS:**  
Green Vision

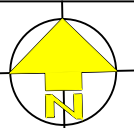
**ELECTRICAL ENGINEERS:**  
Green Vision

**OCCUPATIONAL HEALTH & SAFETY:**  
nemoflow

**MAIN CONTRACTOR:**  
TBA

|                  |                      |          |
|------------------|----------------------|----------|
| DRAWN: Mpho      | DRWG No.: THS-204/H  | REV. No. |
| DATE: 03.Oct. 22 | COMP. No.: THS-204/H | F        |

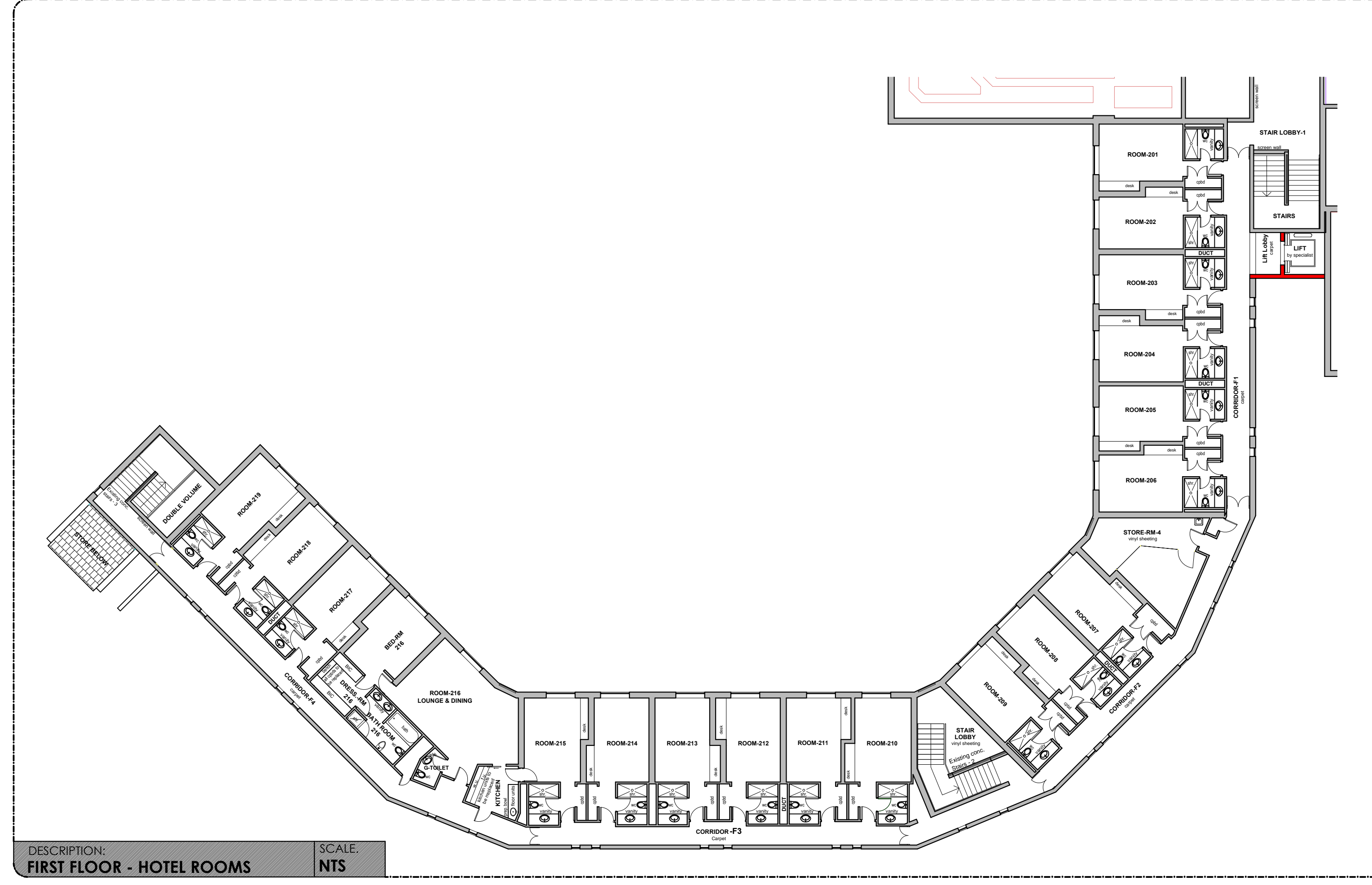




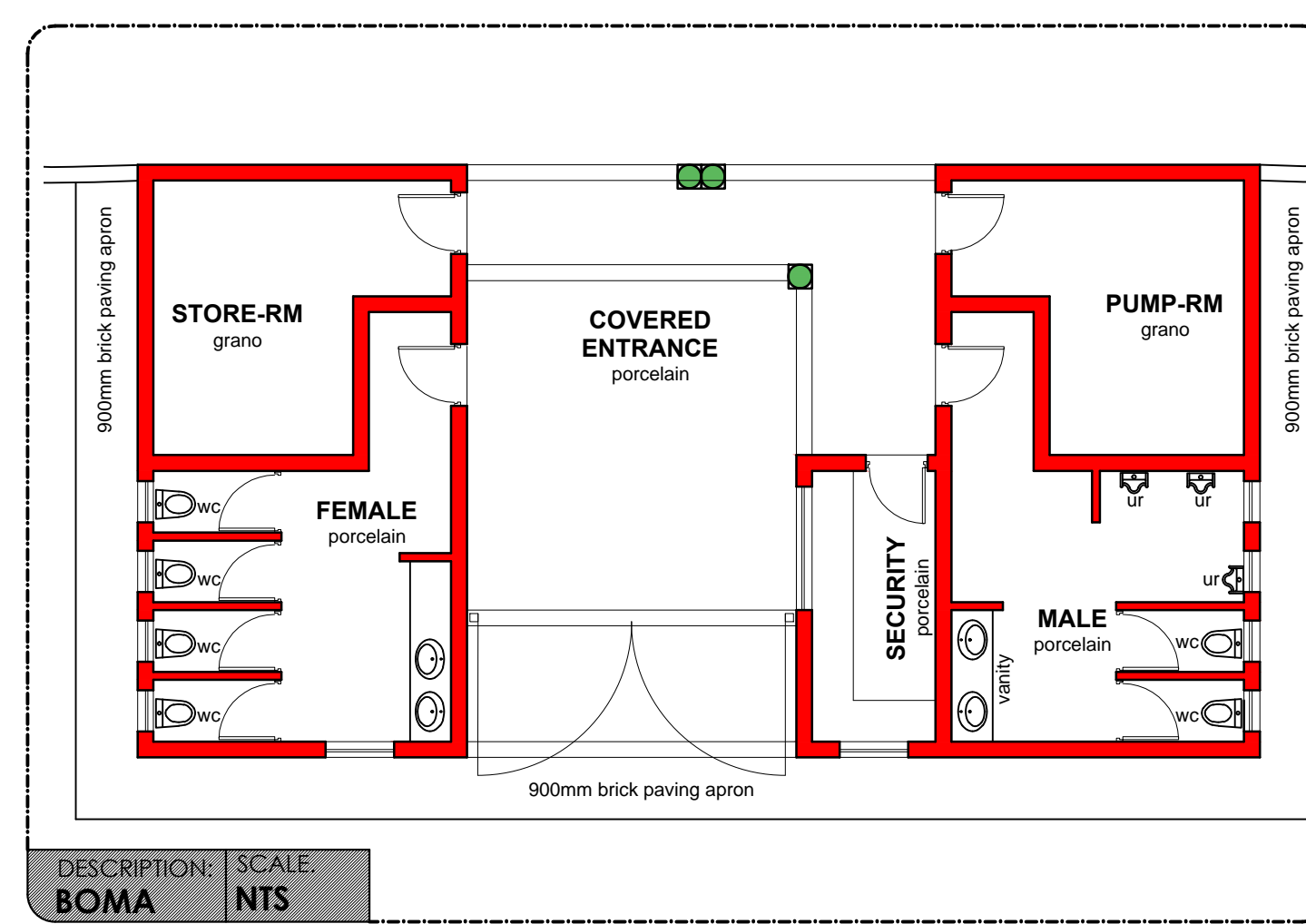
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#### NOTES:

1. GENERAL:  
1.1 THIS DRAWING IS NOT TO BE SCALED. USE FIGURED DIMENSIONS ONLY.  
1.2 ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED AND VERIFIED BEFORE ANY WORK COMMENCES ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY. ALL LEVELS, HEIGHTS OF FLOORS, DEPTHS OF EXCAVATIONS AND NUMBER OF STEPS TO BE FINALLY CHECKED BY CONSTRUCTION ON SITE.  
1.3 THE SITE TO BE TREATED IN ACCORDANCE WITH SABS CODE OF PRACTICE NO. 1024/1977 WITH "SMALL-CRACK" TENSILE-PRISON SOIL PROOFING.  
1.4 TOP OF FOUNDATIONS TO BE A MINIMUM OF 300mm BELOW NATURAL GROUND LEVEL.  
1.5 TOP OF 75mm CONCRETE SURFACE BED TO BE MINIMUM OF 150mm ABOVE FINISH GROUND LEVEL.  
1.6 75mm THICK CONCRETE SURFACE BED TO BE ON "GUMPLAST" USE GREEN DAMP PROOF MEMBRANE ON SAND BINDER ON WELL COMPACTED FILL.  
1.7 "GUMPLAST" BRICK/GRASS SABS ENDS/DPS 375 MCM UNDER ALL WALLS, WINDOW CILLS AND CHANGES IN FLOOR LEVELS.  
1.8 STORM WATER SHALL BE REMOVED FROM DWELLING, YARD AND SITE.  
1.9 ELECTRICAL INSTALLATION SHALL BE ACCORDING TO ELECTRICAL ENGINEER.  
1.10 ALL BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITY BUILDING BY-LAWS AND REGULATIONS.  
2. FOUNDATIONS:  
2.1 ALL FOUNDATIONS, FOUNDATION WALLS, STRUCTURAL CONCRETE WORK AND SUB-SOIL STORM-WATER DRAINAGE TO CIVIL ENGINEER'S SPECIFICATIONS.  
2.2 ALL SOIL COMPACTION TO CIVIL ENGINEER'S SPECIFICATIONS.  
2.3 230 x 100mm CONCRETE FOUNDATIONS FOR 230mm BRICK WORK.  
2.4 300 x 100mm PAD FOUNDATIONS FOR 400 x 400mm BRICK WORK.  
2.5 ALL FOUNDATIONS TO BE REINFORCED AS REQUIRED BY ENGINEER.  
3. FLOORS:  
3.1 125mm CEMENT screed TO ALL FLOORS.  
3.2 125mm CEMENT screed TO ALL FLOORS.  
3.3 125mm CEMENT screed TO ALL FLOORS.  
3.4 125mm CEMENT screed TO ALL FLOORS.  
3.5 125mm CEMENT screed TO ALL FLOORS.  
3.6 125mm CEMENT screed TO ALL FLOORS.  
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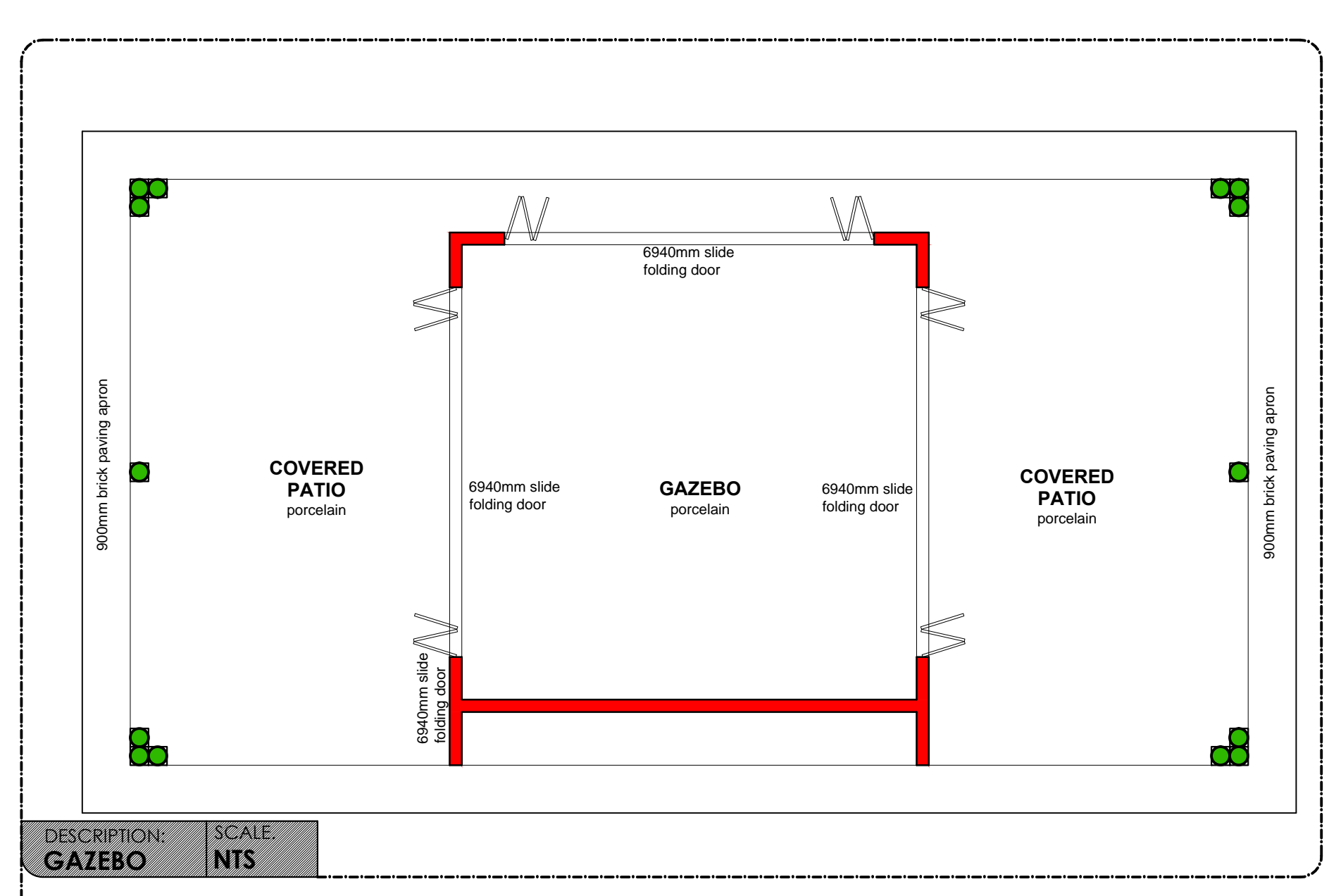
DESCRIPTION: FIRST FLOOR - HOTEL ROOMS  
SCALE: NTS



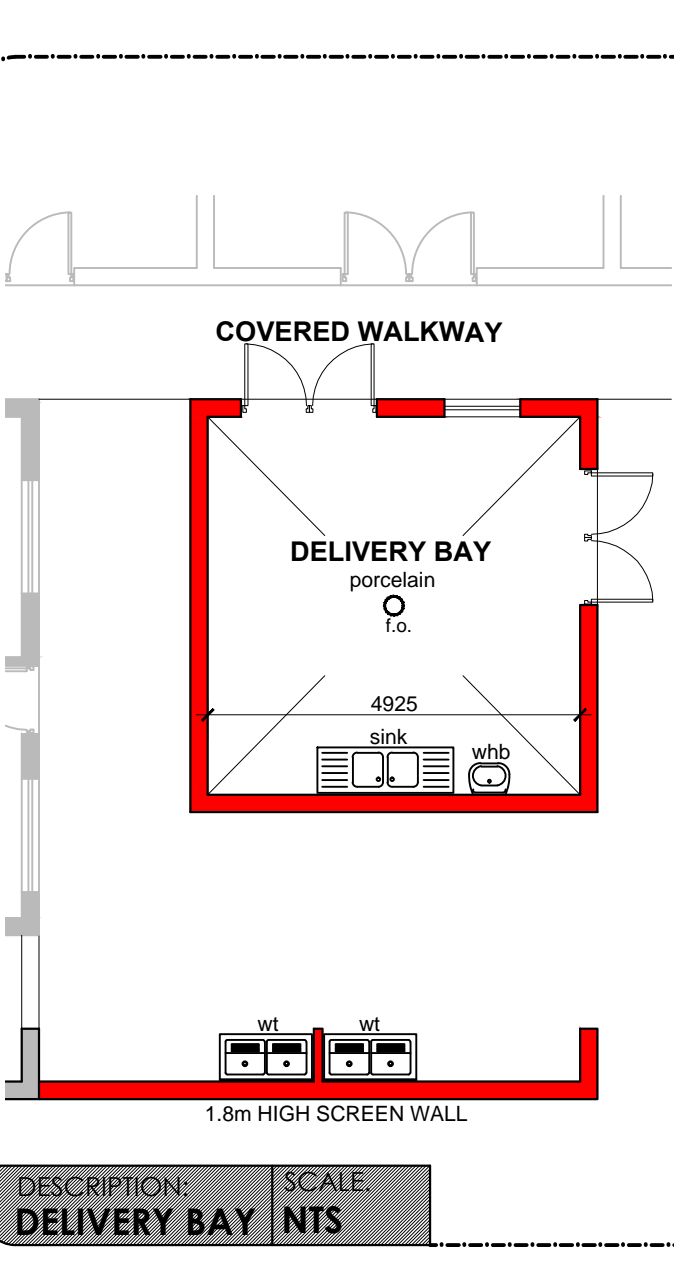
DESCRIPTION: BOMA  
SCALE: NTS



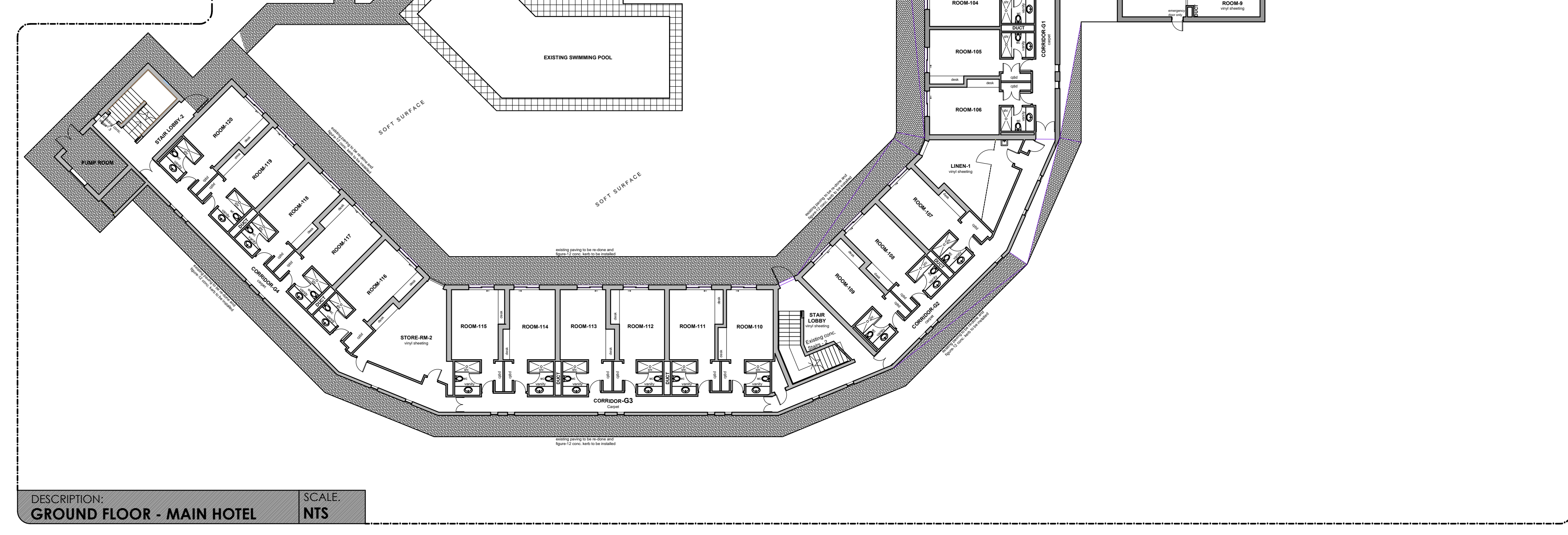
DESCRIPTION: GROUND FLOOR - RECREATIONAL FACILITY  
SCALE: NTS



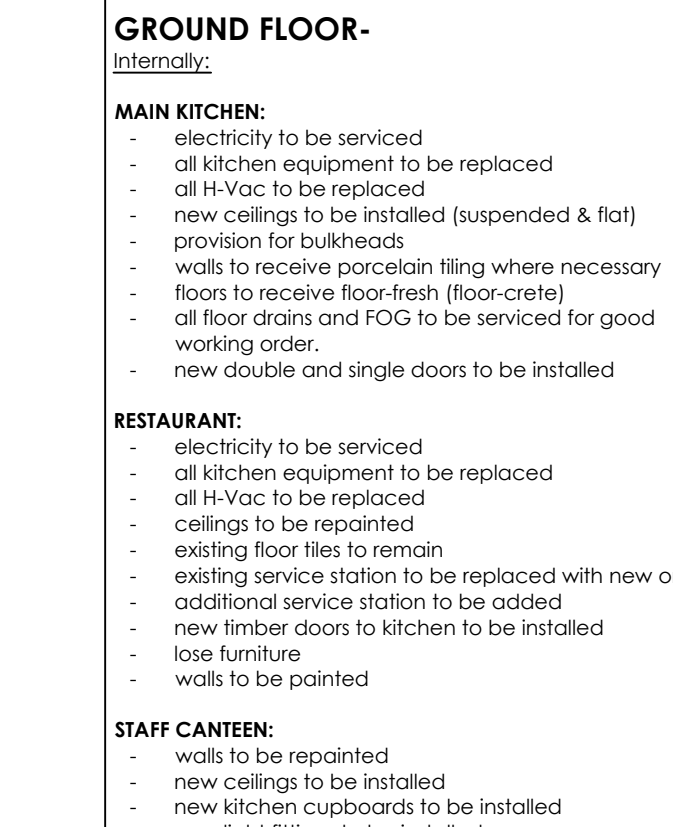
DESCRIPTION: GAZEBO  
SCALE: NTS



DESCRIPTION: DELIVERY BAY  
SCALE: NTS



DESCRIPTION: GROUND FLOOR - MAIN HOTEL  
SCALE: NTS



DESCRIPTION: RESTAURANT  
SCALE: NTS



DESCRIPTION: STAFF CANTEN  
SCALE: NTS

#### Project:

Proposed Refurbishment of Taung Hotel School & Convention Centre for the North West Parks & Tourism Board

#### Description:

Scale: AS SHOWN

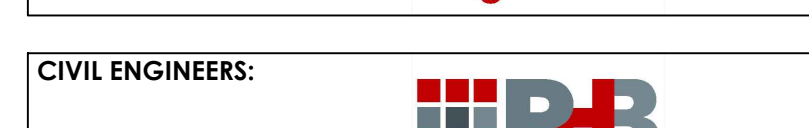
#### EMPLOYER:



#### IMPLEMENTING AGENT:



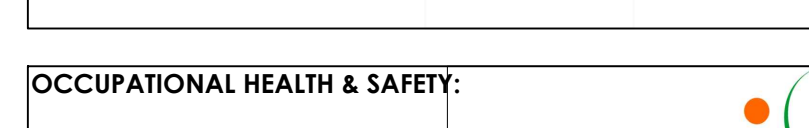
#### ARCHITECTS:



#### QUANTITY SURVEYORS:



#### STRUCTURAL ENGINEERS:



#### CIVIL ENGINEERS:



#### MECHANICAL ENGINEERS:



#### ELECTRICAL ENGINEERS:



#### OCCUPATIONAL HEALTH & SAFETY:



#### MAIN CONTRACTOR:

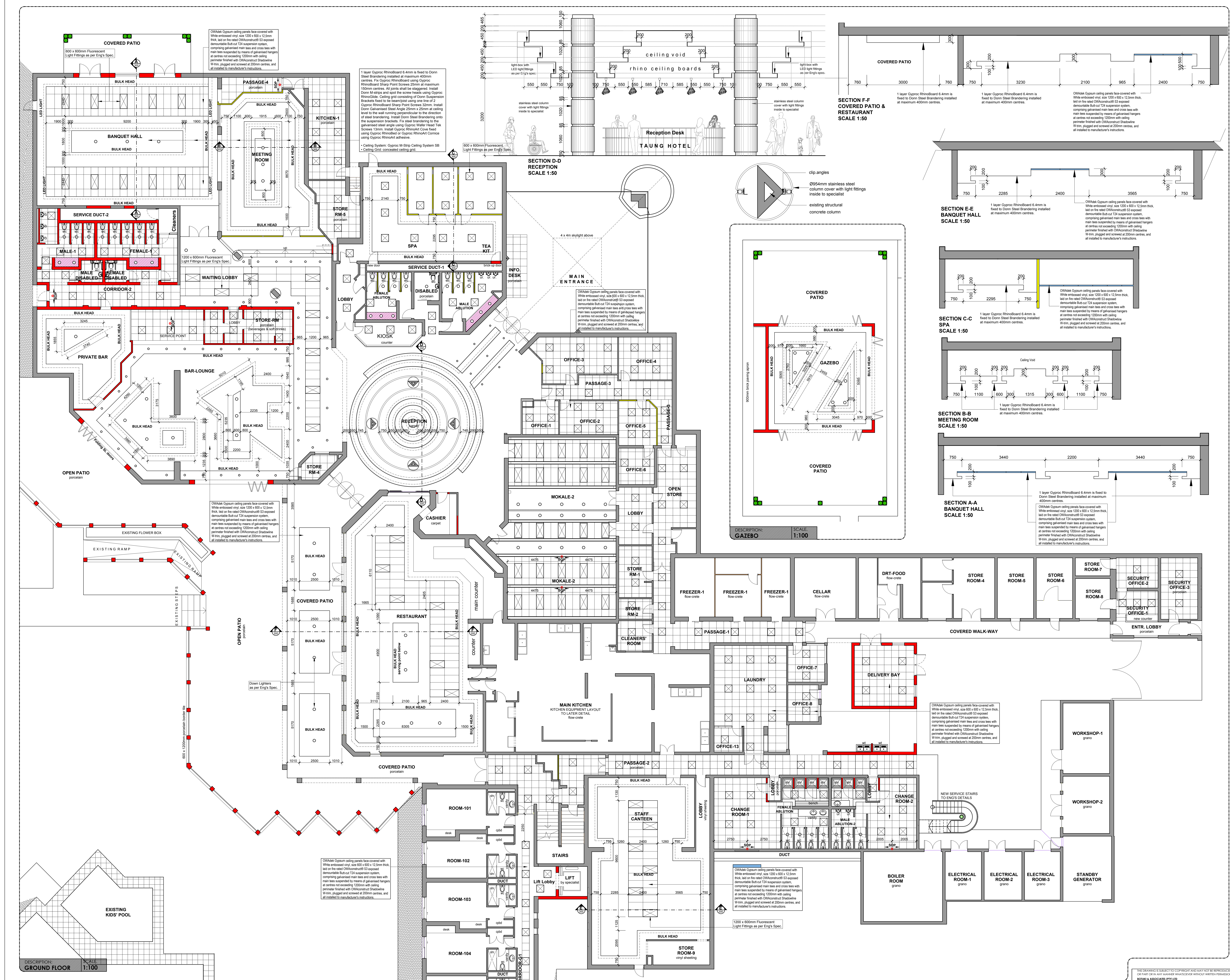


DRAWN: Mpho DATE: 03 Oct 22  
DRWG NO: THS-202/H  
REV. NO. D









**NOTES:**

1. GENERAL

1.1 THIS DRAWING IS NOT TO BE SCALED. USE FIGURED DIMENSIONS ONLY. ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED AND VERIFIED BEFORE ANY WORK COMMENCES ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY. ALL LEVELS, HEIGHTS OF FINISH, DEPTH OF EXCAVATIONS AND NUMBER OF STEPS TO BE FINALLY CHECKED BY CONTRACTOR ON SITE.

1 layer Gyproc Rhinoboard 6.4mm is fixed to Donn Steel Bracing installed at maximum 400mm centres. Fix Gyproc Rhinoboard using Gyproc Rhinoboard Sharp Point Screws 25mm at maximum 100mm centres. All joints shall be staggered. Install Donn M-Strip and spot the screw heads using Gyproc Rhinoboard. Ceiling grid consisting of Donn Suspension Brackets fixed to be beamstop using one line of 2 Gyproc Rhinoboard Sharp Point Screws 25mm. Install Donn Galvalume Steel Angle 25mm x 25mm at ceiling level to the wall running perpendicular to the direction of steel bracing. Install Donn Steel Bracing onto the suspension brackets. Fix steel bracing to the galvanneal steel angle using Gyproc Waller Head Tek Screws 13mm. Install Gyproc Rhinoboard Ceiling using Gyproc Rhinoboard or Gyproc Rhinoboard Concourse using Gyproc Rhinoboard adhesive.

• Ceiling System: Gyproc M-Strip Ceiling System SB

• Ceiling Grid: concealed ceiling grid.

OWAdek Gyproc ceiling panels face-covered with White embossed vinyl, size 1200 x 600 x 12.5mm thick, laid on the steel OWAkonstrukt S3 exposed demountable Bul-cut T24 suspension system, comprising galvanneal main tees and cross tees with main tees supported by means of galvanneal hangers at centres not exceeding 1200mm with ceiling perimeter finished with OWAkonstrukt Shadowline W-Trim, plugged and screwed at 200mm centres, and all installed to manufacturer's instructions.

600 x 600mm Fluorescent Light Fittings as per Eng's Spec.

1200 x 600mm Fluorescent Light Fittings as per Eng's Spec.

Down Lighters as per Eng's Spec.

## FOR INFORMATION

| Rev. | Date       | Revision             | Name |
|------|------------|----------------------|------|
| A    | 16.08.2023 | Revised for Comments | Mpho |

**Project:**  
Proposed Refurbishment & Upgrading of Taung Hotel School & Convention Centre for the North West Parks & Tourism Board

## Description:

**MAIN HOTEL CEILING LAYOUT**  
Scale: AS SHOWN



**IMPLEMENTING AGENT:**  
**Independent Development Trust**

**ARCHITECTS:**  
Boadi & Associates (Pty) Ltd

**QUANTITY SURVEYORS:**  
KARABATZIS

**STRUCTURAL ENGINEERS:**  
R&B engineers

**CIVIL ENGINEERS:**  
R&B engineers

**MECHANICAL ENGINEERS:**  
Green Vision

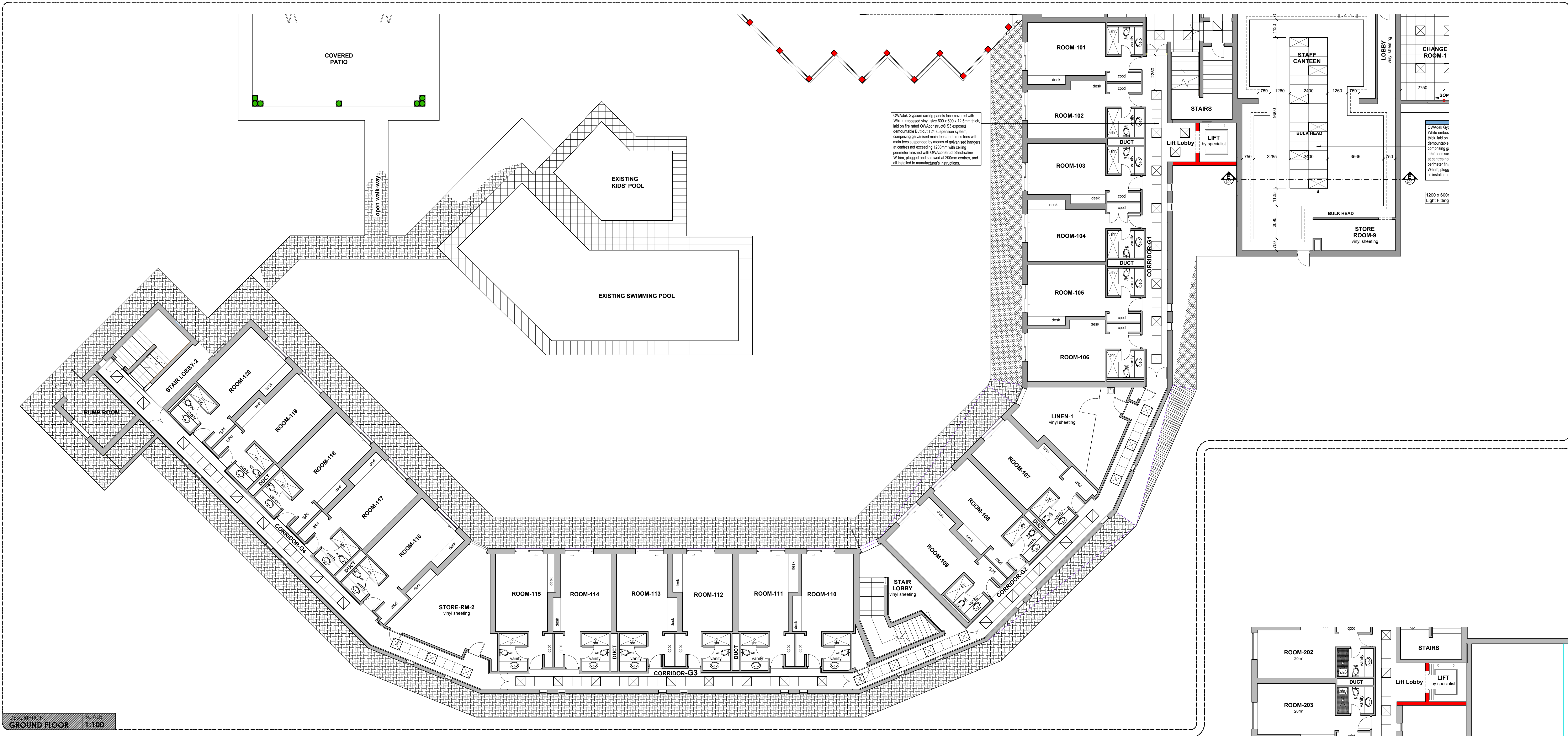
**ELECTRICAL ENGINEERS:**  
Green Vision

**OCCUPATIONAL HEALTH & SAFETY:**  
nemolife

**MAIN CONTRACTOR:**  
TBA

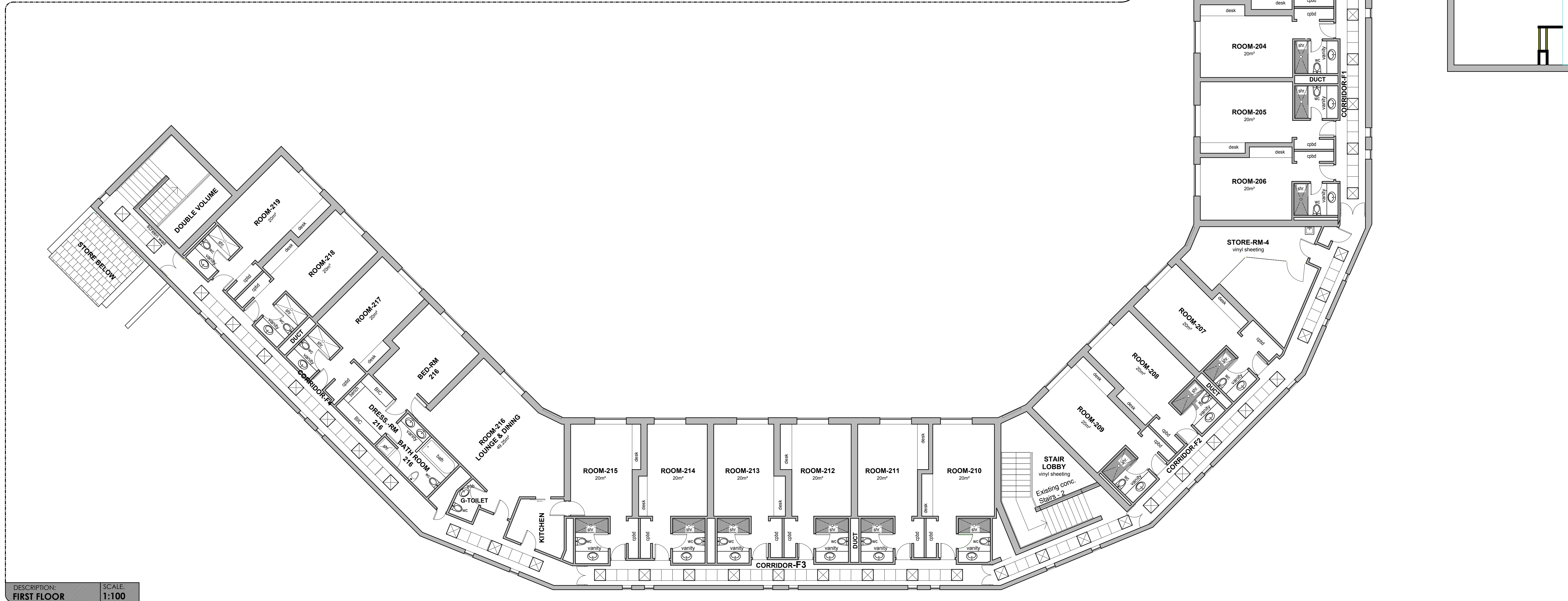
**DRAWN:** Mpho  
**DATE:** 07 July 23  
**DRWG No:** THS-205/H  
**COMP. No:** THS-205/H  
**REV. No:** C





DESCRIPTION:  
GROUND FLOOR

SCALE:  
1:100



DESCRIPTION:  
FIRST FLOOR

SCALE:  
1:100

#### NOTES:

1. GENERAL:
  - 1.1 THIS DRAWING IS NOT TO BE SCALED. USE FIGURED DIMENSIONS ONLY.
  - 1.2 ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED AND VERIFIED BEFORE ANY WORK COMMENCES ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY. ALL LEVELS, HEIGHTS OF FINISH, DEPTH OF EXCAVATIONS AND NUMBER OF STEPS TO BE FINALLY CHECKED BY CONTRACTOR ON SITE.
  - 1.3 THE SITE TO BE TREATED IN ACCORDANCE WITH SABS CODE OF PRACTICE No. 1074/1977 WITH "SHIELD" TENANT PILE SOIL FORCER.
  - 1.4 TOP OF FOUNDATIONS TO BE A MINIMUM OF 300mm BELOW NATURAL GROUND LEVEL.
  - 1.5 BACKFILL TO FOUNDATIONS.
  - 1.6 TOP OF 75mm CONCRETE SURFACE BED TO BE MINIMUM OF 150mm ABOVE FINISH GROUND LEVEL.
  - 1.7 75mm THICK CONCRETE SURFACE BED TO BE ON "GUMPLAS" USE GREEN DAMP PROOF MEMBRANE CHARGED BRINDING ON WELL COMPACTED FILL.
  - 1.8 "GUMPLAS" BRICK GRIP SABS EMBOSSED DPC 375 MIC. UNDER ALL WALLS, WINDOW CILLS AND CHANGES IN FLOOR LEVELS.
  - 1.9 STORM-WATER SHALL BE REMOVED FROM DWELLING, YARD AND SITE.
  - 1.10 ELECTRICAL INSTALLATION SHALL BE ACCORDING TO ELECTRICAL ENGINEERING.
2. FOUNDATIONS:
  - 2.1 ALL FOUNDATIONS, FOUNDATION WALLS, STRUCTURAL CONCRETE WORK AND SUB-SOIL STORM-WATER DRAINAGE TO CIVIL ENGINEER'S SPECIFICATIONS.
  - 2.2 ALL SOIL COMPACTION TO CIVIL ENGINEER'S SPECIFICATIONS.
  - 2.3 230 x 700mm CONCRETE FOUNDATIONS FOR 230mm BRICK WORK.
  - 2.4 500 x 1000mm PAD FOUNDATIONS FOR 460 x 460mm BRICK WORK.
  - 2.5 ALL FOUNDATIONS TO BE REINFORCED AS REQUIRED BY ENGINEER.
3. FLOORS:
  - 3.1 25mm CEMENT SCREED TO ALL FLOORS.
4. WALLS:
  - 4.1 230mm BRICK WALLS WITH WITH GUNDE BRICKGRIP DPC.
  - 4.2 BRICK-FOUR EVERY 6 COURSES AND EVERY COURSE FOR 4 COURSES OVER OPENINGS.
  - 4.3 ALL BRICK WORK MIN. 7 MPa CLASS II.
  - 4.4 WINDOWS BUILT IN WITH GUNDE BRICKGRIP DPC.
  - 4.5 ALL PAINTWORK TO COMPLY WITH MANUFACTURER'S SPECIFICATIONS WITH NECESSARY UNDERCOATS.
5. ROOFS:
  - 5.1 10% ROOF PITCH.
  - 5.2 0.4mm KLP-LOK-700 SHEETING ON 50 x 75mm TIMBER PURINS AT 1.3m C/C'S. 152 x 38mm KING POST ON 152 x 38mm LAMINATED BATTENS ON 1 x 4 38mm WALL PLATE TIED DOWN WITH GALV. HOOK BOLT, THREADED THROUGH 4 COURSES OF BRICK WORK.
  - 5.3 40mm INSULATION BLANKET.
  - 5.4 RHINOCEUT CEILING BOARDS ON 38 x 38mm TIMBER BRANDEINGS AT 450mm C/C'S TIED TO TRUSSES AND 50mm COVERED CORNICES.
  - 5.5 CONCRETE SLAB TO ENGINEER'S DETAILS.
  - 5.6 30mm CHEF - STONE LAYER.
  - 5.7 FINE BRD MESH OVER ALL FULBURE OUTLETS.
  - 5.8 BENEATH WATERPROOFING MEMBRANE TO MANUFACTURE'S SPEC. CREDIT TO FALL 1:20.
6. WINDOWS & DOORS:
  - 6.1 ALUMINIUM FRAME WINDOWS AS PER WINDOW SCHEDULE.
  - 6.2 AL. ANY FRAME OF GLASS WHICH IS TO BE INSTALLED WITHOUT A SUPPORT FRAME SHALL BE IN ACCORDANCE WITH SABS 0137.
  - 6.3 AL. THICKNESS OF FRAME IN RELATION TO THEIR AREA SHALL BE IN ACCORDANCE WITH SABS 0137.
  - 6.4 GLAZING TO BE AS PER WINDOW SCHEDULE.
  - 6.5 ALL DOORS & FRAMES TO BE AS PER DOOR SCHEDULE.
7. DRAINAGE:
  - 7.1 100mm PVC SEWER PIPE DRAIN WITH A MIN. FALL OF 1:50.
  - 7.2 200mm DVP AT HEAD OF DRAIN PIPE AS SHOWN.

#### FOR INFORMATION

| Rev. | Date       | Revision                     | Name |
|------|------------|------------------------------|------|
| C    | 02.08.2023 | Final Layout Revised         | Mpho |
| B    | 15.06.2023 | Roof Top Tiling Added        | Mpho |
| A    | 03.10.2022 | Issued for Client's Comments | Mpho |

**Project:**  
Proposed Refurbishment & Upgrading  
of Taung Hotel School & Convention  
Centre for the North West Parks &  
Tourism Board

#### Description:

**HOTEL ROOMS  
CEILING LAYOUT**  
Scale: AS SHOWN



**Implementing Agent:**  
**Independent Development Trust**

**Architects:**  
**Bosaki & Associates (Pty) Ltd**

**Quantity Surveyors:**  
**MEASUREMENTS**

**Structural Engineers:**  
**engineers**

**Civil Engineers:**  
**engineers**

**Mechanical Engineers:**  
**Green Vision**

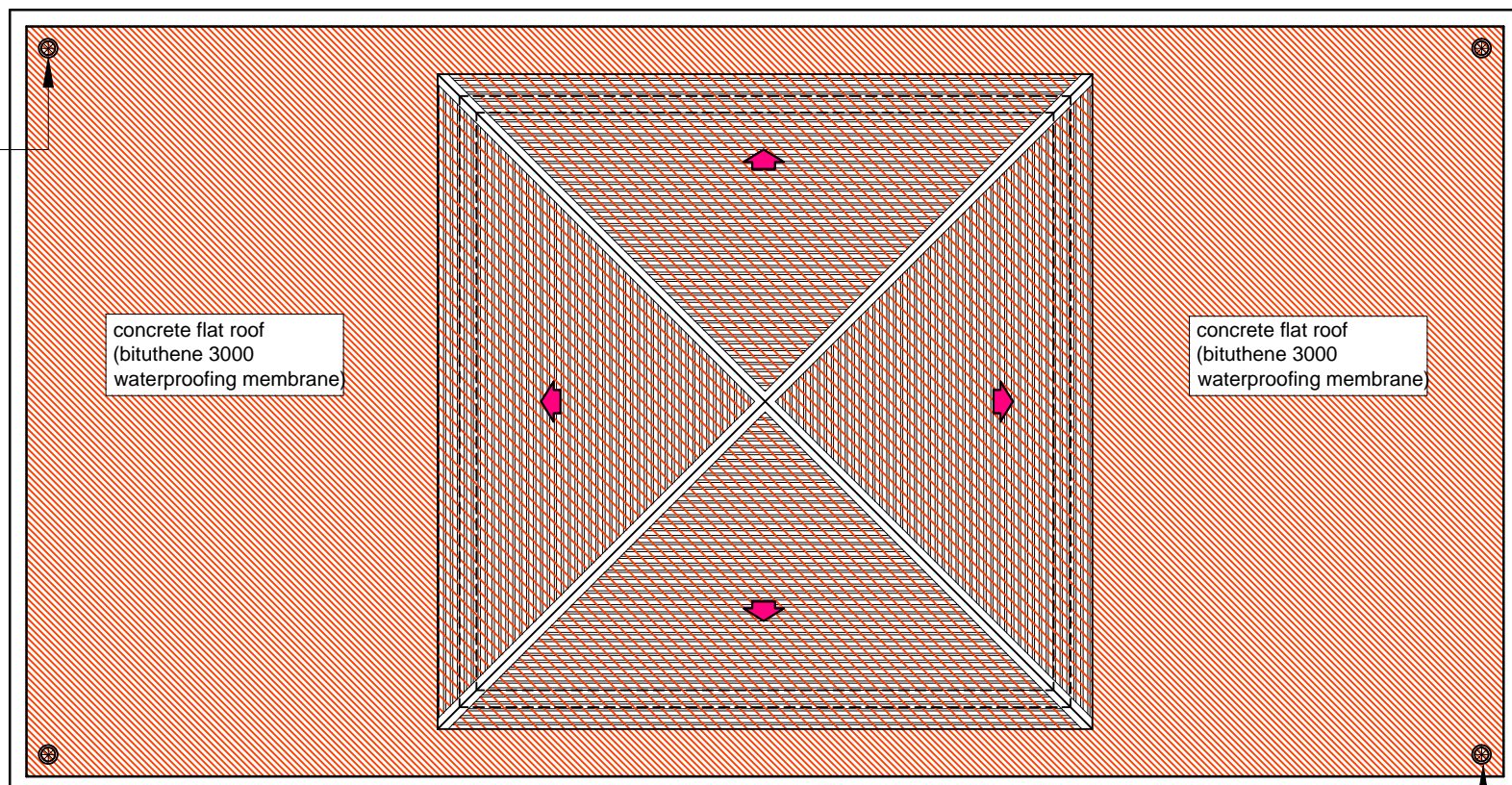
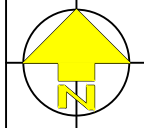
**Electrical Engineers:**  
**Green Vision**

**Occupational Health & Safety:**  
**nemoflow**

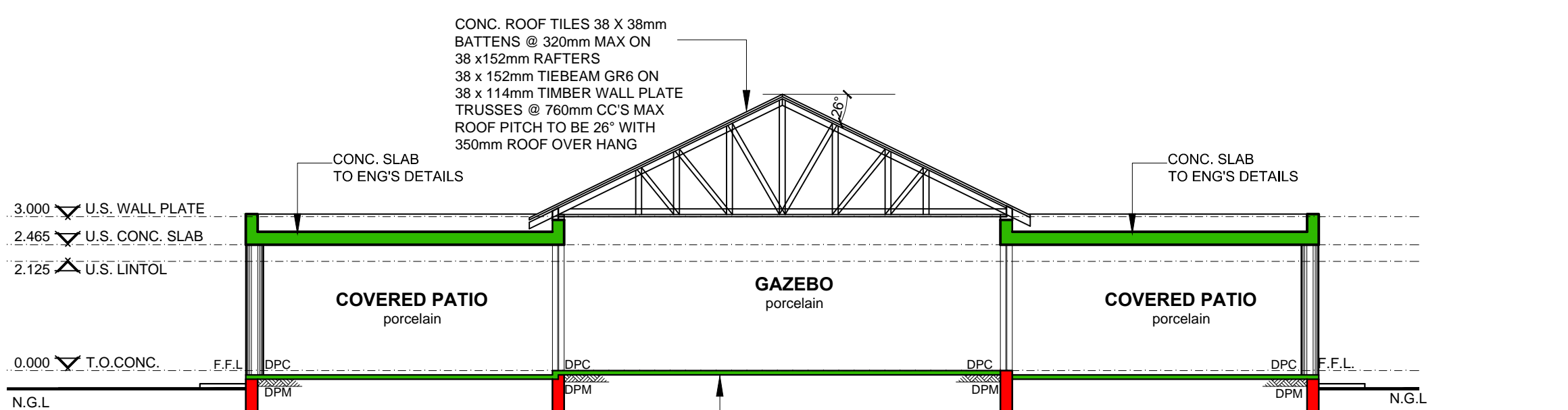
**Main Contractor:**  
**TBA**

**Drawn:** Mpho  
**Date:** 03.Oct. 22  
**Drwg No.:** THS-211/H  
**Comp. No.:** THS-211/H  
**Rev. No.:** A

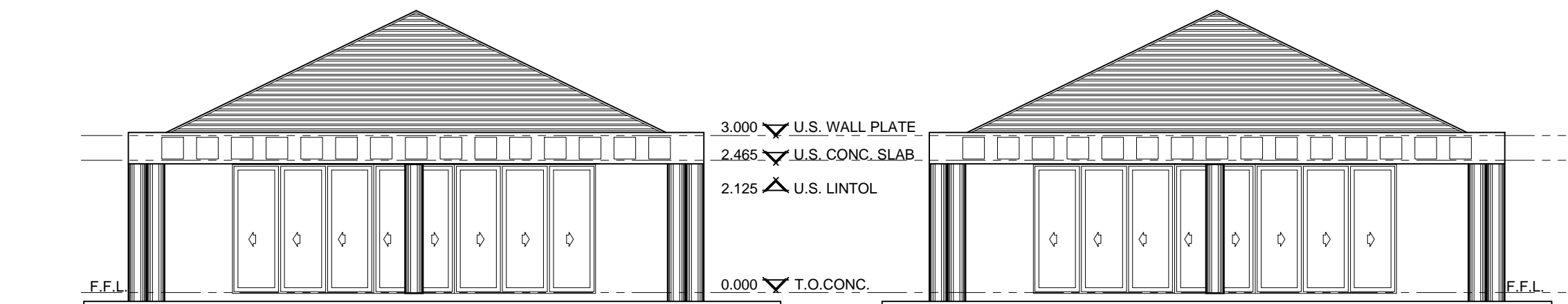




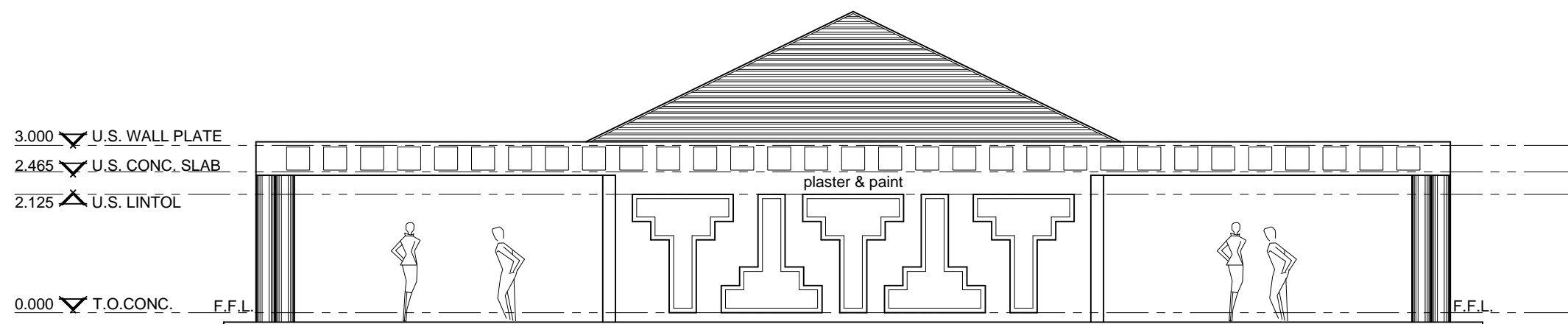
ROOF PLAN - GAZEBO  
SCALE 1:100



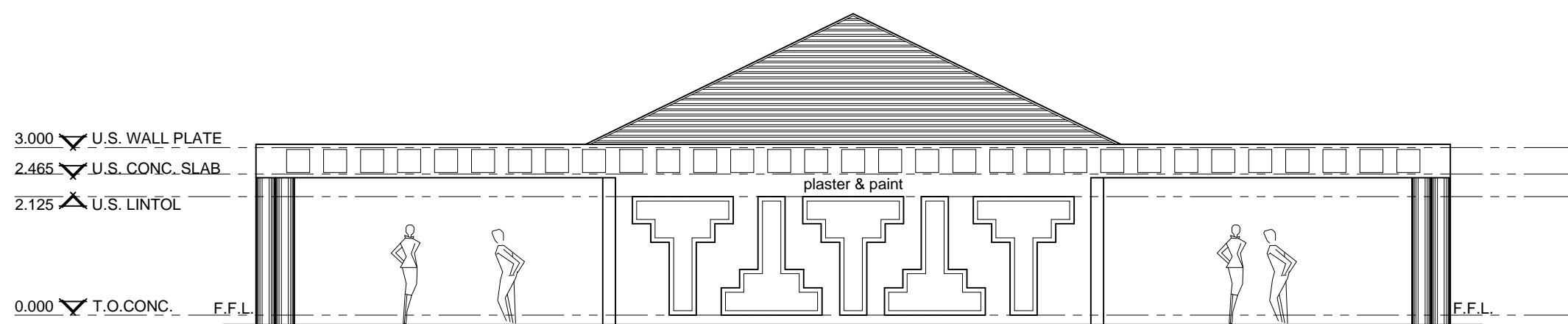
SECTION A-A - GAZEBO  
SCALE 1:100



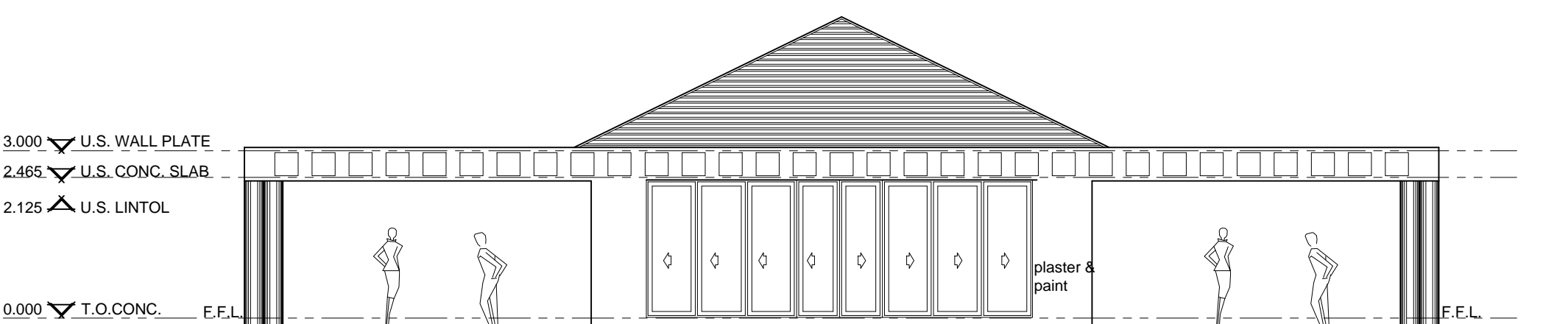
NORTH & SOUTH ELEVATIONS - GAZEBO  
SCALE 1:100



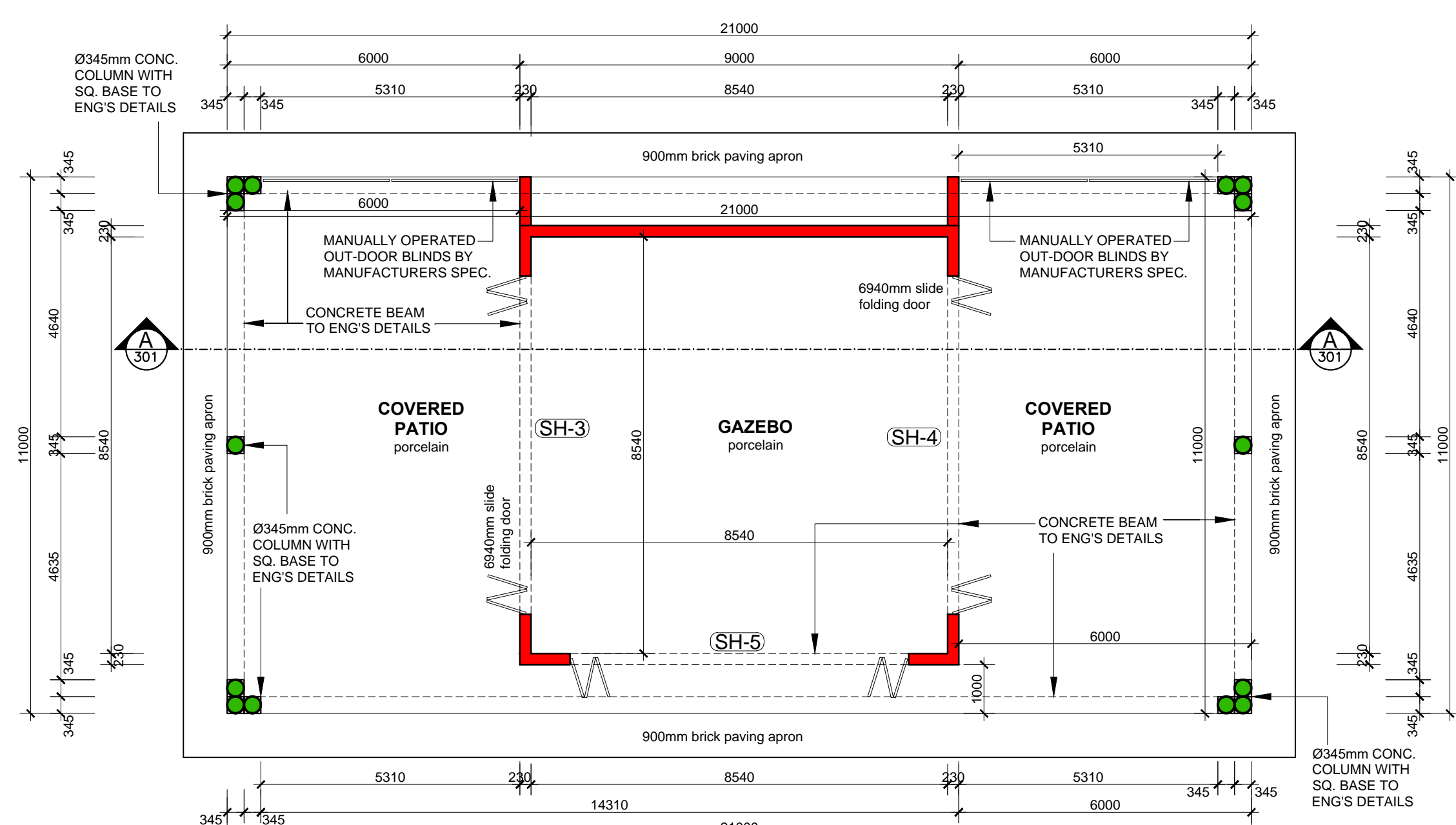
WEST ELEVATION - GAZEBO  
SCALE 1:100



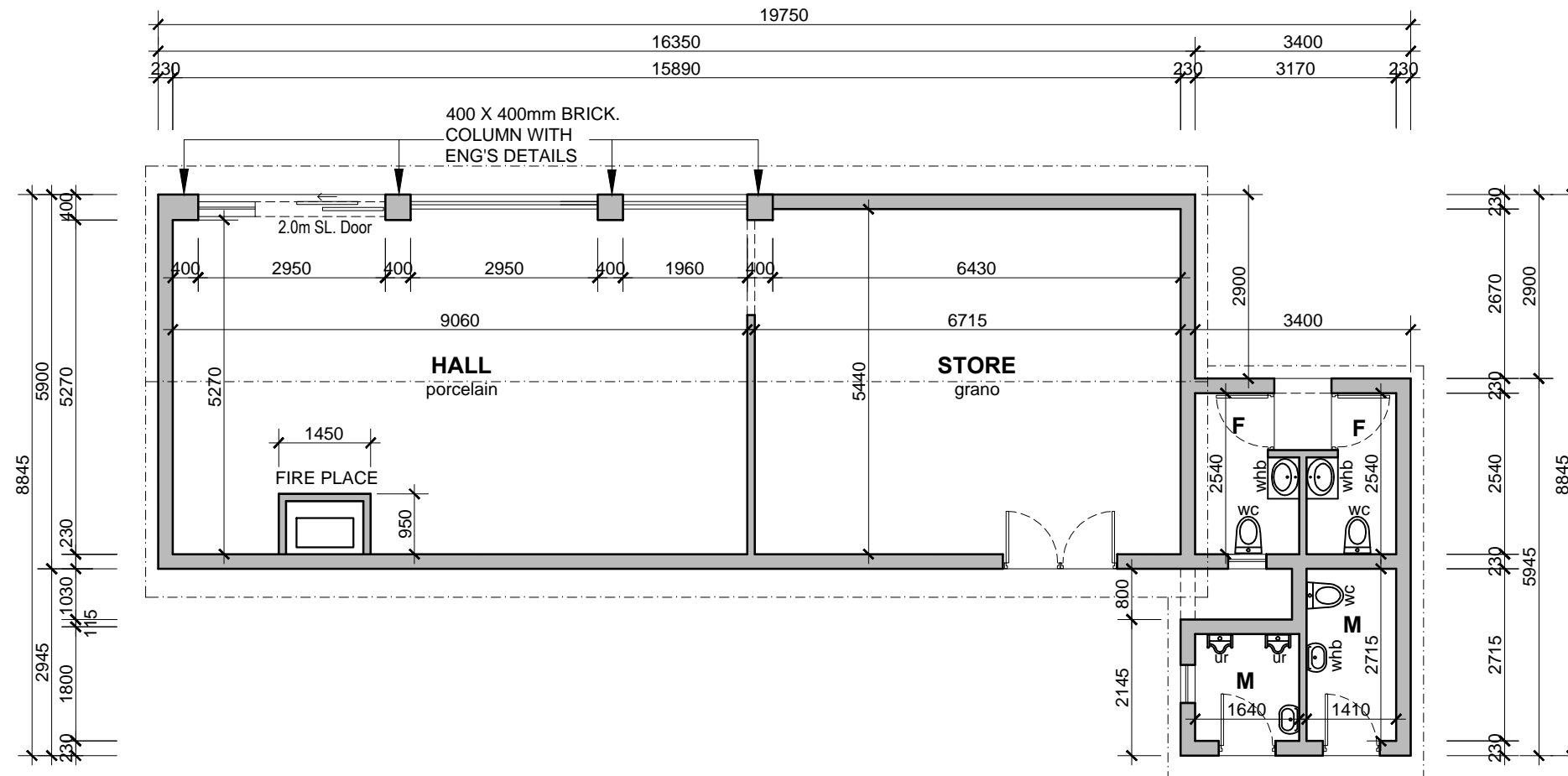
WEST ELEVATION - GAZEBO  
SCALE 1:100



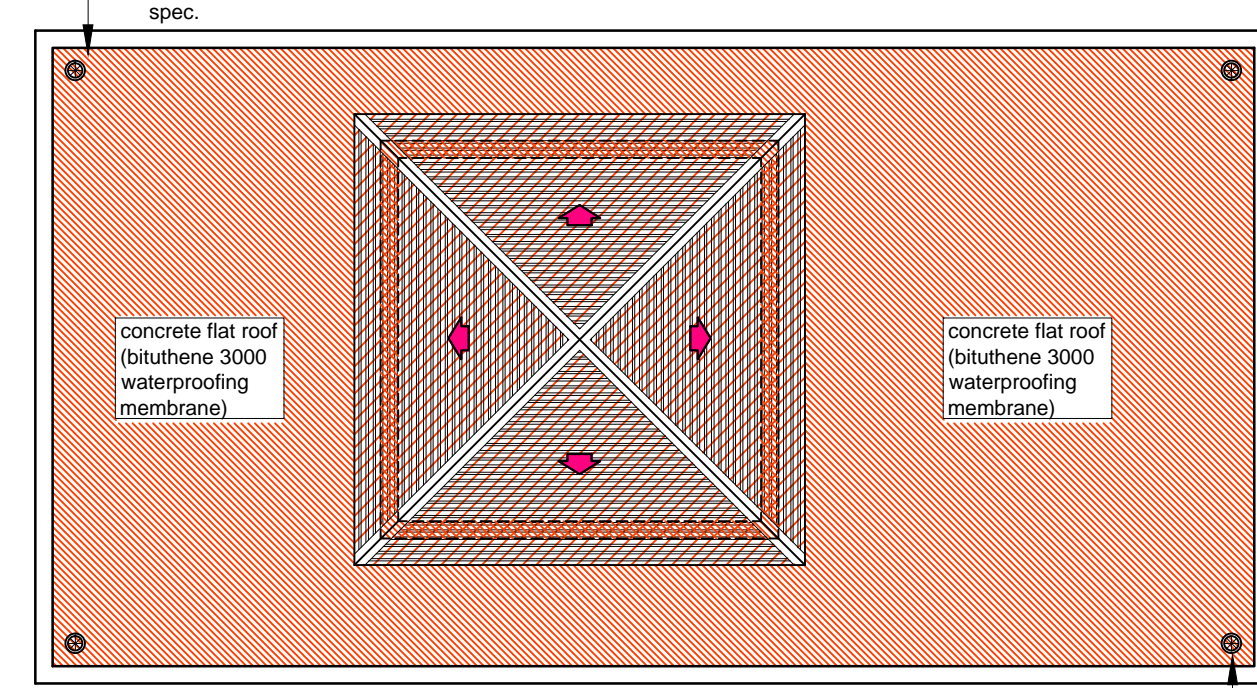
EAST ELEVATION - GAZEBO  
SCALE 1:100



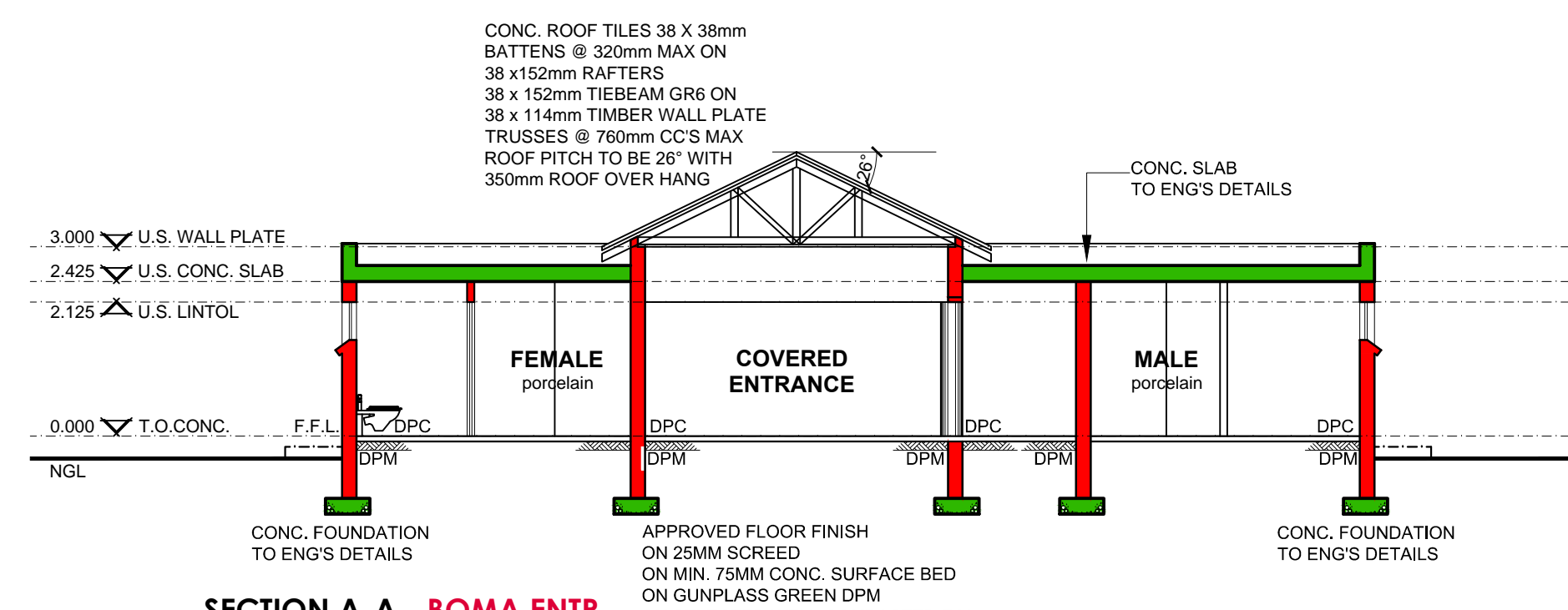
GROUND FLOOR - GAZEBO  
SCALE 1:100  
AREA = 80m²



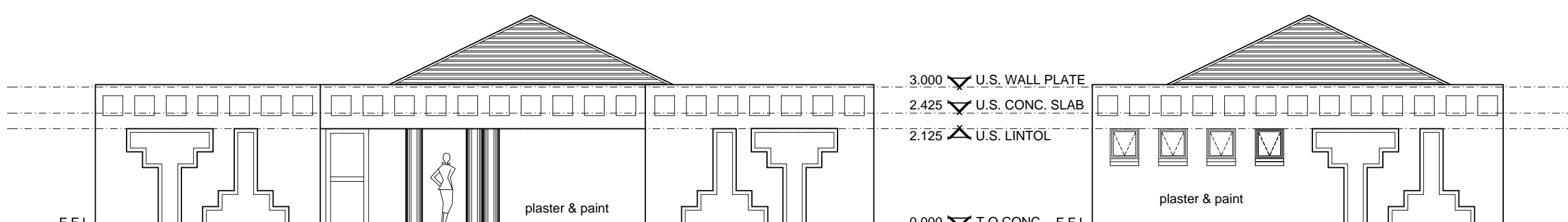
GROUND FLOOR - RECREATIONAL FACILITY  
SCALE 1:100  
AREA = 117m²



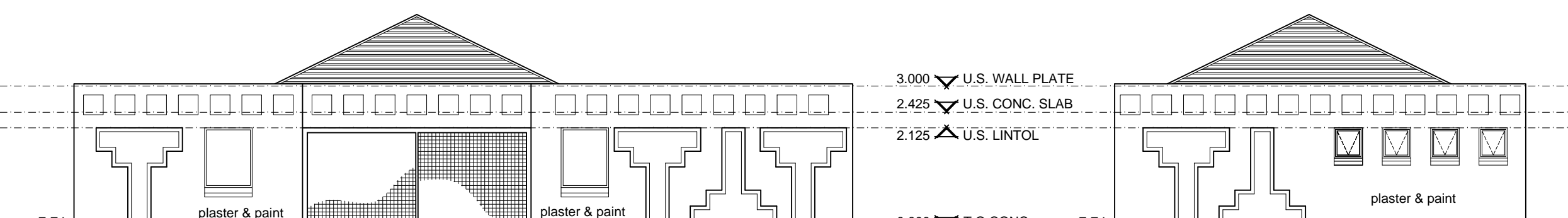
ROOF PLAN - BOMA ENTR.  
SCALE 1:100



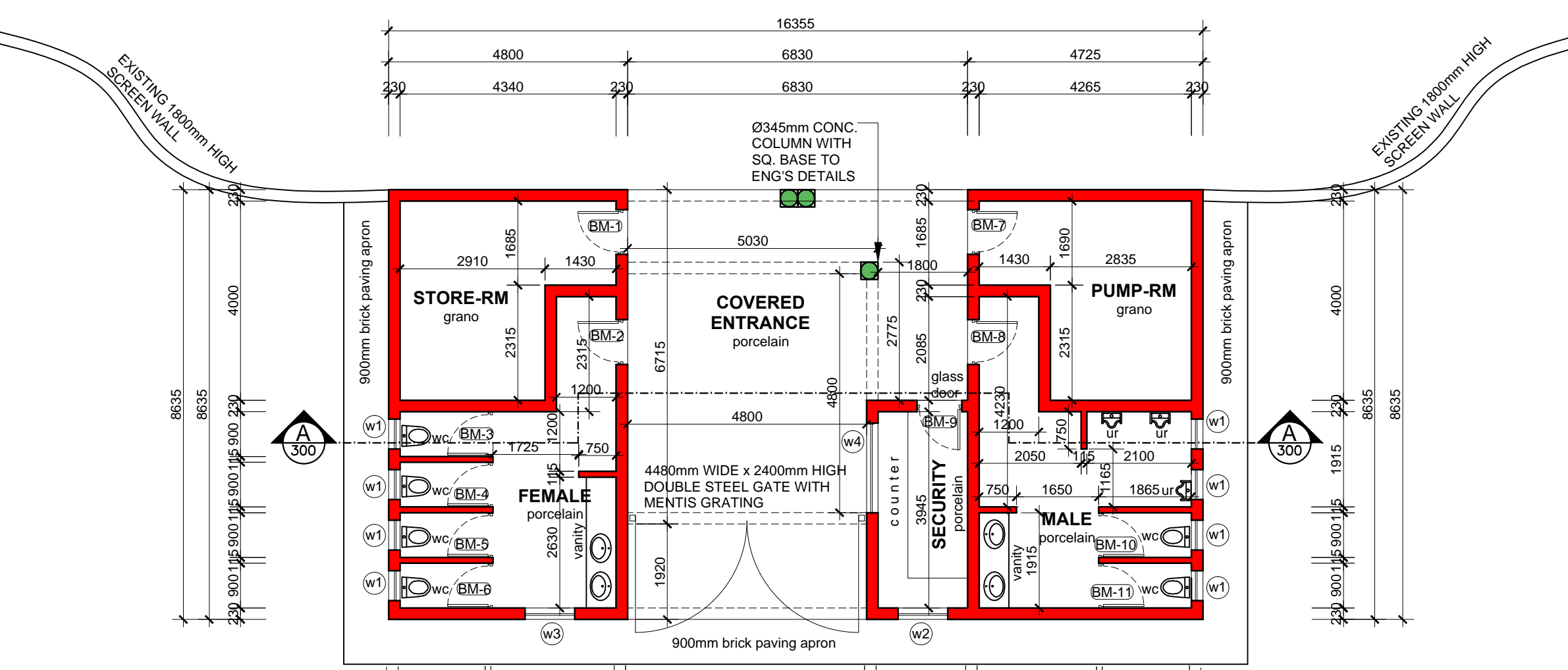
SECTION A-A - BOMA ENTR.  
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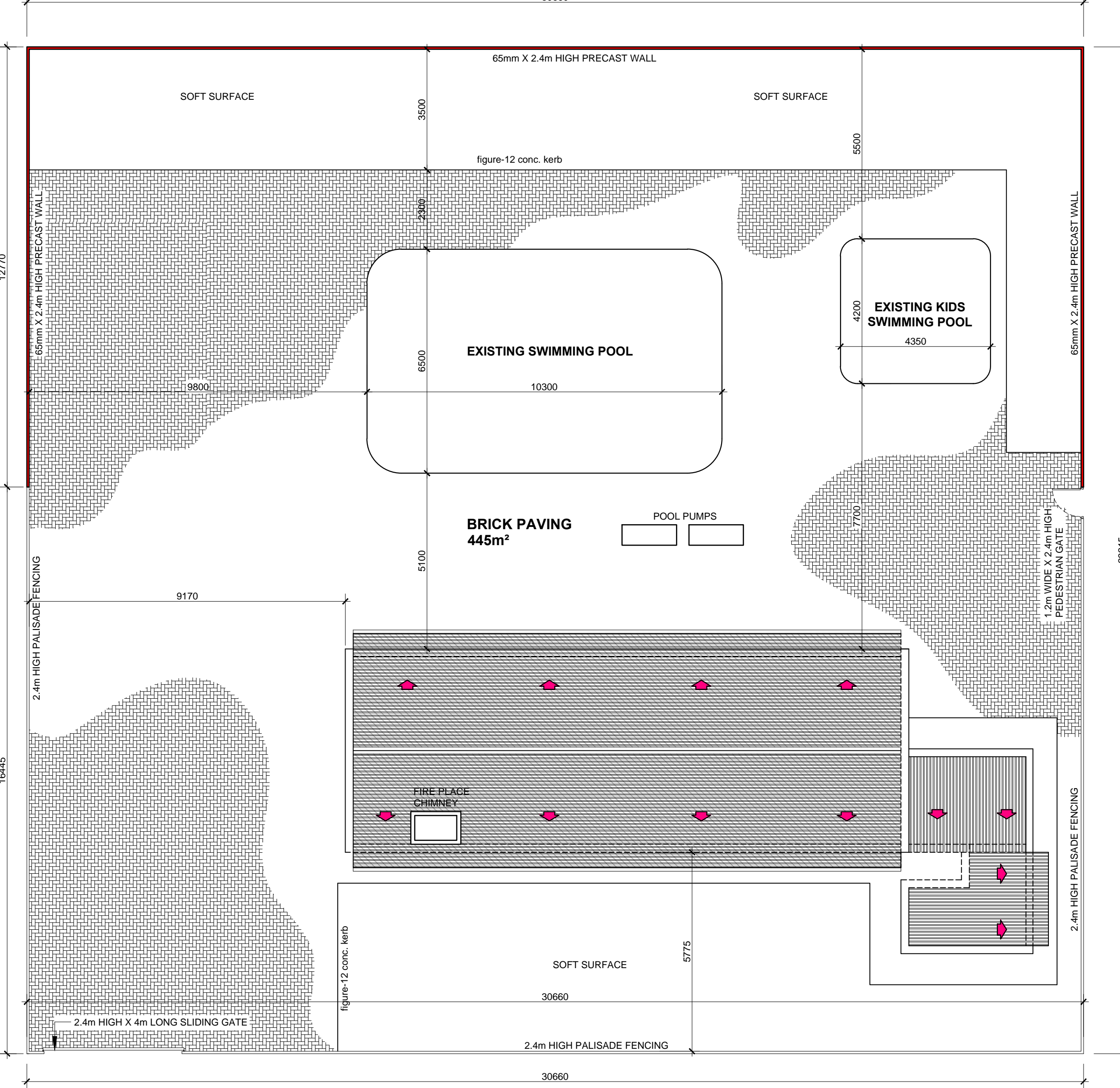
NORTH & EAST ELEVATIONS - BOMA ENTR.  
SCALE 1:100



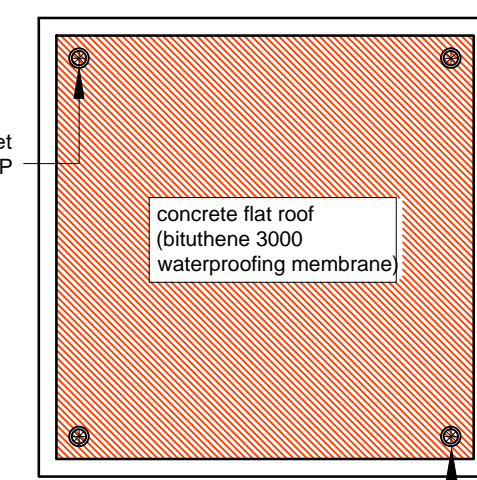
SOUTH & WEST ELEVATIONS - BOMA ENTR.  
SCALE 1:100



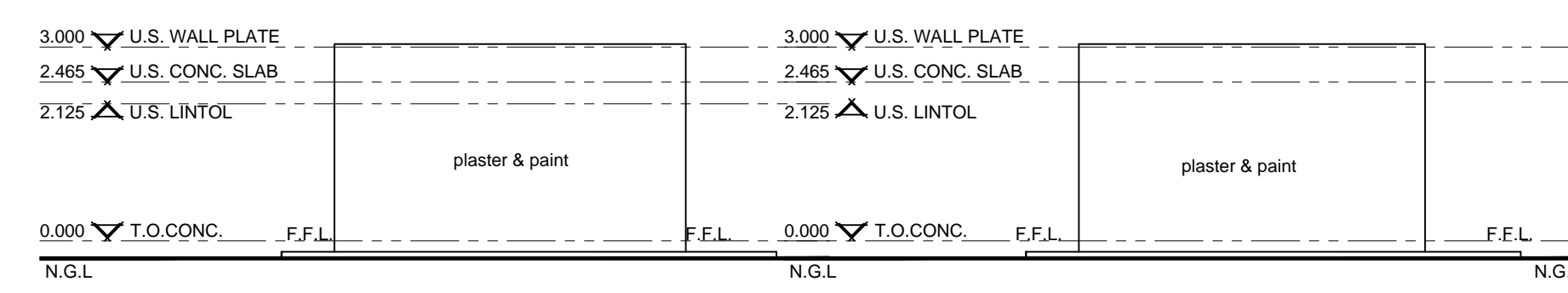
GROUND FLOOR - BOMA ENTR.  
SCALE 1:100  
AREA = 141m²



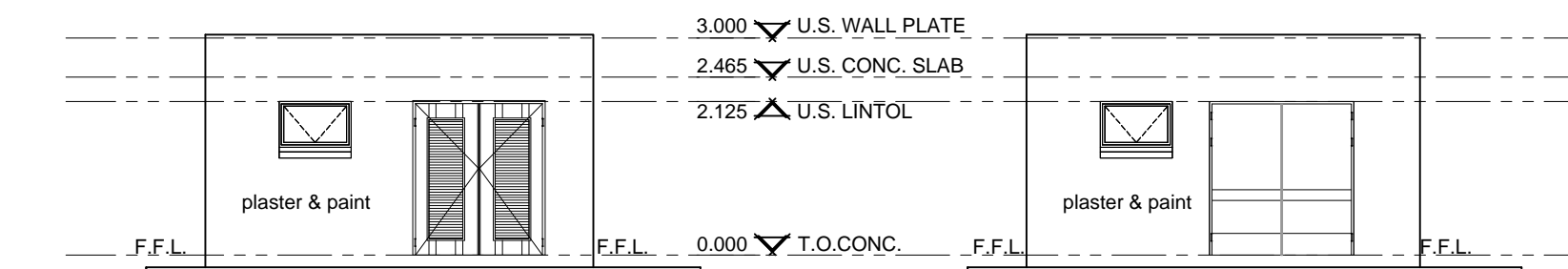
ROOF & SITE PLAN - RECREATIONAL FACILITY  
SCALE 1:100  
(EXISTING)



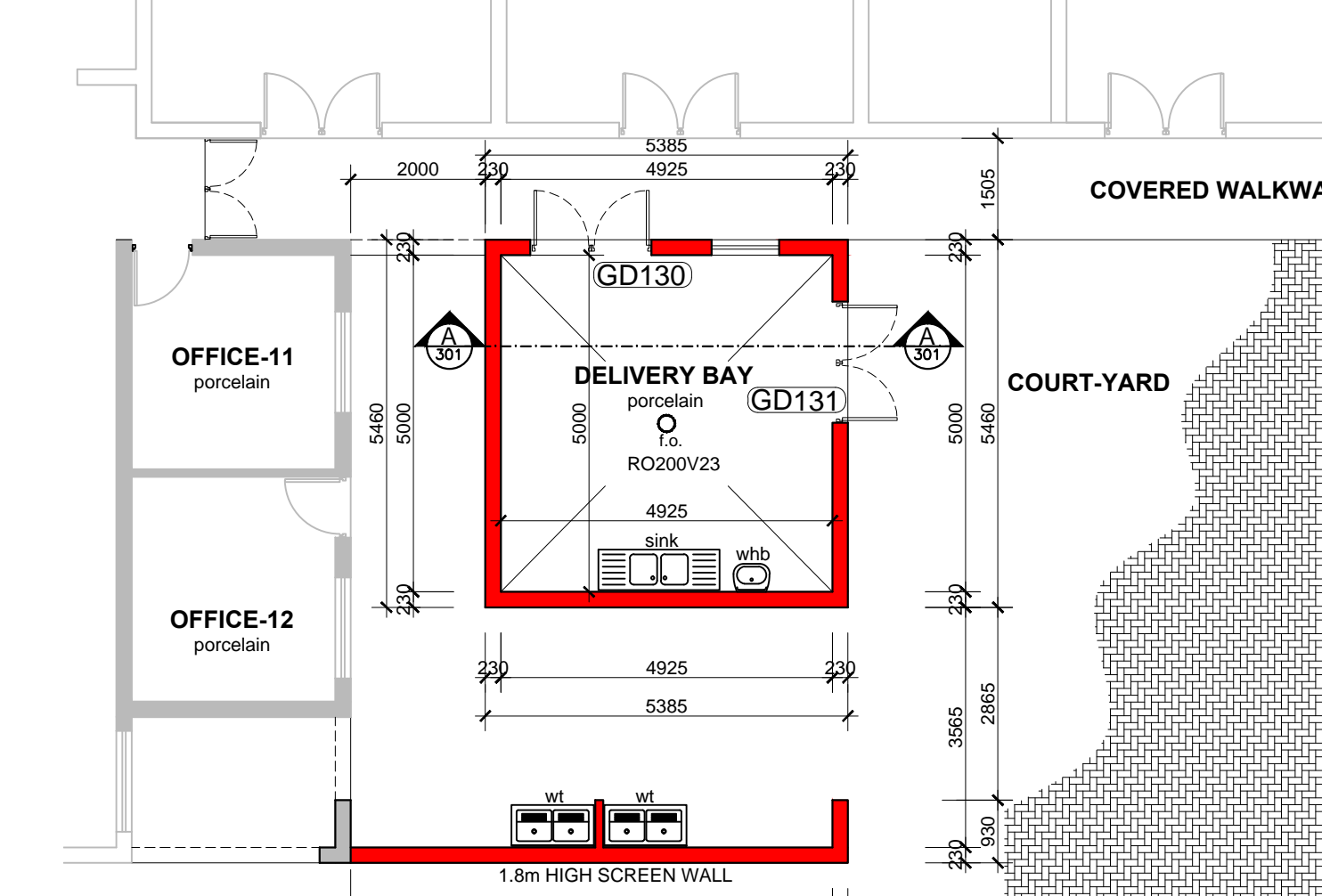
ROOF PLAN - DELIVERY BAY  
SCALE 1:100



WEST & NORTH ELEVATIONS - DELIVERY BAY  
SCALE 1:100



SOUTH & EAST ELEVATIONS - DELIVERY BAY  
SCALE 1:100



GROUND FLOOR - DELIVERY BAY & SCREEN WALL  
SCALE 1:100  
AREA = 29m²

## NOTES:

1. GENERAL:
  - 1.1 THIS DRAWING IS NOT TO BE SCALED. USE FOUR DIMENSIONS ONLY. ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED AND VERIFIED BEFORE ANY WORK COMMENCES ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY. ALL LEVELS, HEIGHTS OF FINISH, DEPTH OF EXCAVATIONS AND NUMBER OF STEPS TO BE FINALLY CHECKED BY CONSTRUCTION ON SITE.
  - 1.2 THE SITE TO BE TREATED IN ACCORDANCE WITH SABS CODE OF PRACTICE No. 0124:1977 WITH "SHELLCORE" THERMATE-PRIME SOIL FOSGOMER.
  - 1.3 TOP OF FOUNDATIONS TO BE A MINIMUM OF 300mm BELOW NATURAL GROUND LEVEL.
  - 1.4 BACKFILL TO FOUNDATIONS:
    - 1.4.1 TOP OF 75mm CONCRETE SURFACE BED TO BE MINIMUM OF 150mm ABOVE FINISH GROUND LEVEL.
    - 1.4.2 75mm THICK CONCRETE SURFACE BED TO BE ON "GUNPLAS" US8 GREEN DAMP PROOF MEMBRANE ON SAND BINDING ON WELL COMPACTED FILL.
    - 1.4.3 "GUNPLAS" BRICKGRIP SABS ENVERSED DPC 35 HIG. UNDER ALL WALLS, WINDOW CILLS AND CHANGES IN FLOOR LEVELS.
    - 1.4.4 STORM WATER SHALL BE REMOVED FROM DWELLING, YARD AND SITE.
    - 1.4.5 ELECTRICAL INSTALLATION SHALL BE ACCORDING TO ELECTRICAL ENGINEERS.
  - 1.5 ALL BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITY BUILDING BY-LAWS AND REGULATIONS.
2. FOUNDATIONS:
  - 2.1 ALL FOUNDATIONS, FOUNDATION WALLS, STRUCTURAL CONCRETE WORK AND SUB-SOIL STORM WATER DRAINAGE TO CIVIL ENGINEER'S SPECIFICATIONS.
  - 2.2 ALL SOIL COMPACTION TO CIVIL ENGINEER'S SPECIFICATIONS.
  - 2.3 230 x 700mm CONCRETE FOUNDATIONS FOR 230mm BRICK WORK.
  - 2.4 300 x 1000mm PAD FOUNDATIONS FOR 400 x 400mm BRICK WORK.
  - 2.5 ALL FOUNDATIONS TO BE REINFORCED AS REQUIRED BY ENGINEER.
3. ROOFS:
  - 3.1 25mm CEMENT SCREED TO ALL FLOORS.
  - 3.2 25mm BRICK WALLS WITH GUNGLER BRICKGRIP DPC.
  - 3.3 BRICK FORCE EVERY 6 COURSES AND EVERY COURSE FOR 4 COURSES OVER OPENINGS.
  - 3.4 ALL BRICK WORK MIN. 7 MPA CLASS 1.
  - 3.5 WINDOWS BUILT IN WITH GUNGLER BRICKGRIP DPC.
  - 3.6 ALL PAINTWORK TO COMPLY WITH MANUFACTURER'S SPECIFICATIONS WITH NECESSARY UNDERCOATS.
4. ROOFS:
  - 4.1 10° ROOF PITCH.
  - 4.2 0.6mm HUP-COR-700 SHEETING ON 50 x 75mm TIMBER FURLINS AT 1.3m C/C'S. 12 x 38mm KING POST ON 182 x 38mm LAMINATED BATTENS ON 14 x 38mm WALL PLATE TIED DOWN WITH GALV. H/CP RICH. TIMBERED THROUGH 4 COURSES OF BRICK WORK.
  - 4.3 40mm INSULATION BLANKET.
  - 4.4 RHINOCELT CEILING BOARDS ON 38 x 38mm TIMBER BRANDBERGS AT 450mm C/C'S FIXED TO TRUSSES AND 30mm COVER CORNICES.
  - 4.5 CORNICE SLAB TO ENGINEER'S DETAILS.
  - 4.6 50mm CHIPS - STONE LAYER.
  - 4.7 FINE BREKMER OVER ALL FULTONE OUTLETS.
  - 4.8 BDM CLOTH.
  - 4.9 BUTHERE WATERPROOFING MEMBRANE TO MANUFACTURER'S SPEC. SCALED TO FALL 1:60.
5. WINDOWS & DOORS:
  - 5.1 ALUMINIUM FRAME WINDOWS AS PER WINDOW SCHEDULE.
  - 5.2 ANY FRAME OF GLASS WHICH IS TO BE SEALED WITHOUT A SUPPORT FRAME SHALL BE IN ACCORDANCE WITH SABS 0137.
  - 5.3 THICKNESS OF FRAME IN RELATION TO AREA SHALL BE IN ACCORDANCE WITH SABS 0137.
  - 5.4 GLAZING TO BE AS PER H/CP PART N.
6. DRAINAGE:
  - 6.1 100mm UPVC SEWER PIPE DRAIN WITH A MIN. FALL OF 1:60.
  - 6.2 100mm CVP AT HEAD OF DRAIN PIPE AS SHOWN.

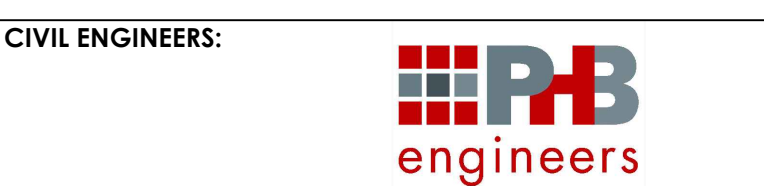
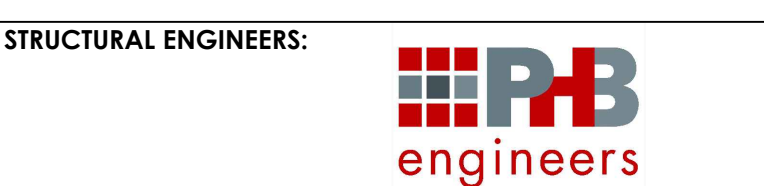
## FOR INFORMATION

| Rev. | Date       | Revision  | Name |
|------|------------|---|------|
| D    | 24.07.2023 | Recreational Facility Added.  | Mpho |
| C    | 28.06.2023 | Delivery Bay added.<br>Screen Wall added.   | Mpho |
| B    | 25.06.2023 | - Conc. slab added to GAZEBO.<br>- Covered Patio added to GAZEBO.<br>- Height of GAZEBO's Wall Post raised.<br>- 900mm Brick Paving Apron added to BOMA ENTRANCE. | Mpho |
| A    | 25.06.2023 | Issued for Costing  | Mpho |

**Project:**  
Proposed Refurbishment & Upgrading of Existing Taung Hotel School & Convention Centre for the North West Parks & Tourism Board

**Description:**  
- GROUND FLOORS, ROOF PLANS  
ELEVATIONS & SECTIONS  
- GAZEBO, BOMA ENTRANCE,  
DELIVERY BAY & RECREATIONAL  
FACILITY

Scale: AS SHOWN



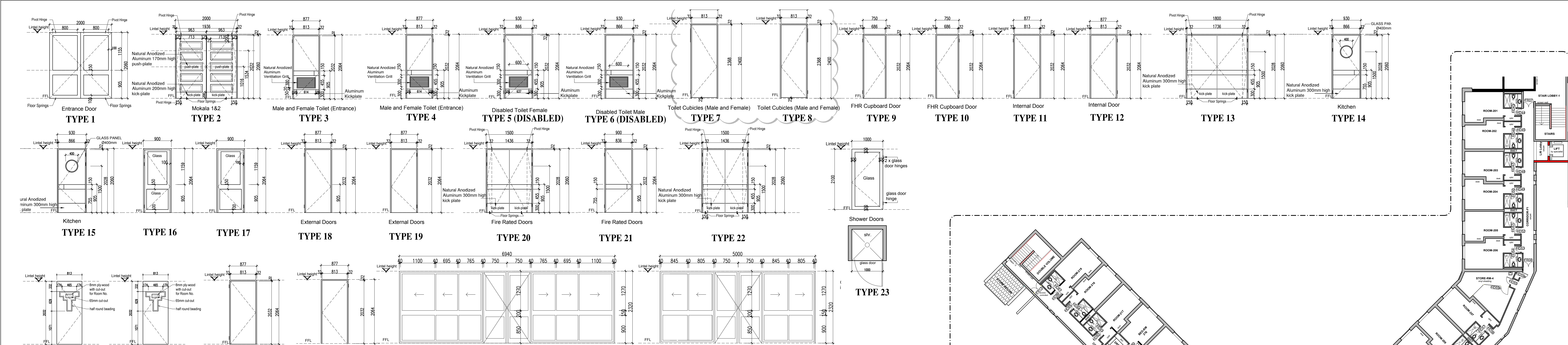
**MAIN CONTRACTOR:**  
TBA

DRAWN: Mpho  
DATE: 03.Oct. 22

DESIGN: TH-207/BM-G-DB-R  
COMP. No: TH-207/BM-G-DB-R

REV. No.  
D



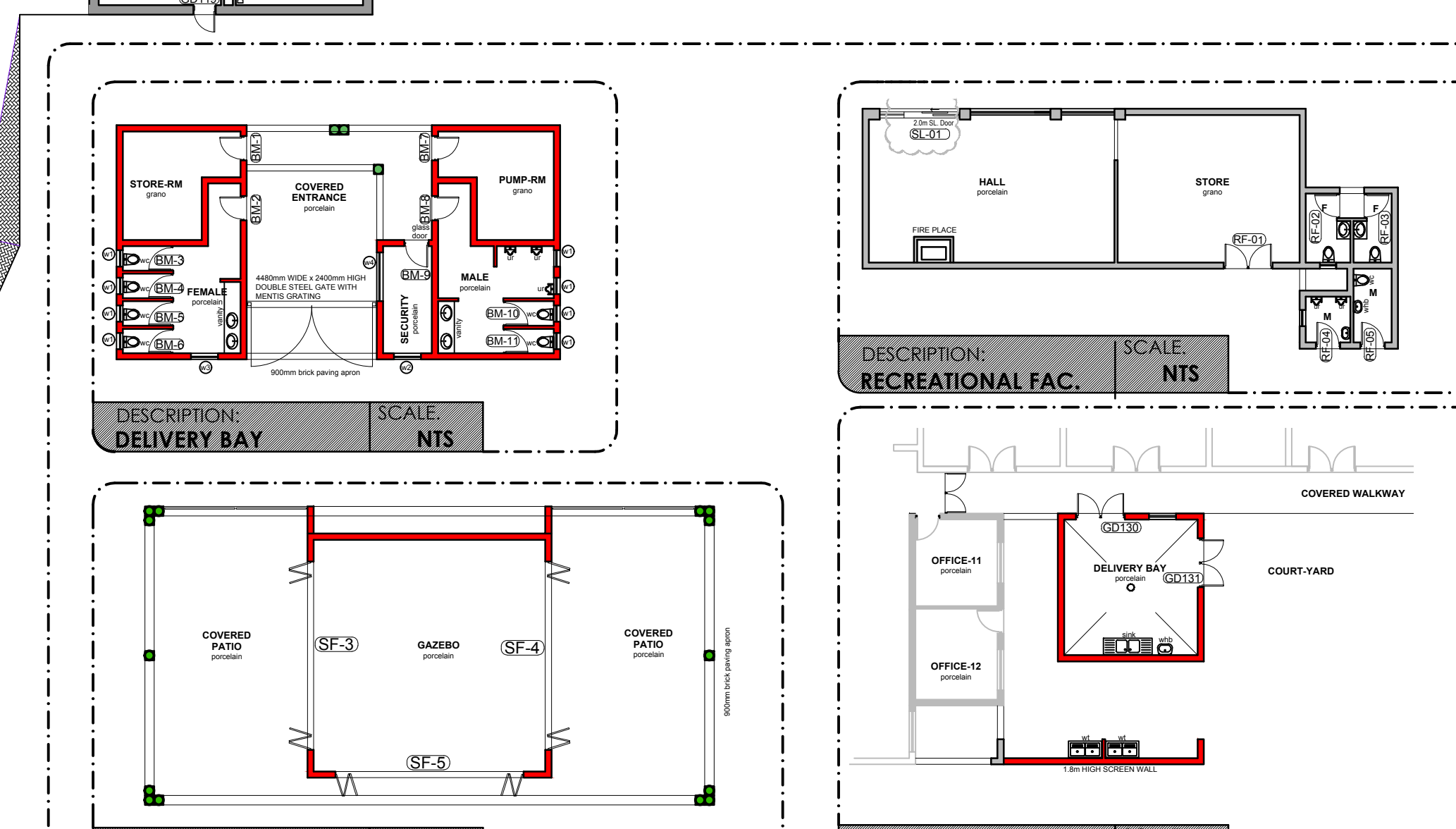
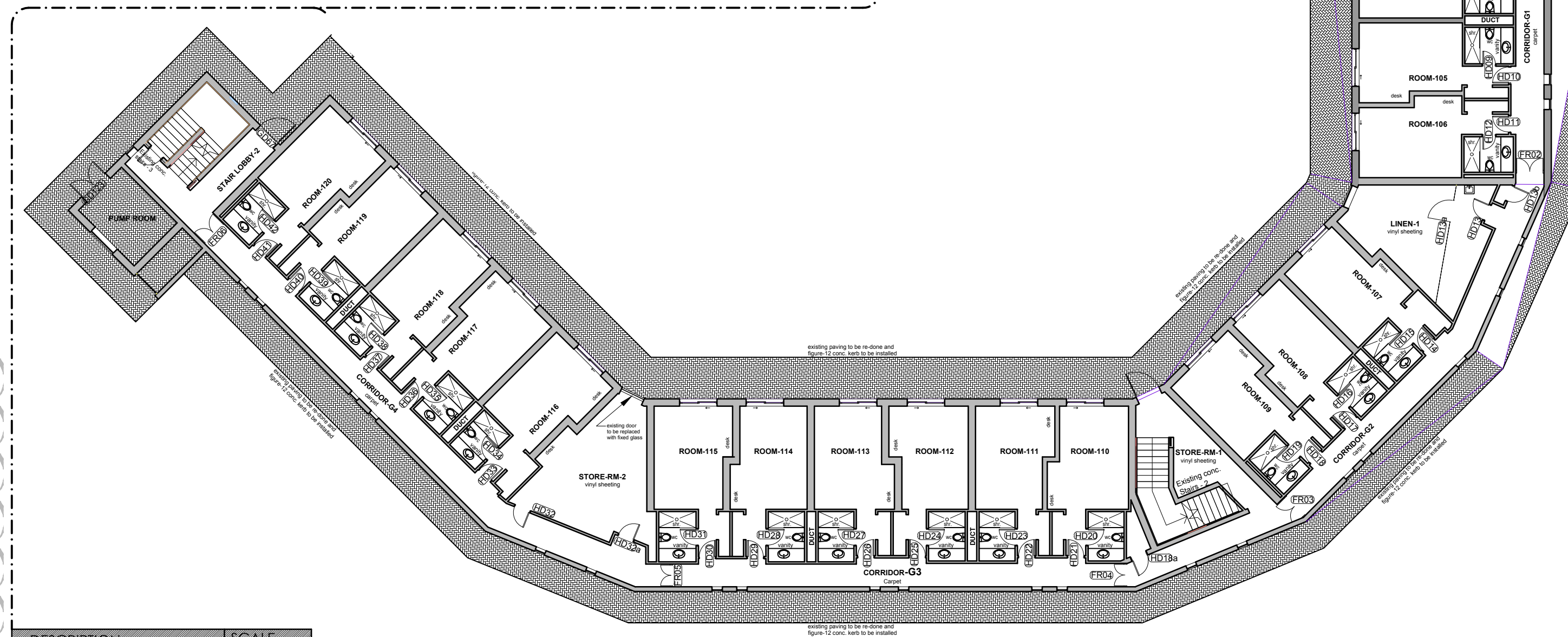
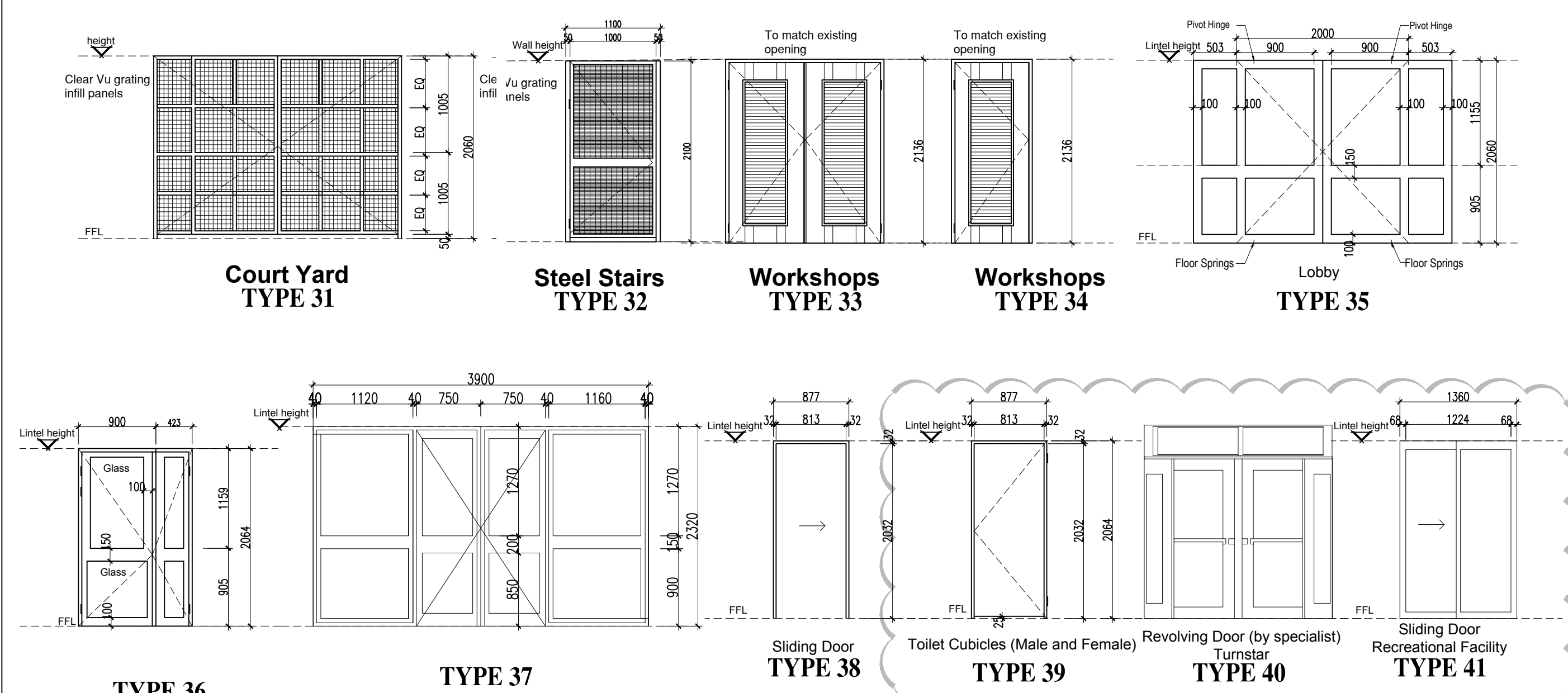


| TYPE         | TYPE 3   | TYPE 4   | TYPE 5 (DISABLED)                                      | TYPE 6 (DISABLED)                                      | TYPE 7  | TYPE 8  | TYPE 9   | TYPE 10  | TYPE 11  |
|--------------|--|--|--|--|---|---|--|--|--|
| NUMBER       | D13, D14, D40, D53, BM2                                | D24, D34, D40a, D59, D53a, D59, D59a, BM-08            | D27  | D26  | D16, D17, D18, D19, D20, D21, D22, D23, D31, D32, D31a, D33, BM10, BM11                             | D06, D37, D38, D39, BM3, BM4, BM5, BM6  | D15  | D12a, D29, D36, D47, D29a                              | D4, D5, D9, D27c, D44, D46, D48, D51, D51b, D103, D106, D107, D108, D111 |
| DOOR         | 40mm thick Semi Solid Door Light Oak Veneer both sides | 40mm thick Semi Solid Door Light Oak Veneer both sides | 40mm thick Semi Solid Door Light Oak Veneer both sides | 40mm thick Semi Solid Door Light Oak Veneer both sides | 40mm Thick Semi Solid Door with Light Oak Veneer both sides. 25mm undercut to allow for Ventilation | 40mm Thick Semi Solid Door with Light Oak Veneer both sides. 25mm undercut to allow for Ventilation | 40mm Thick Semi Solid Door Light Oak Veneer both sides | 40mm Thick Semi Solid Door Light Oak Veneer both sides | 40mm Thick Semi Solid Door Light Oak Veneer both sides                   |
| DOOR FINISH  | As per Architects Specification                        | As per Architects Specification                        | As per Architects Specification                        | As per Architects Specification                        | As per Architects Specification   | As per Architects Specification   | As per Architects Specification                        | As per Architects Specification                        | As per Architects Specification  |
| DOOR OPENING | Left Hand Door   | Left Hand Door   | Left Hand Door   | Left Hand Door   | Right Hand Door   | Right Hand Door   | Left Hand Door   | Right Hand Door  | Left Hand Door   |
| FRAME        | Standard Mild Steel Section 230mm Brick Wall           | Standard Mild Steel Section 230mm Brick Wall           | Standard Mild Steel Section 230mm Brick Wall           | Standard Mild Steel Section 230mm Brick Wall           | Standard Mild Steel Section 115mm Brick Wall  | Standard Aluminum Section   | Standard Aluminum Section                              | Standard Aluminum Section                              | Standard Aluminum Section  |
| FRAME FINISH | As per Architects Specification                        | As per Architects Specification                        | As per Architects Specification                        | As per Architects Specification                        | As per Architects Specification   | As per Architects Specification   | As per Architects Specification                        | As per Architects Specification                        | As per Architects Specification  |
| GLAZING      | N/A  | N/A  | N/A  | N/A  | N/A   | N/A   | N/A  | N/A  | N/A  |
| IRONMONGERY  | ASSABLOY   | ASSABLOY   | ASSABLOY   | ASSABLOY   | ASSABLOY  | ASSABLOY  | ASSABLOY   | ASSABLOY   | ASSABLOY   |

| TYPE         | TYPE 12   | TYPE 13   | TYPE 14  | TYPE 15  | TYPE 16  | TYPE 17  | TYPE 18   | TYPE 19   |
|--------------|---|---|--|--|--|--|---|---|
| NUMBER       | D7, D8, D27a, D27b, D27c, D42, D43, D45, D46b, D49, D49b, D61, D62a, D104, D109, D110, BM7, HD78a | D60, D62, D101, D102, D105, D130 RF-01            | D65, D65a, D65b                                      | D64, D64a  | D08, D30   | D28, D46b, D61 HD45 BM9                              | D106, D106a, D110 BM-1 RF-02                      | D06, D6a, D110a, D110b BM-7 RF-03, RF-04, RF-05.  |
| DOOR         | 40mm Thick Semi Solid Door Light Oak Veneer both sides  | 40mm Thick Solid Door Light Oak Veneer both sides | 40mm Thick Solid Door Light Oak Veneer both sides    | 40mm Thick Solid Door Light Oak Veneer both sides    | Single Door Charcoal Aluminium                       | Single Door Charcoal Aluminium                       | 40mm Thick Solid Door Light Oak Veneer both sides | 40mm Thick Solid Door Light Oak Veneer both sides |
| DOOR FINISH  | As per Architects Specification   | As per Architects Specification                   | As per Architects Specification                      | As per Architects Specification                      | Charcoal Aluminium                                   | Charcoal Aluminium                                   | Charcoal Aluminium                                | As per Architects Specification                   |
| DOOR OPENING | Right Hand Door   | Double Door Open out                              | Single Door Open out                                 | Single Door Open out                                 | Single Door Open out                                 | Single Door Open out                                 | Single Door Open out (Left Hand)                  | Single Door Open out (Right Hand)                 |
| FRAME        | Standard Aluminum Section   | Standard Aluminum Section                         | Existing Steel Frame                                 | Existing Steel Frame                                 | Standard Aluminum Section                            | Standard Aluminum Section                            | Standard Aluminum Section                         | As per Architects Specification                   |
| FRAME FINISH | Natural Anodized Aluminium  | Natural Anodized Aluminium                        | Natural Anodized Aluminium                           | Natural Anodized Aluminium                           | Natural Anodized Aluminium                           | Natural Anodized Aluminium                           | Natural Anodized Aluminium                        | Natural Anodized Aluminium                        |
| GLAZING      | N/A   | N/A   | 6mm Laminated Clear Safety Glass Colour: Clear Glass | 6mm Laminated Clear Safety Glass Colour: Clear Glass | 6mm Laminated Clear Safety Glass Colour: Clear Glass | 6mm Laminated Clear Safety Glass Colour: Clear Glass | N/A   | N/A   |
| IRONMONGERY  | ASSABLOY  | ASSABLOY  | ASSABLOY   | ASSABLOY   | ASSABLOY   | ASSABLOY   | ASSABLOY  | ASSABLOY  |

| TYPE         | TYPE 20  | TYPE 21   | TYPE 22   |
|--------------|--|---|---|
| NUMBER       | FR01, FR02, FR03, FR04, FR05, FR06, FR07, FR08, FR09, FR10, FR11, FR12 | D03, D25, FR09, D119, D12                         | D12   |
| DOOR         | 40mm Thick Solid Door Light Oak Veneer both sides                      | 40mm Thick Solid Door Light Oak Veneer both sides | 40mm Thick Solid Door Light Oak Veneer both sides |
| DOOR FINISH  | As per Architects Specification  | As per Architects Specification                   | As per Architects Specification                   |
| DOOR OPENING | Double Door Open out   | Double Door Open out                              | Single Door Open out                              |
| FRAME        | As per Architects Specification  | As per Architects Specification                   | As per Architects Specification                   |
| FRAME FINISH | Natural Anodized Aluminum  | Natural Anodized Aluminum                         | Standard Mild Steel Section 230mm Brick Wall      |
| GLAZING      | N/A  | N/A   | N/A   |
| IRONMONGERY  | ASSABLOY   | ASSABLOY  | ASSABLOY  |

| TYPE         | TYPE 29   | TYPE 30   | TYPE 31                         | TYPE 32                         | TYPE 33  | TYPE 34  | TYPE 35  | TYPE 36  | TYPE 37  | TYPE 38  |
|--------------|---|---|---------------------------------|---------------------------------|--|--|--|--|--|--|
| NUMBER       | SF-1, SF-3, SF-4, SF-5                                    | SF-2  | Gate - 1                        | Gate 2                          | D112, D113, D115, D116, D117, D118, D123, D131           | D114   | D11  | D30, D41   | SF-6   | HD76   |
| DOOR         | Double Door Charcoal Aluminum                             | Double Door Charcoal Aluminum                             | Clear Vu infill panels          | Clear Vu infill panels          | Transformation Room Door with Ventilation Louvers Type D | Transformation Room Door with Ventilation Louvers Type D | Double Door Charcoal Aluminum                        | Single Door Charcoal Aluminum                        | Double Door Charcoal Aluminum                        | Sliding Door Charcoal Aluminum                       |
| DOOR FINISH  | As per Architects Specification                           | As per Architects Specification                           | As per Architects Specification | As per Architects Specification | As per Architects Specification                          | As per Architects Specification                          | As per Architects Specification                      | As per Architects Specification                      | As per Architects Specification                      | As per Architects Specification                      |
| DOOR OPENING | Double Door Open In                                       | Double Door Open In                                       | Double Gate Open In             | Single Gate Open Out            | Double Gate Open In                                      | Single Gate Open Out                                     | Double Door Open out                                 | Single Door Open out                                 | Double Door Open out                                 | Sliding Door (Single)                                |
| FRAME FINISH | Standard Aluminum Section                                 | Standard Aluminum Section                                 | Standard Steel Section          | Standard Steel Section          | Standard Steel Section                                   | Standard Steel Section                                   | Standard Aluminum Section                            | Standard Aluminum Section                            | Standard Aluminum Section                            | Standard Aluminum Section                            |
| GLAZING      | 6mm Laminated Clear Safety Glass, Smart Colour Vue Bronze | 6mm Laminated Clear Safety Glass, Smart Colour Vue Bronze | n/a                             | n/a                             | n/a  | n/a  | 6mm Laminated Clear Safety Glass Colour: Clear Glass | 6mm Laminated Clear Safety Glass Colour: Clear Glass | 6mm Laminated Clear Safety Glass Colour: Clear Glass | 6mm Laminated Clear Safety Glass Colour: Clear Glass |
| IRONMONGERY  | ASSA ABLOY  | ASSA ABLOY  | ASSA ABLOY                      | ASSA ABLOY                      | ASSA ABLOY   | ASSA ABLOY   | ASSABLOY   | ASSABLOY   | ASSABLOY   | ASSABLOY   |



- NOTES:**
1. THIS DRAWING IS NOT TO BE SCALED. USE FIGURED DIMENSIONS ONLY. ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED AND VERIFIED BEFORE ANY WORK COMMENCES ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY. ALL LEVELS, HEIGHTS OF FINISH, DEPTH OF EXCAVATIONS AND NUMBER OF STEPS TO BE FINALLY CHECKED BY CONTRACTOR ON SITE.
  2. THE SITE TO BE TREATED IN ACCORDANCE WITH SABS CODE OF PRACTICE No. 0124-1977 with "SHELL DRITE" TERMITICIDE SOIL POSONER.
  3. TOP OF FOUNDATIONS TO BE A MINIMUM OF 300mm BELOW NATURAL GROUND LEVEL.
  4. 150mm CONCRETE SURFACE BED TO BE MINIMUM OF 150mm ABOVE FINISH GROUND LEVEL.
  5. 17 "CONCRETE" BRICKWORK SABS ENDSPEC DPC 375 MIC. UNDER ALL WALLS, WINDOW CILLS AND CHANGES IN FLOOR LEVELS.
  6. 150mm STORM-WATER SHALL BE REMOVED FROM DWELLING, YARD AND SITE.
  7. ELECTRICAL INSTALLATION SHALL BE ACCORDING TO ELECTRICAL ENGINEERS.
  8. ALL BRICKING WORK TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITIES BUILDING BY-LAWS AND REGULATIONS.
  9. FOUNDATIONS:
    - 21. ALL FOUNDATIONS, FOUNDATION WALLS, STRUCTURAL CONCRETE WORK AND SUB-SOIL STORM-WATER DRAINAGE TO CIVIL ENGINEERS SPECIFICATIONS.
    - 22. ALL SOIL COMPACTION TO CIVIL ENGINEERS SPECIFICATIONS.
    - 23. 200 x 100mm CONCRETE FOUNDATIONS FOR 200mm BRICK WORK.
    - 24. 300 x 100mm PAD FOUNDATIONS FOR 400 x 400mm BRICK WORK.
    - 25. ALL FOUNDATIONS TO BE REINFORCED AS REQUIRED BY ENGINEER.
  10. FLOORS:
    - 31. 25mm CEMENT SCREED TO ALL FLOORS.
  11. WALLS:
    - 41. 200mm BRICK WALLS WITH GUNDEL BRICKWORK DPC.
    - 42. BRICKWORK EVERY 4 COURSES AND EVERY COURSE FOR 4 COURSES OVER OPENINGS.
    - 43. ALL BRICK WORK M8.7 MPA CLASS 5.
    - 44. WINDOWS BUILT IN WITH GUNDEL BRICKWORK DPC.
    - 45. ALL PAINTWORK TO COMPLY WITH MANUFACTURER'S SPECIFICATIONS WITH NECESSARY UNDERCOATS.
  12. ROOFING:
    - 51. 10% ROOF PITCH.
    - 52. 6mm KLP-LOCK 700 SHEETING ON 50 x 75mm TIMBER PURLINS AT 1.3m c/c/c. 150 x 38mm KING POST ON 100 x 38mm LAMINATED BATTEN ONLY 14.38mm WALL PLATE TIED DOWN WITH GALV. HOOP IRON, THREADED THROUGH 4 COURSES OF BRICK WORK.
    - 53. 40mm INSULATION BLANKET.
    - 54. RAINWATER CEILING BOARDS ON 38 x 38mm TIMBER BRANDEDINGS AT 600mm c/c/c. FIXED TO TRUSSES AND 200mm COVERED CORNICES.
    - 55. CONCRETE SLAB TO ENGINEER'S DETAILS.
    - 56mm CHIPS - 200mm LAYER.
    - 57. FINE BRID MESH OVER ALL FULBURE OUTLETS.
    - 58. 100mm CLOTH.
    - 59. BUTYLSHEE WATERPROOFING MEMBRANE TO MANUFACTURER'S SPEC. SCREDS TO FALL 1:60.
  13. WINDOWS & DOORS:
    - 61. ALUMINUM FRAME WINDOWS AS PER WINDOW SCHEDULE.
    - 61a. ANY FRAME OF GLASS WHICH IS TO BE INSTALLED WITHOUT A SUPPORT FRAME SHALL BE IN ACCORDANCE WITH SABS 0137.
    - 61b. INCREASE OF FRAME RELATION TO THEIR AREA SHALL BE IN ACCORDANCE WITH SABS 0137.
    - 61c. GLAZING TO BE AS PER SABS PART 4.
  14. ALL DOORS & FRAMES TO BE AS PER DOOR SCHEDULE.
  15. DRAINAGE:
    - 71. 60mm ID PVC SEWER PIPE DRAIN WITH A MIN. FALL OF 1:60.
    - 72. 80mm ID PVC AT HEAD OF DRAIN PIPE AS SHOWN.

| FOR INFORMATION |            |   |      |
|-----------------|------------|---|------|
| Rev.            | Date       | Revision  | Name |
| G               | 14.08.2023 | Type 7 & 8 (black) door height increased. Type 39, 40 & 41 Spec. added.   | Mpho |
| F               | 01.08.2023 | All Doors revised to match the recent layout Type 24 (Slide Folding Door Removed). Type 35, 36, 37, 38, 39, 40, 41. | Mpho |
| E               | 04.07.2023 | Room 104 "RF" Doors 1:11 added. RF11 Door No. 72 removed.   | Mpho |
| D               | 28.06.2023 | Doors 120 & 131 added with Delivery Bay. Door 83a added (Pilot unit - 800). Gatebox Shop front numbering added.     | Mpho |
| c               | 22.06.2023 | Doors 100-123 added. Door 29a added.  | Mpho |
| b               | 14.06.2023 | Doors Revised.  | Mpho |
| a               | 01.06.2023 | Issued for Client Comments  | Mpho |

**Project:**  
Proposed Refurbishment of Taung Hotel  
School & Convention Centre for the  
North West Parks & Tourism Board

**Description:**  
- Dining & Shopfront Schedule -

Scale: NTS

**EMPLOYER:**  
NORTH WEST PARKS & TOURISM BOARD

**IMPLEMENTING AGENT:**  
Independent Development Trust

**ARCHITECTS:**  
Boskalis & Associates (Pty) Ltd

**QUANTITY SURVEYORS:**  
Boskalis & Associates (Pty) Ltd

**STRUCTURAL ENGINEERS:**  
PB engineers

**CIVIL ENGINEERS:**  
PB engineers

**MECHANICAL ENGINEERS:**  
Green Vision

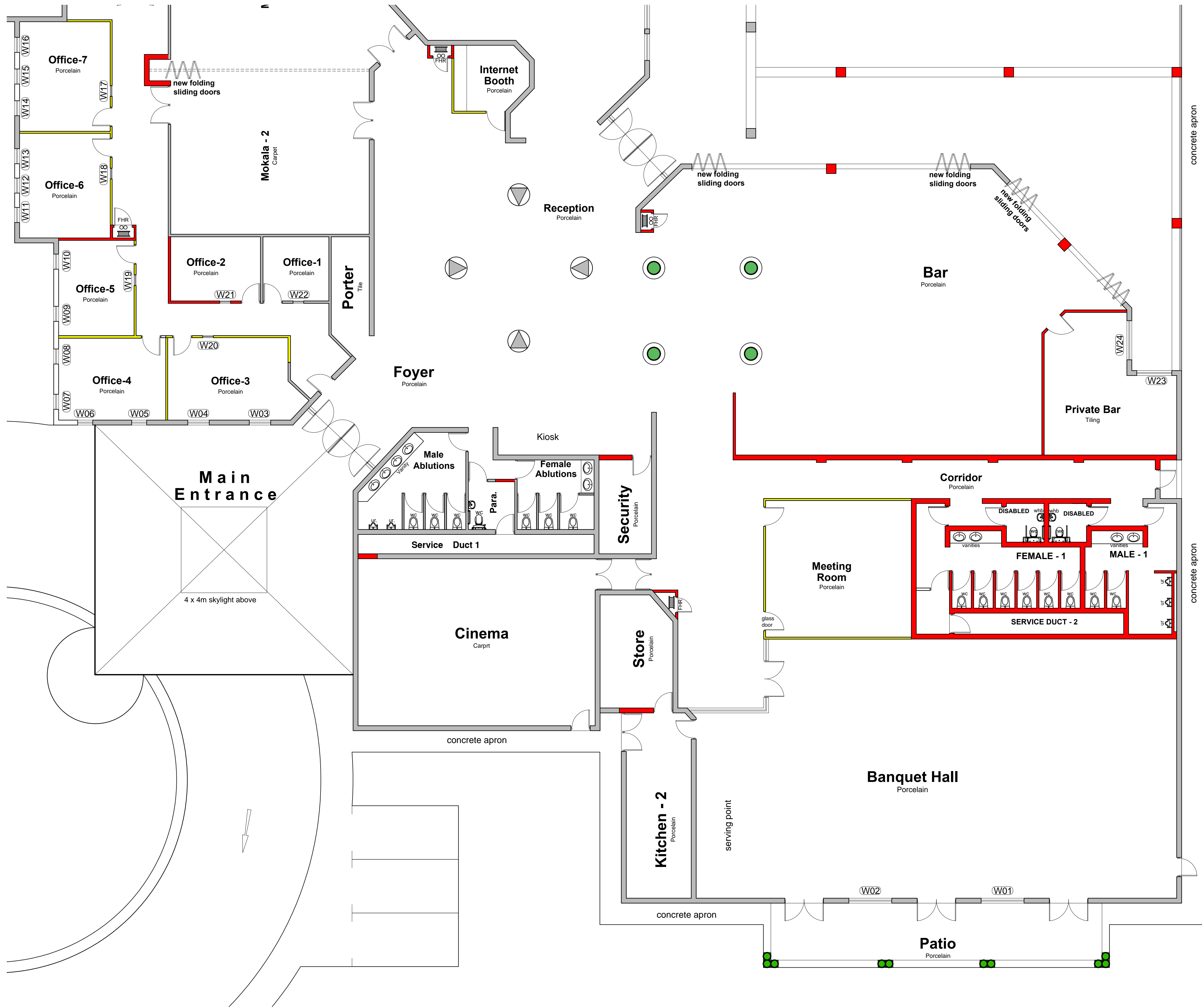
**ELECTRICAL ENGINEERS:**  
Green Vision

**OCCUPATIONAL HEALTH & SAFETY:**  
nemoBlue

**MAIN CONTRACTOR:**  
TBA

**DRAWN:** Mpho  
**DATE:** 03 Oct. 22  
**DRWG No.:** THS-700/H  
**COMP. No.:** THS-700/H  
**REV. No.:** F



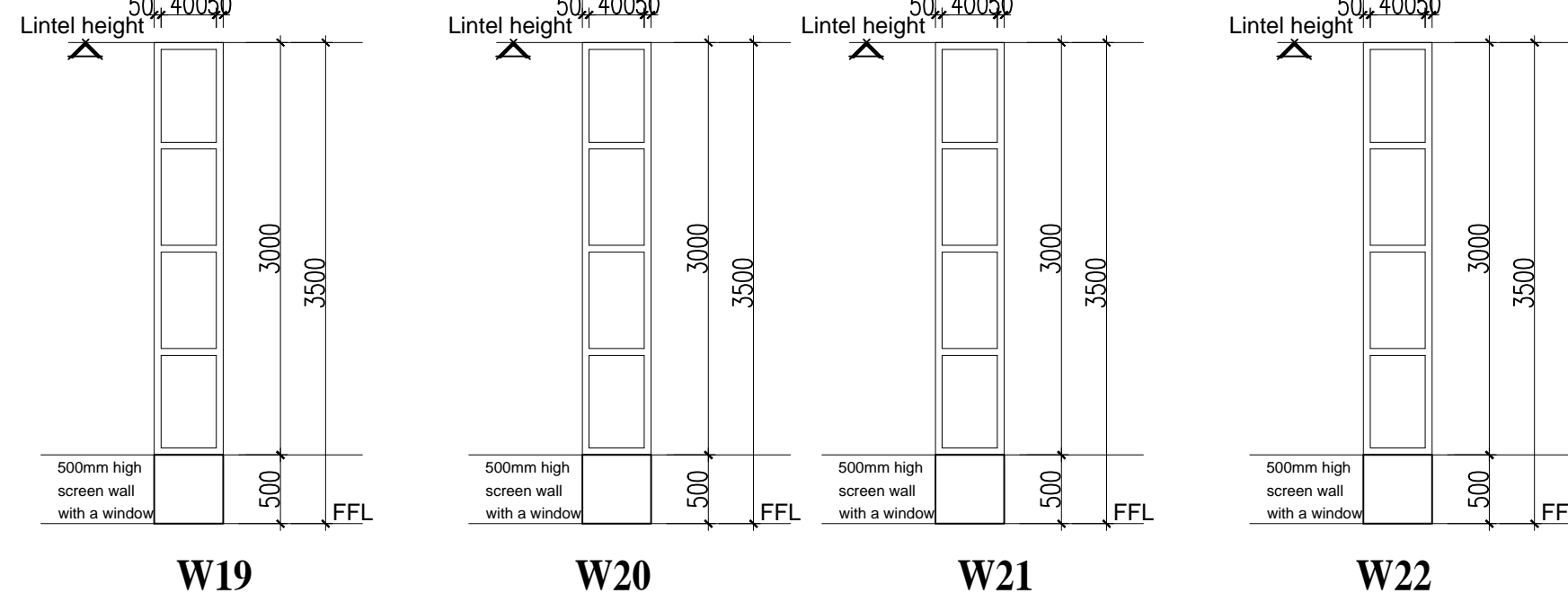
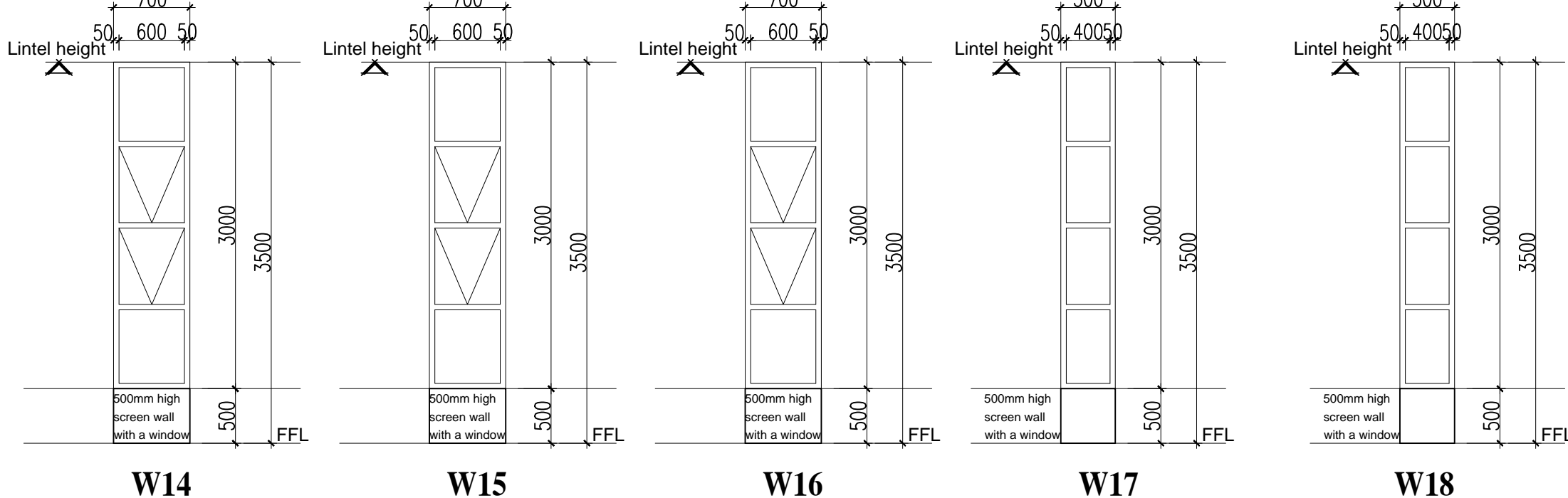
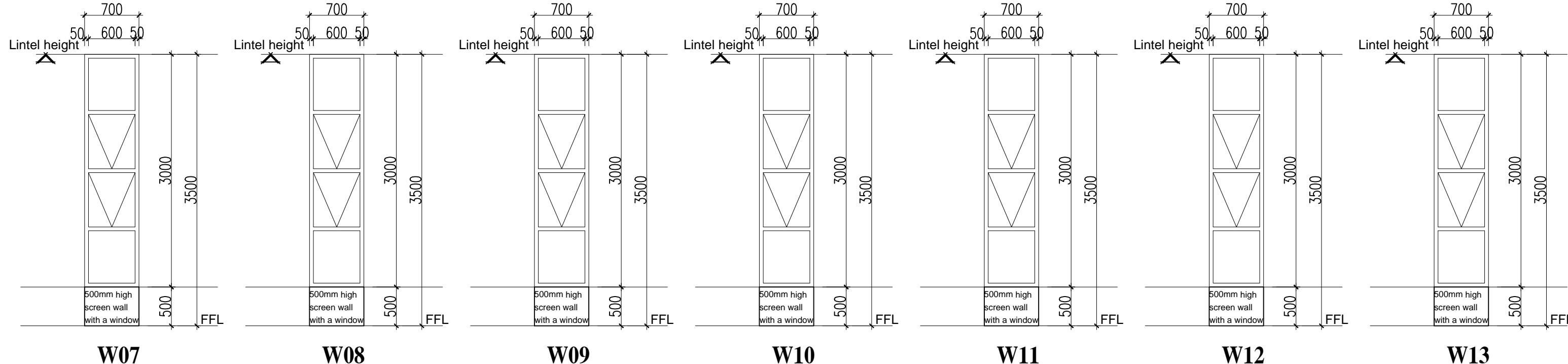
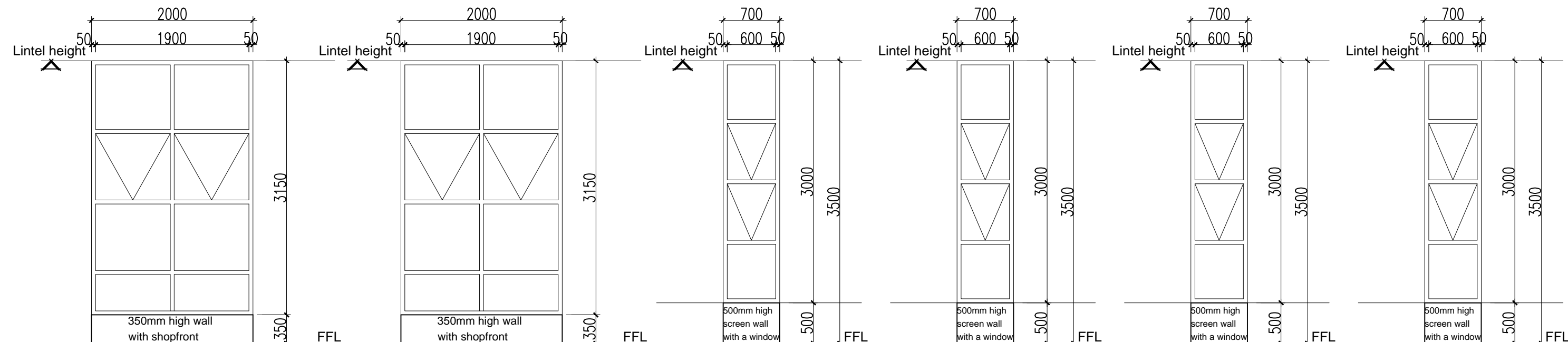


#### WINDOW SCHEDULE

| TYPE         | TYPE 1  | TYPE 2  | TYPE 3  | TYPE 4  | TYPE 5  | TYPE 6  | TYPE 7  | TYPE 8  | TYPE 9  | TYPE 10   |
|--------------|---|---|---|---|---|---|---|---|---|---|
| NUMBER       | W1  | W2  | W3  | W4  | W5  | W6  | W7  | W8  | W9  | W10   |
| FRAME        | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  |
| FRAME FINISH | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   |
| GLAZING      | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           |
| IRONMONGERY  | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect |
| HINGES       | Friction Hinges   | Friction Hinges   | Friction Hinges   | Friction Hinges   | Friction Hinges   | Not Applicable  | Not Applicable  | Friction Hinges   | Friction Hinges   | Friction Hinges   |

| TYPE         | TYPE 11   | TYPE 12   | TYPE 13   | TYPE 14   | TYPE 15   | TYPE 16   | TYPE 17   | TYPE 18   | TYPE 19   | TYPE 20   |
|--------------|---|---|---|---|---|---|---|---|---|---|
| NUMBER       | W11   | W12   | W13   | W14   | W15   | W16   | W17   | W18   | W19   | W20   |
| FRAME        | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  | Standard Aluminum Sections  |
| FRAME FINISH | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   | Charcoal Grey   |
| GLAZING      | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Bronze</b>                           |
| IRONMONGERY  | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect |
| HINGES       | Friction Hinges   | Friction Hinges   | Friction Hinges   | Friction Hinges   | Friction Hinges   | Friction Hinges   | Not Applicable  | Not Applicable  | Not Applicable  | Not Applicable  |

| TYPE         | TYPE 21   | TYPE 22   |
|--------------|---|---|
| NUMBER       | W21   | W22   |
| FRAME        | Standard Aluminum Sections  | Standard Aluminum Sections  |
| FRAME FINISH | Charcoal Grey   | Charcoal Grey   |
| GLAZING      | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Clear</b>                            | 6mm Laminated Safety glass Smart Colour Vue Cool Grey <b>Clear</b>                            |
| IRONMONGERY  | All window furniture to be supplied by window manufacture and to be approved by the architect | All window furniture to be supplied by window manufacture and to be approved by the architect |
| HINGES       | Not Applicable  | Not Applicable  |



#### NOTES:

1. GENERAL:
  - 1.1 THIS DRAWING IS NOT TO BE SCALED. USE FIGURED DIMENSIONS ONLY. ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED AND VERIFIED BEFORE ANY WORK COMMENCES ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY. ALL LEVELS, HEIGHTS OF PLUMBING, DEPTH OF EXCAVATIONS AND NUMBER OF STEPS TO BE FINALLY CHECKED BY CONTRACTOR ON SITE.
  - 1.2 THE SITE TO BE TREATED IN ACCORDANCE WITH SABS CODE OF PRACTICE No. 0124-1977 WITH 'SHELL DRIFF' TERMITE-PRUNE SOIL POROSER.
  - 1.3 TOP OF FOUNDATIONS TO BE A MINIMUM OF 300mm BELOW NATURAL GROUND LEVEL.
2. FOUNDATIONS:
  - 2.1 ALL BUILDINGS FOUNDATION WALLS, STRUCTURAL CONCRETE WORK AND 150mm STORM WATER DRAINAGE TO CIVIL ENGINEERS SPECIFICATIONS.
  - 2.2 ALL SOIL COMPACTED TO CIVIL ENGINEERS SPECIFICATIONS.
  - 2.3 230 x 700mm CONCRETE FOUNDATIONS FOR 230mm BRICK WORK.
  - 2.4 300 x 100mm PAD FOUNDATIONS FOR 400 x 400mm BRICK WORK.
  - 2.5 ALL FOUNDATIONS TO BE REINFORCED AS REQUIRED BY ENGINEER.
3. FLOORS:
  - 3.1 50mm CEMENT SCREED TO ALL FLOORS.
4. WALLS:
  - 4.1 230mm BRICK WALLS WITH WITH GUNDE BRICKGRP DPC.
  - 4.2 BRICK-FORCE EVERY 4 COURSES AND EVERY COURSE FOR 4 COURSES OVER GREENS.
  - 4.3 ALL BRICK WORK WITH 7 MPA CLASS II.
  - 4.4 WINDOWS BUILT IN WITH GUNDE BRICKGRP DPC.
  - 4.5 ALL PAINTWORK TO COMPLY WITH MANUFACTURER'S SPECIFICATIONS WITH NECESSARY UNDERCOATS.
5. ROOF:
  - 5.1 10° ROOF PITCH.
  - 5.2 10mm KLP LK-700 SHEETING ON 30 x 75mm LAMINATED RAFTERS @ 1.3m c/c's. 152 x 38mm KING POST ON 152 x 38mm LAMINATED RAFTERS @ 1.3m c/c's. 152 x 38mm WALL PLATE TIED DOWN WITH GALV. HOOP ROOF, THREADED THROUGH 4 COURSES OF BRICK WORK.
  - 5.3 40mm INSULATION BLANKET.
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6. WINDOWS & DOORS:
  - 6.1 ALUMINIUM FRAME WINDOWS AS PER WINDOW SCHEDULE.
  - 6.2 ANY FRAME OF GLASS WHICH IS TO BE INSTALLED WITHOUT A SUPPORT FRAME SHALL BE IN ACCORDANCE WITH SABS 0137.
  - 6.3 THE THICKNESS OF GLASS IN RELATION TO THEIR AREA SHALL BE IN ACCORDANCE WITH SABS 0137.
  - 6.4 GLAZING TO BE AS PER SABS PART-1.
  - 6.5 ALL DOORS & FRAMES TO BE AS PER DOOR SCHEDULE.
7. DRAINAGE:
  - 7.1 80mm UPVC SEWER PIPE DRAIN WITH A MIN. FALL OF 1:60.
  - 7.2 80mm OVE AT HEAD OF DRAIN PIPE AS SHOWN.

#### FOR INFORMATION

| Rev. | Date       | Revision                    | Name |
|------|------------|-----------------------------|------|
| A    | 24.05.2023 | Issued for Client's Copying | Mpho |

**Project:**  
Proposed Refurbishment of Taung Hotel School & Convention Centre for the North West Parks & Tourism Board

#### Description:

- Window Schedule -

Scale: 1:100



#### IMPLEMENTING AGENT:



#### ARCHITECTS:



#### QUANTITY SURVEYORS:

#### STRUCTURAL ENGINEERS:

#### CIVIL ENGINEERS:

#### MECHANICAL ENGINEERS:

#### ELECTRICAL ENGINEERS:

#### OCCUPATIONAL HEALTH & SAFETY:

#### MAIN CONTRACTOR:

TBA

DRAWN: Mpho  
DATE: 24.May. 23  
DRWG No.: THS-701/TH  
COMP. No.: THS-701/TH  
REV. No.: A