

**REPUBLIC OF KENYA**

**MINISTRY OF HEALTH**

**STATE DEPARTMENT FOR MEDICAL SERVICES**

**P.O. BOX 30016 – 00100**

**NAIROBI**

**TENDER DOCUMENT**

**FOR**

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV  
HOSPITAL – KURIA EAST, MIGORI COUNTY**

**TENDER NO.MOH/SDMS/OT/02/2024-2025**

**IFMIS TENDER NEGOTIATION NO.1667773**

**INVITATION DATE: 30<sup>TH</sup> OCTOBER 2024**

**CLOSING/OPENING DATE: FRIDAY 8 NOVEMBER<sup>th</sup>2024 AT  
11:00 AM**

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL  
– KURIA EAST, MIGORI COUNTY,**

**WP ITEM NO. 1081 NY/MGI/ 2301 JOB NO. 11368A**

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**TENDER DOCUMENT**

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**TENDER NO: MOH/SDMS/OT/02/2024-2025**

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**PROCURING ENTITY**

**MINISTRY OF HEALTH**

**STATE DEPARTMENT OF MEDICAL SERVICES**

**P.O BOX 30016 – 00100**

**NAIROBI**

**PROJECT MANAGER**

**WORKS SECRETARY**

**STATE DEPARTMENT FOR PUBLIC WORKS**

**P.O. BOX 30743-00100**

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**QUANTITY SURVEYOR**

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**P.O. BOX 30743-00100**

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**STRUCTURAL ENGINEER**

**CHIEF ENGINEER (STRUCTURAL)**

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**NAIROBI.**

**MECHANICAL ENGINEER (B.S)**

**CHIEF MECHANICAL ENGINEER**

**STATE DEPARTMENT FOR PUBLIC WORKS**

**P.O. BOX 30743-00100**

**NAIROBI.**

**INTERIOR DESIGNER**

**CHIEF DESIGNER**

**STATE DEPARTMENT FOR PUBLIC WORKS**

**P.O. BOX 30743-00100 NAIROBI.**

**OCTOBER, 2024**

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL – KURIA EAST, MIGORI  
COUNTY**

**TENDER DOCUMENTS**

**Consisting**

- A Contents page (i)
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- C Standard Tender Documents for Procurement of Works:

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J	Builder's Work: Third Floor	TF/1 – TF/6
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(i)

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL – KURIA EAST, MIGORI COUNTY,**

Prepared by: -

**Quantities and Contract Department,  
STATE DEPARTMENT FOR PUBLIC WORKS,  
MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMEN.**

**P. O. Box 30743-00100,  
NAIROBI.**

This Tender Document together with any amendments issued thereto shall be read and construed as part of the envisaged contract.

**SPECIAL NOTES**

The Contractor is required to check the numbers of the pages of these Bills of Quantities and should he find any missing or in duplicate or figures indistinct he must inform the Principal Secretary for State Department for Public Works, Head Office, Ngong Road, Nairobi at once and have the same rectified.

Should the Contractor be in doubt about the precise meaning of any item or figure for any reason whatsoever, he must inform the Principal Secretary, State Department for Public Works, Head Office in order that the correct meaning may be decided before the date for submission of tenders.

No liability will be admitted nor claim allowed in respect of errors in the Contractor's Tender due to mistakes in the specifications, which should have been rectified in the manner, described above.

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INVITATION TO TENDER

**DATE: 30<sup>th</sup> OCTOBER 2024**

**PROCURING ENTITY: STATE DEPARTMENT FOR MEDICAL SERVICES**

**CONTRACT NAME AND DESCRIPTION: PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL – KURIA EAST, MIGORI COUNTY,**

1. **The State Department for Medical Services** invites sealed tenders for the *Proposed Construction of Kegonga Level IV Hospital – Kuria East, Migori County, For Ministry of Health.*
2. Tendering will be conducted under open competitive method, National using a standardized tender document. Tendering is open to **all qualified and interested NCA 4 and above Tenderers.**
3. Qualified and interested tenderers may obtain further information and inspect the Tender Documents during office hours **0900 to 1700 hours** at the address given below.

Ministry of Health,  
State Department for Medical Services,  
P.O Box 30016-00100 Nairobi  
Procurement Office 5th Floor, Room 514B  
Afya House, Cathedral Road, Nairobi

4. Interested eligible candidates may obtain a complete set of tender documents with detailed qualification criteria at the State Department for Medical Services website: **www.health.go.ke**, the **Public Procurement Information Portal** and also at the **IFMIS portal: supplier.treasury.go.ke** and search using the unique IFMIS Negotiation Number provided against the tenders above
5. Interested eligible candidates may obtain further information and inspect tender documents at the Ministry of Health, State Department for Medical Services, P.O Box 30016-00100 Nairobi procurement office, 5th Floor, Room 514B Afya House, Cathedral Road, Nairobi ( **Email.procurement@health.go.ke to facilitate any further clarifications or addendum**)

The tender is a **single contract package** comprised of the **of the following Four (4) categories of requirements;-**

Item	Requirement Category
------	----------------------



1	Builder's Works – NCA 4 and above
2	Electrical & Structured Cabling Works – NCA 5 and above
3	Plumbing, drainage & Air conditioning works – NCA 5 and above
4	Medical gases pipeline system installation works – NCA 5 and above

The main Contractor will be the Main Tenderer and may invite eligible joint venture partners participating through Category two (2) to four (4) to form part of his tender. All partners of the joint venture shall be liable jointly and severally for the execution of the contract in accordance with the contract terms. A copy of the agreement entered into by the joint venture partners shall be submitted with the tender.

The Main Tenderer will take the lead and shall be responsible for the sub contractors or joint venture partners and will arrange for the mandatory Tender Security.

6. Tenders shall be quoted in Kenya Shillings and shall include all taxes. Tenders shall remain valid for 126 days from the date of opening of tenders.
  7. The Tender must be accompanied by a tender security of Kenya Shillings Five Million. (Kshs. 5000,000.00) from a reputable financial institution in Kenya valid for 30 days beyond the tender validity period.
  8. The Tenderer shall chronologically serialize all pages of the tender documents submitted.
  9. Completed tenders must be submitted in the IFMIS Supplier Portal with select original tendering documents being dropped in the State Department's tender box as explained below in **paragraph 11(B&D)** on or before **Friday 8<sup>th</sup>, November, 2024 at 11:00Am. Manual Submissions Will Not Be Accepted except for the select original documents indicated in paragraph 11 B & D**
  10. The Tenders will be opened immediately after the deadline date and time specified above or any deadline date and time specified later. Tenders will be publicly opened in the presence of the Tenderers' designated representatives who choose to attend at the address below.
  11. The addresses referred to above are:
    - A. **Address for obtaining further information and for Obtaining tender documents**
      - 1) State Department for Medical Services P.O Box 30016-00100 Nairobi.  
Supply Chain Management Office Afya House Nairobi 5<sup>th</sup> Floor, Room 514B  
[Email.Procurement@health.go.ke](mailto:Email.Procurement@health.go.ke)
    - B. **Address for Submission of Tenders.**
      - 1) Ministry of Health.  
State Department for Medical Services IFMIS Tenders Portal: [www.supplier.treasury.go.ke](http://www.supplier.treasury.go.ke) The  
Principal Secretary State Department for Medical Services  
P.O BOX (30016-00100)  
Nairobi
- Tenders are to be submitted online in the above IFMIS Platform but the originals of the **Form of Tender, Power of Attorney and Tender Security Must** be dropped to the Tender box located at the entrance of 1<sup>st</sup> floor Afya House in a single sealed envelope bearing the name and reference number of tender, addressed to the procuring entity and warning not to open before the date and time of tender opening
- C. **Address for Opening of Tenders.**

State Department for Medical Services  
GTZ Board Room  
Afya House Nairobi, Cathedral Road

**D)** Tenders are to be submitted online in the IFMIS Platform but the original of the following documents **MUST** be dropped to the Tender box located at the entrance of 1<sup>st</sup> floor Afya House in a single sealed envelope bearing the name and reference number of tender, addressed to the Principal Secretary, State Department for Medical Services and warning not to open before the date and time of tender opening.

1. Dully Filled Form of tender
2. Power of Attorney
3. Tender Security of **Kshs. 5,000,000.00** from a reputable financial institution in Kenya or Insurance Company approved by PPRA

12. Late tenders will be rejected

**The PRINCIPAL SECRETARY STATE DEPARTMENT FOR MEDICAL SERVICES**

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# **PART I: TENDERING PROCEDURES**

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## **SECTION I - INSTRUCTIONS TO TENDERERS A**

### **GENERAL PROVISIONS**

#### **1.0 Scope of tender**

**1.1** The Procuring Entity as defined in the Appendix to Conditions of Contract invites tenders for Works Contract as described in the tender documents. The name, identification, and number of lots (contracts) of this Tender Document are specified in the TDS.

**1.2** Throughout this tendering document:

- a) The term “in writing” means communicated in written form (e.g. by mail, e-mail, fax, including if specified in the TDS, distributed or received through the electronic-procurement system used by the Procuring Entity) with proof of receipt;
- b) if the context so requires, “singular” means “plural” and vice versa;
- c) “Day” means calendar day, unless otherwise specified as “Business Day”. A Business Day is any day that is an official working day of the Procuring Entity. It excludes official public holidays.

#### **2.0 Fraud and corruption**

**2.1** The Procuring Entity requires compliance with the provisions of the Public Procurement and Asset Disposal Act, 2015, Section 62 “Declaration not to engage in corruption”. The tender submitted by a person shall include a declaration that the person shall not engage in any corrupt or fraudulent practice and a declaration that the person or his or her sub-contractors are not debarred from participating in public procurement proceedings.

**2.2** The Procuring Entity requires compliance with the provisions of the Competition Act 2010, regarding collusive practices in contracting. Any tenderer found to have engaged in collusive conduct shall be disqualified and criminal and/or civil sanctions may be imposed. To this effect, Tenders shall be required to complete and sign the “Certificate of Independent Tender Determination” annexed to the Form of Tender.

**2.3** Tenderers shall permit and shall cause their agents (whether declared or not), subcontractors, sub-consultants, service providers, suppliers, and their personnel, to permit the Procuring Entity to inspect all accounts, records and other documents relating to any initial selection process, pre-qualification process, tender submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Procuring Entity.

**2.4** Unfair Competitive Advantage - Fairness and transparency in the tender process require that the firms or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to this tender. To that end, the Procuring Entity shall indicate in the **Data Sheet** and make available to all the firms together with this tender document all information that would in that respect give such firm any unfair competitive advantage over competing firms.

#### **3.0 Eligible tenderers**

**3.1** A Tenderer may be a firm that is a private entity, a state-owned enterprise or institution subject to ITT 3.8, or an individual or any combination of such entities in the form of a joint venture (JV) under an existing agreement with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the tendering process and, in the event the JV is awarded the Contract, during contract execution. Members of a joint venture may not also make an individual tender, be a subcontractor in a separate tender or be part of another joint venture for the purposes of the same Tender. The maximum number of JV members shall be specified in the **TDS**.

**3.2** Public Officers of the Procuring Entity, their Spouses, Child, Parent, Brothers or Sister. Child, Parent, Brother or Sister of a Spouse, their business associates or agents and firms/organizations in which they have a substantial or controlling interest shall not be eligible to tender or be awarded a contract. Public Officers are also not allowed to participate in any procurement proceedings.

- 3.3 A Tenderer shall not have a conflict of interest. Any tenderer found to have a conflict of interest shall be disqualified. A tenderer may be considered to have a conflict of interest for the purpose of this tendering process, if the tenderer:
- a) Directly or indirectly controls, is controlled by or is under common control with another tenderer;
  - b) Receives or has received any direct or indirect subsidy from another tenderer;
  - c) Has the same legal representative as another tenderer;
  - d) Has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process;
  - e) Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the goods or works that are the subject of the tender;
  - f) Any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as a consultant for Contract implementation;
  - g) Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the contract specified in this Tender Document;
  - h) Has a close business or personal relationship with senior management or professional staff of the Procuring Entity who has the ability to influence the bidding process and:
  - i) Are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract; or
  - ii) May be involved in the implementation or supervision of such Contract unless the conflicts stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.
- 3.4 A tenderer shall not be involved in corrupt, coercive, obstructive or fraudulent practice. A tenderer that is proven to have been involved in any of these practices shall be automatically disqualified
- 3.5 A Tenderer (either individually or as a JV member) shall not participate in more than one Tender, except for permitted alternative tenders. This includes participation as a subcontractor in other Tenders. Such participation shall result in the disqualification of all Tenders in which the firm is involved. Members of a joint venture may not also make an individual tender, be a sub-contractor in a separate tender or be part of another joint venture for the purposes of the same Tender. A firm that is not a tenderer or a JV member may participate as a subcontractor in more than one tender.
- 3.6 A Tenderer may have the nationality of any country, subject to the restrictions pursuant to ITT3.9. A Tenderer shall be deemed to have the nationality of a country if the Tenderer is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.
- 3.7 A Tenderer that has been debarred from participating in public procurement shall be ineligible to tender or be awarded a contract. The list of debarred firms and individuals is available from the website of PPRA [www.ppra.go.ke](http://www.ppra.go.ke).
- 3.8 A Tenderer that is a state-owned enterprise or a public institution in Kenya may be eligible to tender and be awarded Contract(s) only if it is determined by the Procuring Entity to meet the following conditions, i.e. if it is:
- i) A legal public entity of Government and/or public administration, ii) financially autonomous and not receiving any significant subsidies or budget support from any public entity or Government, and;
  - (iii) Operating under commercial law and vested with legal rights and liabilities similar to any commercial enterprise to enable it compete with firms in the private sector on an equal basis.

- 3.9 Firms and individuals shall be ineligible if their countries of origin are:
- (a) As a matter of law or official regulations, Kenya prohibits commercial relations with that country;
  - (b) By an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.

A tenderer shall provide such documentary evidence of eligibility satisfactory to the Procuring Entity, as the Procuring Entity shall reasonably request.

- 3.10 Foreign tenderers are required to source at least forty (40%) percent of their contract inputs (in supplies, local sub-contracts and labor) from citizen suppliers and contractors. To this end, a foreign tenderer shall provide in its tender documentary evidence that this requirement is met. Foreign tenderers not meeting this criterion will be automatically disqualified. Information required to enable the Procuring Entity determine if this condition is met shall be provided for this purpose in “*SECTION III - EVALUATION AND QUALIFICATION CRITERIA, Item 9*”.
- 3.11 Pursuant to the eligibility requirements of ITT 3.10, a tender is considered a foreign tenderer, if it is registered in Kenya and has less than 51 percent ownership by nationals of Kenya and if it does not subcontract to foreign firms or individuals more than 10 percent of the contract price, excluding provisional sums. JVs are considered as foreign tenderers if the individual member firms registered in Kenya have less 51 percent ownership by nationals of Kenya. The JV shall not subcontract to foreign firms more than 10 percent of the contract price, excluding provisional sums.
- 3.12 The National Construction Authority Act of Kenya requires that all local and foreign contractors be registered with the National Construction Authority and be issued with a Registration Certificate before they can undertake any construction works in Kenya. Registration shall not be a condition for tender, but it shall be a condition of contract award and signature. A selected tenderer shall be given opportunity to register before such award and signature of contract. Application for registration with National Construction Authority may be accessed from the website [www.nca.go.ke](http://www.nca.go.ke).
- 3.13 The Competition Act of Kenya requires that firms wishing to tender as Joint Venture undertakings which may prevent, distort or lessen competition in provision of services are prohibited unless they are exempt in accordance with the provisions of Section 25 of the Competition Act, 2010. JVs will be required to seek for exemption from the Competition Authority. Exemption shall not be a condition for tender, but it shall be a condition of contract award and signature. A JV tenderer shall be given opportunity to seek such exemption as a condition of award and signature of contract. Application for exemption from the Competition Authority of Kenya may be accessed from the website [www.cak.go.ke](http://www.cak.go.ke).
- 3.14 A Kenyan tenderer shall be eligible to tender if it provides evidence of having fulfilled his/her tax obligations by producing valid tax compliance certificate or tax exemption certificate issued by the Kenya Revenue Authority.

#### **4.0 Eligible goods, equipment, and services**

- 4.1 Goods, equipment and services to be supplied under the Contract may have their origin in any country that is not ineligible under ITT 3.9. At the Procuring Entity's request, Tenderers may be required to provide evidence of the origin of Goods, equipment and services.
- 4.2 Any goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.

#### **5.0 Tenderer's responsibilities**

- 5.1 The tenderer shall bear all costs associated with the preparation and submission of his/her tender, and the Procuring Entity will in no case be responsible or liable for those costs.
- 5.2 The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the Site of the Works and its surroundings and obtain all information that may be necessary for preparing the tender and entering into a contract for construction of the Works. The costs of visiting the Site shall be the tenderer's own expense.

- 5.3 The Tenderer and any of its personnel or agents will be granted permission by the Procuring Entity to enter upon its premises and lands for the purpose of such visit. The Tenderer shall indemnify the Procuring Entity against liability arising from death or personal injury, loss of or damage to property, and any other losses and expenses incurred as a result of the examination and inspection.
- 5.4 The tenderer shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including charts, as necessary or required.

## B. CONTENTS OF TENDER DOCUMENTS

### 6.0 Sections of Tender Document

- 6.1 The tender document consists of Parts 1, 2, and 3, which includes all the sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITT 10.

#### **PART 1: Tendering Procedures**

Section I – Instructions to Tenderers  
Section II – Tender Data Sheet (TDS) Section  
III- Evaluation and Qualification  
Criteria Section IV – Tendering Forms

#### **PART 2: Works' Requirements**

Section V - Bills of Quantities  
Section VI - Specifications  
Section VII - Drawings

#### **PART 3: Conditions of Contract and Contract Forms**

Section VIII - General Conditions (GCC)  
Section IX - Special Conditions of Contract Section  
X- Contract Forms

- 6.2 The Invitation to Tender Notice issued by the Procuring Entity is not part of the Contract documents. Unless obtained directly from the Procuring Entity, the Procuring Entity is not responsible for the completeness of the Tender document, responses to requests for clarification, the minutes of a pre-arranged site visit and those of the pre-Tender meeting (if any), or Addenda to the Tender document in accordance with ITT 10. In case of any contradiction, documents obtained directly from the Procuring Entity shall prevail.
- 6.3 The Tenderer is expected to examine all instructions, forms, terms, and specifications in the Tender Document and to furnish with its Tender all information and documentation as is required by the Tender document.

### 7.0 Clarification of Tender Document, Site Visit, Pre-tender Meeting

- 7.1 A Tenderer requiring any clarification of the Tender Document shall contact the Procuring Entity in writing at the Procuring Entity's address specified in the **TDS** or raise its enquiries during the pre-Tender meeting if provided for in accordance with ITT 7.2. The Procuring Entity will respond in writing to any request for clarification, provided that such request is received no later than the period specified in the **TDS** prior to the deadline for submission of tenders. The Procuring Entity shall forward copies of its response to all tenderers who have acquired the Tender documents in accordance with ITT 7.4, including a description of the inquiry but without identifying its source. If so specified in the **TDS**, the Procuring Entity shall also promptly publish its response at the web page identified in the **TDS**. Should the clarification result in changes to the essential elements of the Tender Documents, the Procuring Entity shall amend the Tender Documents following the procedure under ITT 8 and ITT 22.2.
- 7.2 The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the site(s) of the required contracts and obtain all information that may be necessary for preparing a tender. The

costs of visiting the Site shall be at the Tenderer's own expense. The Procuring Entity shall specify in the **TDS** if a pre-arranged Site visit and or a pre-tender meeting will be held, when and where. The Tenderer's designated representative is invited to attend a pre-arranged site visit and a pre-tender meeting, as the case may be. The purpose of the site visit and the pre-tender meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

**7.3** The Tenderer is requested to submit any questions in writing, to reach the Procuring Entity not later than the period specified in the **TDS** before the meeting.

**7.4** Minutes of a pre-arranged site visit and those of the pre-tender meeting, if applicable, including the text of the questions asked by Tenderers and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Tenderers who have acquired the Tender Documents. Minutes shall not identify the source of the questions asked.

**7.5** The Procuring Entity shall also promptly publish anonymized (*no names*) Minutes of the pre-arranged site visit and those of the pre-tender meeting at the web page identified in the **TDS**. Any modification to the Tender Documents that may become necessary as a result of the pre-arranged site visit and those of the pre-tender meeting shall be made by the Procuring Entity exclusively through the issue of an Addendum pursuant to ITT 8 and not through the minutes of the pre-Tender meeting. Non-attendance at the pre-arranged site visit and the pre-tender meeting will not be a cause for disqualification of a Tenderer.

## **8.0 Amendment of Tender Documents**

**8.1** At any time prior to the deadline for submission of Tenders, the Procuring Entity may amend the Tender Documents by issuing addenda.

**8.2** Any addendum issued shall be part of the Tender Documents and shall be communicated in writing to all who have obtained the Tender Documents from the Procuring Entity. The Procuring Entity shall also promptly publish the addendum on the Procuring Entity's website in accordance with ITT 7.5.

**8.3** To give Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity should extend the dead line for the submission of Tenders, pursuant to ITT 22.2.

## **C. PREPARATION OF TENDERS**

### **9.0 Cost of Tendering**

The Tenderer shall bear all costs associated with the preparation and submission of its Tender, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

### **10.0 Language of Tender**

The Tender, as well as all correspondence and documents relating to the tender exchanged by the tenderer and the Procuring Entity, shall be written in the English Language. Supporting documents and printed literature that are part of the Tender may be in another language provided they are accompanied by an accurate and notarized translation of the relevant passages into the English Language, in which case, for purposes of interpretation of the Tender, such translation shall govern.

### **11.0 Documents Comprising the Tender**

**11.1** The Tender shall comprise the following:

- a) Form of Tender prepared in accordance with ITT 12;
- b) Schedules including priced Bill of Quantities, completed in accordance with ITT 12 and ITT 14;
- c) Tender Security or Tender-Securing Declaration, in accordance with ITT 19.1;



- d) Alternative Tender, if permissible, in accordance with ITT 13;
- e) **Authorization**: written confirmation authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT 20.3;
- f) **Qualifications**: documentary evidence in accordance with ITT 17 establishing the Tenderer's qualifications to perform the Contract if its Tender is accepted;
- g) **Conformity**: a technical proposal in accordance with ITT 16;
- h) Any other document required in the **TDS**.

**11.2** In addition to the requirements under ITT 11.1, Tenders submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Tender shall be signed by all members and submitted with the Tender, together with a copy of the proposed JV Agreement. Change of membership and conditions of the JV prior to contract signature will render the tender liable for disqualification.

## **12.0 Form of Tender and Schedules**

**12.1** The Form of Tender and Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section IV, Tendering Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITT 20.3. All blank spaces shall be filled in with the information requested. The Tenderer shall chronologically serialize all pages of the tender documents submitted.

**12.2** The Tenderer shall furnish in the Form of Tender information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Tender.

## **13. Alternative Tenders**

**13.1** Unless otherwise specified in the TDS, alternative Tenders shall not be considered.

**13.2** When alternative times for completion are explicitly invited, a statement to that effect will be included in the **TDS**, and the method of evaluating different alternative times for completion will be described in Section III, Evaluation and Qualification Criteria.

**13.3** Except as provided under ITT 13.4 below, Tenderers wishing to offer technical alternatives to the requirements of the Tender Documents must first price the Procuring Entity's design as described in the Tender Documents and shall further provide all information necessary for a complete evaluation of the alternative by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the Tenderer with the Winning Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

**13.4** When specified in the **TDS**, Tenderers are permitted to submit alternative technical solutions for specified parts of the Works, and such parts will be identified in the **TDS**, as will the method for their evaluating, and described in Section VII, Works' Requirements.

## **14.0 Tender Prices and Discounts**

**14.1** The prices and discounts (including any price reduction) quoted by the Tenderer in the Form of Tender and in the Bill of Quantities shall conform to the requirements specified below.

**14.2** The Tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Tenderer shall be deemed covered by the rates for other items in the Bill of Quantities and will not be paid for separately by the Procuring Entity. An item not listed in the priced Bill of Quantities shall be assumed to be not included in the Tender, and provided that the Tender is determined substantially responsive notwithstanding this omission, the average price of the item quoted by substantially

responsive Tenderers will be added to the Tender price and the equivalent total cost of the Tender so determined will be used for price comparison.

- 14.3** The price to be quoted in the Form of Tender, in accordance with ITT 12.1, shall be the total price of the Tender, including any discounts offered.
- 14.4** The Tenderer shall quote any discounts and the methodology for their application in the Form of Tender, in accordance with ITT 12.1.
- 14.5** It will be specified in the **TDS** if the rates and prices quoted by the Tenderer are or are not subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, except in cases where the contract is subject to fluctuations and adjustments, not fixed price. In such a case, the Tenderer shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data and the Procuring Entity may require the Tenderer to justify its proposed indices and weightings.
- 14.6** Where tenders are being invited for individual lots (contracts) or for any combination of lots (packages), tenderers wishing to offer discounts for the award of more than one Contract shall specify in their Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITT 14.4, provided the Tenders for all lots (contracts) are opened at the sometime.
- 14.7** All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 30 days prior to the deadline for submission of Tenders, shall be included in the rates and prices and the total Tender Price submitted by the Tenderer.

## **15.0 Currencies of Tender and Payment**

- 15.1** The currency (ies) of the Tender and the currency (ies) of payments shall be the same.
- 15.2** Tenderers shall quote entirely in Kenya Shillings. The unit rates and the prices shall be quoted by the Tenderer in the Bill of Quantities, entirely in Kenya shillings.
- a) A Tenderer expecting to incur expenditures in other currencies for inputs to the Works supplied from outside Kenya (referred to as “the foreign currency requirements”) shall (if so allowed in the **TDS**) indicate in the Appendix to Tender the percentage(s) of the Tender Price (excluding Provisional Sums), needed by the Tenderer for the payment of such foreign currency requirements, limited to no more than two foreign currencies.
- b) The rates of exchange to be used by the Tenderer in arriving at the local currency equivalent and the percentage(s) mentioned in (a) above shall be specified by the Tenderer in the Appendix to Tender and shall be based on the exchange rate provided by the Central Bank of Kenya on the date 30 days prior to the actual date of tender opening. Such exchange rate shall apply for all foreign payments under the Contract.
- 15.3** Tenderers may be required by the Procuring Entity to justify, to the Procuring Entity's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data in the Appendix to Tender are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Tenderers.

## **16.0 Documents Comprising the Technical Proposal**

The Tenderer shall furnish a technical proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Tender Forms, and in sufficient detail to demonstrate the adequacy of the Tenderer's proposal to meet the work's requirements and the completion time.

## **17.0 Documents Establishing the Eligibility and Qualifications of the Tenderer**

- 17.1** Tenderers shall complete the Form of Tender, included in Section IV, Tender Forms, to establish Tenderer's eligibility in accordance with ITT 4.

- 17.2** In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract the Tenderer shall provide the information requested in the corresponding information sheets included in Section IV, Tender Forms.
- 17.3** If a margin of preference applies as specified in accordance with ITT 33.1, national tenderers, individually or in joint ventures, applying for eligibility for national preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITT 33.1.
- 17.4** Tenderers shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contractor or group of contractors qualifies for a margin of preference. Further the information will enable the Procuring Entity identify any actual or potential conflict of interest in relation to the procurement and/or contract management processes, or a possibility of collusion between tenderers, and thereby help to prevent any corrupt influence in relation to the procurement process or contract management.
- 17.5** The purpose of the information described in ITT 17.4 above overrides any claims to confidentiality which a tenderer may have. There can be no circumstances in which it would be justified for a tenderer to keep information relating to its ownership and control confidential where it is tendering to undertake public sector work and receive public sector funds. Thus, confidentiality will not be accepted by the Procuring Entity as a justification for a Tenderer's failure to disclose, or failure to provide required information on its ownership and control.
- 17.6** The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to ownership and control which in formation on any changes to the information which was provided by the tenderer under ITT 6.4. The obligations to require this information shall continue for the duration of the procurement process and contract performance and after completion of the contract, if any change to the information previously provided may reveal a conflict of interest in relation to the award or management of the contract.
- 17.7** All information provided by the tenderer pursuant to these requirements must be complete, current and accurate as at the date of provision to the Procuring Entity. In submitting the information required pursuant to these requirements, the Tenderer shall warrant that the information submitted is complete, current and accurate as at the date of submission to the Procuring Entity.
- 17.8** If a tenderer fails to submit the information required by these requirements, its tender will be rejected. Similarly, if the Procuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.
- 17.9** If information submitted by a tenderer pursuant to these requirements, or obtained by the Procuring Entity (whether through its own enquiries, through notification by the public or otherwise), shows any conflict of interest which could materially and improperly benefit the tenderer in relation to the procurement or contract management process, then:
- i) If the procurement process is still ongoing, the tenderer will be disqualified from the procurement process,
  - ii) if the contract has been awarded to that tenderer, the contract award will be set as depending the outcome of (iii),
  - iii) the tenderer will be referred to the relevant law enforcement authorities for investigation of whether the tenderer or any other person have committed any criminal offence.
- 17.10** If a tenderer submits information pursuant to these requirements that is incomplete, inaccurate or out-of-date, or attempts to obstruct the verification process, then the consequences ITT 17.8 will ensue unless the tenderer can show to the reasonable satisfaction of the Procuring Entity that any such act was not material, or was due to genuine error which was not attributable to the intentional act, negligence or recklessness of the tenderer.

## **18.0 Period of Validity of Tenders**

- 18.1.** Tenders shall remain valid for the Tender Validity period specified in the TDS. The Tender Validity period starts from the date fixed for the Tender submission deadline (as prescribed by the Procuring Entity in accordance with ITT 22). A tender valid for a shorter period shall be rejected by the Procuring Entity as non-responsive.

18.2 In exceptional circumstances, prior to the expiration of the Tender validity period, the Procuring Entity may request Tenderers to extend the period of validity of their Tenders. The request and the responses shall be made in writing. If a Tender Security is requested in accordance with ITT 19, it shall also be extended for thirty (30) days beyond the deadline of the extended validity period. A Tenderer may refuse the request without forfeiting its Tender security. A Tenderer granting the request shall not be required or permitted to modify its Tender.

## **19.0 Tender Security**

19.1 The Tenderer shall furnish as part of its Tender, either a Tender-Securing Declaration or a Tender Security as specified in the **TDS**, in original form and, in the case of a Tender Security, in the amount and currency **specified** in the **TDS**. A Tender-Securing Declaration shall use the form included in Section IV, Tender Forms.

19.2 If a Tender Security is specified pursuant to ITT 19.1, the Tender Security shall be a demand guarantee in any of the following forms at the Tenderer's option:

- I) cash;
- ii) a bank guarantee;
- iii) a guarantee by an insurance company registered and licensed by the Insurance Regulatory Authority listed by the Authority;
- iv) a guarantee issued by a financial institution approved and licensed by the Central Bank of Kenya, from a reputable source, and an eligible country.

19.3 If an unconditional bank guarantee is issued by a bank located outside Kenya, the issuing bank shall have a correspondent bank located in Kenya to make it enforceable. The Tender Security shall be valid for thirty (30) days beyond the original validity period of the Tender, or beyond any period of extension if requested under ITT 18.2.

19.4 If a Tender Security or Tender-Securing Declaration is specified pursuant to ITT 19.1, any Tender not accompanied by a substantially responsive Tender Security or Tender-Securing Declaration shall be rejected by the Procuring Entity as non-responsive.

19.5 If a Tender Security is specified pursuant to ITT 19.1, the Tender Security of unsuccessful Tenderers shall be returned as promptly as possible upon the successful Tenderer's signing the Contract and furnishing the Performance Security and any other documents required in the TDS. The Procuring Entity shall also promptly return the tender security to the tenderers where the procurement proceedings are terminated, all tenders were determined non-responsive or a bidder declines to extend tender validity period.

19.6 The Tender Security of the successful Tenderer shall be returned as promptly as possible once the successful Tenderer has signed the Contract and furnished the required Performance Security, and any other documents required in the TDS.

19.7 The Tender Security may be forfeited or the Tender-Securing Declaration executed:

- a) if a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender, or any extension there to provided by the Tenderer; or
- b) if the successful Tenderer fails to:
  - i) sign the Contract in accordance with ITT47; or
  - ii) furnish a Performance Security and if required in the TDS, and any other documents required in the TDS.

19.8 Where tender securing declaration is executed, the Procuring Entity shall recommend to the PPRA to debar the Tenderer from participating in public procurement as provided in the law.

19.9 The Tender Security or the Tender-Securing Declaration of a JV shall be in the name of the JV that submits the Tender. If the JV has not been legally constituted into a legally enforceable JV at the time of tendering, the Tender Security or the Tender-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITT 4.1 and ITT 11.2.

**19.10** A tenderer shall not issue a tender security to guarantee itself.

## **20.0 Format and Signing of Tender**

**20.1** The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT 11 and clearly mark it “ORIGINAL.” Alternative Tenders, if permitted in accordance with ITT 13, shall be clearly marked “ALTERNATIVE.” In addition, the Tenderer shall submit copies of the Tender, in the number specified in the TDS and clearly mark them “COPY.” In the event of any discrepancy between the original and the copies, the original shall prevail.

**20.2** Tenderers shall mark as “CONFIDENTIAL” all information in their Tenders which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.

**20.3** The original and all copies of the Tender shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation as specified in the TDS and shall be attached to the Tender. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Tender where entries or amendments have been made shall be signed or initialed by the person signing the Tender.

**20.4** In case the Tenderer is a JV, the Tender shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.

**20.5** Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Tender.

## **D. SUBMISSION AND OPENING OF TENDERS**

### **21.0 Sealing and Marking of Tenders**

**21.1** The Tenderer shall deliver the Tender in a single sealed envelope, or in a single sealed package, or in a single sealed container bearing the name and Reference number of the Tender, addressed to the Procuring Entity and a warning not to open before the time and date for Tender opening date. Within the single envelope, package or container, the Tenderer shall place the following separate, sealed envelopes:

- a) in an envelope or package or container marked “ORIGINAL”, all documents comprising the Tender, as described in ITT 11; and
- b) in an envelope or package or container marked “COPIES”, all required copies of the Tender; and
- c) if alternative Tenders are permitted in accordance with ITT 13, and if relevant:
  - i) in an envelope or package or container marked “ORIGINAL –ALTERNATIVE TENDER”, the alternative Tender; and
  - ii) in the envelope or package or container marked “COPIES- ALTERNATIVE TENDER”, all required copies of the alternative Tender.

The inner envelopes or packages or containers shall:

- a) bear the name and address of the Procuring Entity,
- b) bear the name and address of the Tenderer; and
- c) bear the name and Reference number of the Tender.

**21.2** If an envelope or package or container is not sealed and marked as required, the *Procuring Entity* will assume no responsibility for the misplacement or premature opening of the Tender. Tenders misplaced or opened prematurely will not be accepted.

### **22.0 Deadline for Submission of Tenders**

**22.1** Tenders must be received by the Procuring Entity at the address specified in the **TDS** and no later than the date and time also specified in the **TDS**. When so specified in the **TDS**, tenderers shall have the option of submitting their Tenders electronically. Tenderers submitting Tenders electronically shall follow the electronic Tender submission procedures specified in the **TDS**.

**22.2** The Procuring Entity may, at its discretion, extend the deadline for the submission of Tenders by amending the Tender Documents in accordance with ITT 8, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

### **23.0 Late Tenders**

The Procuring Entity shall not consider any Tender that arrives after the deadline for submission of tenders, in accordance with ITT 22. Any Tender received by the Procuring Entity after the deadline for submission of Tenders shall be declared late, rejected, and returned unopened to the Tenderer.

### **24.0 Withdrawal, Substitution, and Modification of Tenders**

**24.1** A Tenderer may withdraw, substitute, or modify its Tender after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITT 20.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Tender must accompany the respective written notice. All notices must be:

- a) prepared and submitted in accordance with ITT 20 and ITT 21 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION;” and
- b) received by the Procuring Entity prior to the deadline prescribed for submission of Tenders, in accordance with ITT 22.

**24.2** Tenders requested to be withdrawn in accordance with ITT 24.1 shall be returned unopened to the Tenderers.

**24.3** No Tender may be withdrawn, substituted, or modified in the interval between the deadline for submission of Tenders and the expiration of the period of Tender validity specified by the Tenderer on the Form of Tender or any extension thereof.

### **25. Tender Opening**

**25.1** Except in the cases specified in ITT 23 and ITT 24.2, the Procuring Entity shall publicly open and read out all Tenders received by the deadline, at the date, time and place specified **in the TDS**, in the presence of Tenderers' designated representatives who chooses to attend. Any specific electronic Tender opening procedures required if electronic Tendering is permitted in accordance with ITT 22.1, shall be as specified in the **TDS**.

**25.2** First, envelopes marked “WITHDRAWAL” shall be opened and read out and the envelopes with the corresponding Tender shall not be opened but returned to the Tenderer. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Tender opening.

**25.3** Next, envelopes marked “SUBSTITUTION” shall be opened and read out and exchanged with the corresponding Tender being substituted, and the substituted Tender shall not be opened, but returned to the Tenderer. No Tender substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Tender opening.

**25.4** Next, envelopes marked “MODIFICATION” shall be opened and read out with the corresponding Tender. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Tender opening.

**25.5** Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Tenderer and whether

there is a modification; the total Tender Price, per lot (contract) if applicable, including any discounts and alternative Tenders; the presence or absence of a Tender Security or Tender-Securing Declaration, if required; and any other details as the Procuring Entity may consider appropriate.

- 25.6** Only Tenders, alternative Tenders and discounts that are opened and read out at Tender opening shall be considered further for evaluation. The Form of Tender and pages of the Bill of Quantities (to be decided on by the tender opening committee) are to be initialed by the members of the tender opening committee attending the opening.
- 25.7** At the Tender Opening, the Procuring Entity's Hall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 23.1).
- 25.8** The Procuring Entity shall prepare minutes of the Tender Opening that shall include, as a minimum: -
- a) the name of the Tenderer and whether there is a withdrawal, substitution, or modification;
  - b) the Tender Price, per lot (contract) if applicable, including any discounts; c) any alternative Tenders;
  - d) the presence or absence of a Tender Security, if new as required;
  - e) number of pages of each tender document submitted.
- 25.9** The Tenderers' representatives who are present shall be requested to sign the minutes. The omission of a Tenderer's signature on the minutes shall not invalidate the contents and effect of the minutes. A copy of the tender opening register shall be distributed to all Tenderers.

## **E. EVALUATION AND COMPARISON OF TENDERS**

### **26. Confidentiality**

26.1 Information relating to the evaluation of Tenders and recommendation of contract award shall not be disclosed

to Tenderers or any other persons not officially concerned with the Tender process until information on Intention to Award the Contract is transmitted to all Tenderers in accordance with ITT 43.

26.2 Any effort by a Tenderer to influence the Procuring Entity in the evaluation of the Tenders or Contract award decisions may result in the rejection of its tender.

26.3 Notwithstanding ITT 26.2, from the time of tender opening to the time of contract award, if a tenderer wishes to contact the Procuring Entity on any matter related to the tendering process, it shall do so in writing.

### **27.0 Clarification of Tenders**

**27.1** To assist in the examination, evaluation, and comparison of the tenders, and qualification of the tenderers, the Procuring Entity may, at its discretion, ask any tenderer for a clarification of its tender, given a reasonable time for a response. Any clarification submitted by a tenderer that is not in response to a request by the Procuring Entity shall not be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the tender shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the tenders, in accordance with ITT 31.

**27.2** If a tenderer does not provide clarifications of its tender by the date and time set in the Procuring Entity's request for clarification, its Tender may be rejected.

### **28.0 Deviations, Reservations, and Omissions**

**28.1** During the evaluation of tenders, the following definitions apply: -

- a) “*Deviation*” is a departure from the requirements specified in the tender document;
- b) “*Reservation*” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the tender document; and
- c) “*Omission*” is the failure to submit part or all of the information or documentation required in the Tender document.

## **29.0 Determination of Responsiveness**

**29.1** The Procuring Entity's determination of a Tender's responsiveness is to be based on the contents of the tender itself, as defined in ITT 11.

**29.2** A substantially responsive Tender is one that meets the requirements of the Tender document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that, if accepted, would:

- a) Affect in any substantial way the scope, quality, or performance of the Works specified in the Contract;
- b) limit in any substantial way, inconsistent with the tender document, the Procuring Entity's rights or the tenderer's obligations under the proposed contract;
- c) if rectified, would unfairly affect the competitive position of other tenderers presenting substantially responsive tenders.

**29.3** The Procuring Entity shall examine the technical aspects of the tender submitted in accordance with ITT 16, to confirm that all requirements of Section VII, Works' Requirements have been met without any material deviation, reservation or omission.

**29.4** If a tender is not substantially responsive to the requirements of the tender document, it shall be rejected by the Procuring Entity and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

## **30.0 Non-material Non-conformities**

**30.1** Provided that a tender is substantially responsive, the Procuring Entity may waive any non-conformities in the tender.

**30.2** Provided that a Tender is substantially responsive, the Procuring Entity may request that the tenderer submit the necessary information or documentation, within a reasonable period of time, to rectify non-material non-conformities in the tender related to documentation requirements. Requesting information or documentation on such non-conformities shall not be related to any aspect of the price of the tender. Failure of the tenderer to comply with the request may result in the rejection of its tender.

**30.3** Provided that a tender is substantially responsive, the Procuring Entity shall rectify quantifiable non-material non-conformities related to the Tender Price. To this effect, the Tender Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified **in the TDS.**

## **31.0 Arithmetical Errors**

**31.1** The tender sum as submitted and read out during the tender opening shall be absolute and final and shall not be the subject of correction, adjustment or amendment in any way by any person or entity.

**31.2** Provided that the Tender is substantially responsive, the Procuring Entity shall handle errors on the following basis: -

- a) Any error detected if considered a major deviation that affects the substance of the tender, shall lead to disqualification of the tender as non-responsive.
- b) Any errors in the submitted tender arising from a miscalculation of unit price, quantity, subtotal and total bid price shall be considered as a major deviation that affects the substance of the tender and shall lead to disqualification of the tender as non-responsive. and



c) if there is a discrepancy between words and figures, the amount in words shall prevail

**31.3** Tenderers shall be notified of any error detected in their bid during the notification of award.

### **32.0 Conversion to Single Currency**

For evaluation and comparison purposes, the currency (ies) of the Tender shall be converted in to a single currency as specified in the **TDS**.

### **33.0 Margin of Preference and Reservations**

**33.1** A margin of preference may be allowed only when the contract is open to international competitive tendering where foreign contractors are expected to participate in the tendering process and where the contract exceeds the value/threshold specified in the Regulations.

**33.2** A margin of preference shall not be allowed unless it is specified so in the **TDS**.

**33.3** Contracts procured on basis of international competitive tendering shall not be subject to reservations exclusive to specific groups as provided in ITT 33.4.

**33.4** Where it is intended to reserve a contract to a specific group of businesses (these groups are Small and Medium Enterprises, Women Enterprises, Youth Enterprises and Enterprises of persons living with disability, as the case may be), and who are appropriately registered as such by the authority to be specified in the **TDS**, a procuring entity shall ensure that the invitation to tender specifically indicates that only businesses or firms belonging to the specified group are eligible to tender. No tender shall be reserved to more than one group. If not so stated in the Invitation to Tender and in the Tender documents, the invitation to tender will be open to all interested tenderers.

### **34.0 Nominated Subcontractors**

**34.1** Unless otherwise stated in the **TDS**, the Procuring Entity does not intend to execute any specific elements of the Works by subcontractors selected/nominated by the Procuring Entity. In case the Procuring Entity nominates a subcontractor, the subcontract agreement shall be signed by the Subcontractor and the Procuring Entity. The main contract shall specify the working arrangements between the main contractor and the nominated subcontractor.

**34.2** Tenderers may propose sub-contracting up to the percentage of total value of contracts or the volume of works as specified in the **TDS**. Subcontractors proposed by the Tenderer shall be fully qualified for their parts of the Works.

**34.3** Domestic subcontractor's qualifications shall not be used by the Tenderer to qualify for the Works unless their specialized parts of the Works were previously designated so by the Procuring Entity in the **TDS** as can be met by subcontractors referred to hereafter as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractors proposed by the Tenderer may be added to the qualifications of the Tenderer.

### **35. Evaluation of Tenders**

**35.1** The Procuring Entity shall use the criteria and methodologies listed in this ITT and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Procuring Entity shall determine the Lowest Evaluated Tender in accordance with ITT 40.

**35.2** To evaluate a Tender, the Procuring Entity shall consider the following:

- a) Price adjustment in accordance with ITT 31.1 (iii); excluding provisional sums and contingencies, if any, but including Daywork items, where priced competitively;
- b) price adjustment due to discounts offered in accordance with ITT 14.4;
- c) converting the amount resulting from applying (a) and (b) above, if relevant, to a single currency in accordance with ITT 32;
- d) price adjustment due to quantifiable non material non-conformities in accordance with ITT 30.3; and

- e) any additional evaluation factors specified in the TDS and Section III, Evaluation and Qualification Criteria.
- 35.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be considered in Tender evaluation.
- 35.4 Where the tender involves multiple lots or contracts, the tenderer will be allowed to tender for one or more lots (contracts). Each lot or contract will be evaluated in accordance with ITT 35.2. The methodology to determine the lowest evaluated tenderer or tenderers base done lot (contract) or based on a combination of lots (contracts), will be specified in Section III, Evaluation and Qualification Criteria. In the case of multiple lots or contracts, tenderer will be will be required to prepare the Eligibility and Qualification Criteria Form for each Lot.

### **36.0 Comparison of tenders**

The Procuring Entity shall compare the evaluated costs of all substantially responsive Tenders established in accordance with ITT 35.2 to determine the Tender that has the lowest evaluated cost.

### **37.0 Abnormally low tenders and abnormally high tenders**

#### **Abnormally Low Tenders**

- 37.1 An Abnormally Low Tender is one where the Tender price, in combination with other elements of the Tender, appears so low that it raises material concerns as to the capability of the Tenderer in regards to the Tenderer's ability to perform the Contract for the offered Tender Price or that genuine competition between Tenderers is compromised.
- 37.2 In the event of identification of a potentially Abnormally Low Tender, the Procuring Entity shall seek written clarifications from the Tenderer, including detailed price analyses of its Tender price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Tender document.
- 37.3 After evaluation of the price analyses, in the event that the Procuring Entity determines that the Tenderer has failed to demonstrate its capability to perform the Contract for the offered Tender Price, the Procuring Entity shall reject the Tender.

#### **Abnormally high tenders**

- 37.4 An abnormally high tender price is one where the tender price, in combination with other constituent elements of the Tender, appears unreasonably too high to the extent that the Procuring Entity is concerned that it (the Procuring Entity) may not be getting value for money or it may be paying too high a price for the contract compared with market prices or that genuine competition between Tenderers is compromised.
- 37.5 In case of a nab normally high price, the Procuring Entity shall make a survey of the market prices, check if the estimated cost of the contract is correct and review the Tender Documents to check if the specifications, scope of work and conditions of contract are contributory to the abnormally high tenders. The Procuring Entity may also seek written clarification from the tenderer on the reason for the high tender price. The Procuring Entity shall proceed as follows:
- i) If the tender price is abnormally high based on wrong estimated cost of the contract, the Procuring Entity may accept or not accept the tender depending on the Procuring Entity's budget considerations.
  - ii) If specifications, scope of work and/or conditions of contract are contributory to the abnormally high tender prices, the Procuring Entity shall reject all tenders and may retender for the contract based on revised estimates, specifications, scope of work and conditions of contract, as the case may be.
- 37.6 If the Procuring Entity determines that the Tender Price is abnormally too high because genuine competition between tenderers is compromised (*often due to collusion, corruption or other manipulations*), the Procuring

Entity shall reject all Tenders and shall institute or cause competent Government Agencies to institute an investigation on the cause of the compromise, before retendering.

### **38.0 Unbalanced and/ or front-loaded tenders**

- 38.1** If in the Procuring Entity's opinion, the Tender that is evaluated as the lowest evaluated price is seriously unbalanced and/or frontloaded, the Procuring Entity may require the Tenderer to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the tender prices with the scope of works, proposed methodology, schedule and any other requirements of the Tender document.
- 38.2** After the evaluation of the information and detailed price analyses presented by the Tenderer, the Procuring Entity may as appropriate:
- a) accept the Tender;
  - b) require that the total amount of the Performance Security be increased at the expense of the Tenderer to a level not exceeding a 30% of the Contract Price;
  - c) agree on a payment mode that eliminates the inherent risk of the Procuring Entity paying too much for undelivered works;
  - d) reject the Tender,

### **39.0 Qualifications of the tenderer**

- 39.1** The Procuring Entity shall determine to its satisfaction whether the eligible Tenderer that is selected as having submitted the lowest evaluated cost and substantially responsive Tender, meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.
- 39.2** The determination shall be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to ITT 17. The determination shall not take into consideration the qualifications of other firms such as the Tenderer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Sub-contractors if permitted in the Tender document), or any other firm(s) different from the Tenderer.
- 39.3** An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in disqualification of the Tender, in which event the Procuring Entity shall proceed to the Tenderer who offers a substantially responsive Tender with the next lowest evaluated price to make a similar determination of that Tenderer's qualifications to perform satisfactorily.

### **40.0 Lowest evaluated tender**

Having compared the evaluated prices of Tenders, the Procuring Entity shall determine the Lowest Evaluated Tender. The Lowest Evaluated Tender is the Tender of the Tenderer that meets the Qualification Criteria and whose Tender has been determined to be:

- a) Most responsive to the Tender document; and
- b) the lowest evaluated price.

### **41.0 Procuring entity's right to accept any tender, and to reject any or all tenders.**

The Procuring Entity reserves the right to accept or reject any Tender and to annul the Tender process and reject all Tenders at any time prior to Contract Award, without there by incurring any liability to Tenderers. In case of annulment, all Tenders submitted and specifically, Tender securities, shall be promptly returned to the Tenderers.

## **F. AWARD OF CONTRACT**

### **42.0 Award criteria**

The Procuring Entity shall award the Contract to the successful tenderer whose tender has been determined to be the Lowest Evaluated Tender.

#### **43.0 Notice of Intention to Enter into a Contract/Notification of Award**

Upon award of the contract and prior to the expiry of the Tender Validity Period the Procuring Entity shall issue a Notification of Intention to Enter into a Contract/Notification of award to all tenderers which shall contain, at a minimum, the following information:

- a) the name and address of the Tenderer submitting the successful tender;
- b) the Contract price of the successful tender;
- c) a statement of the reason(s) the tender of the unsuccessful tenderer to whom the letter is addressed was unsuccessful, unless the price information in (c) above already reveals the reason;
- d) the expiry date of the Standstill Period; and
- e) instruction on how to request a debriefing and/ or submit a complaint during the stand still period;

#### **44.0 Stand still Period**

**44.1** The Contract shall not be signed earlier than the expiry of a Standstill Period of 14 days to allow any dissatisfied tender to launch a complaint. Where only one Tender is submitted, the Standstill Period shall not apply.

**44.2** Where a Standstill Period applies, it shall commence when the Procuring Entity has transmitted to each Tenderer the Notification of Intention to Enter into a Contract with the successful Tenderer.

#### **45.0 Debriefing by The Procuring Entity**

**45.1** On receipt of the Procuring Entity's Notification of Intention to Enter into a Contract referred to in ITT 43, an unsuccessful tenderer may make a written request to the Procuring Entity for a debriefing on specific issues or concerns regarding their tender. The Procuring Entity shall provide the debriefing within five days of receipt of the request.

**45.2** Debriefings of unsuccessful Tenderers may be done in writing or verbally. The Tenderer shall bear its own costs of attending such a debriefing meeting.

#### **46.0 Letter of Award**

Prior to the expiry of the Tender Validity Period and upon expiry of the Standstill Period specified in ITT 42.1, upon addressing a complaint that has been filed with in the Standstill Period, the Procuring Entity shall transmit the Letter of Award to the successful Tenderer. The letter of award shall request the successful tenderer to furnish the Performance Security within 21 days of the date of the letter.

#### **47.0 Signing of Contract**

**47.1** Upon the expiry of the fourteen days of the Notification of Intention to enter in to contract and upon the parties meeting their respective statutory requirements, the Procuring Entity shall send the successful Tenderer the Contract Agreement.

**47.2** Within fourteen (14) days of receipt of the Contract Agreement, the successful Tenderer shall sign, date, and return it to the Procuring Entity.

**47.3** The written contract shall be entered into within the period specified in the notification of award and before expiry of the tender validity period.

#### **48.0 Performance Security**

- 48.1** Within twenty-one (21) days of the receipt of the Letter of Award from the Procuring Entity, the successful Tenderer shall furnish the Performance Security and, any other documents required in the **TDS**, in accordance with the General Conditions of Contract, subject to ITT 38.2 (b), using the Performance Security and other Forms included in Section X, Contract Forms, or another form acceptable to the Procuring Entity. A foreign institution providing a bank guarantee shall have a correspondent financial institution located in Kenya, unless the Procuring Entity has agreed in writing that a correspondent bank is not required.
- 48.2** Failure of the successful Tenderer to submit the above-mentioned Performance Security and other documents required in the **TDS** or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security. In that event the Procuring Entity may award the Contract to the Tenderer offering the next Best Evaluated Tender.
- 48.3** Performance security shall not be required for contracts estimated to cost less than the amount specified in the Regulations.

**49.0 Publication of Procurement Contract**

Within fourteen days after signing the contract, the Procuring Entity shall publish the awarded contract at its notice boards and websites; and on the Website of the Authority. At the minimum, the notice shall contain the following information:

- a) name and address of the Procuring Entity;
- b) name and reference number of the contract being awarded, a summary of its scope and the selection method used;
- c) the name of the successful Tenderer, the final total contract price, the contract duration;
- d) dates of signature, commencement and completion of contract;
- e) names of all Tenderers that submitted Tenders, and their Tender prices as readout at Tender opening.

**50.0 Procurement related Complaint**

The procedures for making Procurement-related Complaints are as specified in the **TDS**.

**SECTION II - TENDER DATA SHEET**

The following specific data shall complement, supplement, or amend the provisions in the Instruction to Tenderers (ITT). Whenever there is a conflict, the conditions here in shall prevail over those in ITT

<b>A. GENERAL</b>	
<b>ITT 1.1</b>	<p>The name of the Contract is: <b>PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL – KURIA EAST, MIGORI COUNTY,</b></p> <p>The reference number of the contract is: <b>MoH/SDMS/OT/02/2024-2025</b></p> <p><b>IFMIS Negotiation No.1667773</b></p> <p>The number and identification of Lots (contracts) comprising this tender are: <i>Not applicable</i></p>
<b>ITT 2.3</b>	<p>The information made available on competing firms is as <b>per the tender document and bill of quantities</b></p>
<b>ITT 2.4</b>	<p>The firms that provided consultancy services for the contract being tendered for are:</p> <p><b>STATE DEPARTMENT FOR PUBLIC WORKS, P.O.BOX 30743-00100 NAIROBI</b></p>

ITT 3.1	The maximum number of members in a Joint Venture (JV) shall be: <b>THREE (3)</b>
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<b>B. Contents of Tender Document</b>	
ITT 7.1	<p>(i) The Tenderer will submit any request for clarifications in writing at the Address: <b>Principal Secretary, State Department for Medical Services P.O Box 30016-00100 Nairobi</b> email <a href="mailto:procurement@health.go.ke">procurement@health.go.ke</a></p> <p>To reach the Procuring Entity not later than <b>three (3) days</b> before the deadline for submission of tenders</p> <p>(ii) The Procuring Entity shall publish its response at the website <b>as indicated in the invitation to tender</b></p>
ITT 7.2	<p>(A) A pre-arranged pretender site visit [insert "shall" or "shall not"] take place at the following date, time and place: <b>The tenderer may visit the site on any official working day during office hours before the deadline for submission of tenders</b></p> <p>(B) Pre-Tender meeting [insert "shall" or "shall not"] take place at the following date, time and place: <b>There will be no pre-tender meeting</b></p> <p>-</p> <p>-</p>
ITT 7.3	Requests for clarification in writing to reach the Procuring Entity not later than 4 days before the Tender Opening Date. No pretender meeting will be held.
ITT 7.5	The Procuring Entity's website where Minutes of the pre-Tender meeting and the pre- arranged pretender will be published is: <i>N/A</i>
<b>C. Preparation of Tenders</b>	
ITT 11.1 (h)	The Tenderer shall submit the following additional documents in its Tender: <b>The list of documents is as per the evaluation criteria.</b>
ITT 13.1	Alternative Tenders <b>shall not</b> be considered.
ITT 13.2	Alternative times for completion <b>shall not be</b> permitted.
ITT 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: <b>Not applicable</b>
ITT 14.5	The prices quoted by the Tenderer shall be: <b>Fixed</b>
ITT 15.2 (a)	Foreign currency requirements <b>not allowed.</b>
ITT 18.1	The Tender validity period shall be <b>One Hundred and Twenty-Six (126)</b> days.
ITT 18.3	(a) The Number of days beyond the expiry of the initial tender validity period will be <b>Thirty (30)</b> days.

ITT 19.1	Tender shall provide a Tender Security. The type of Tender security shall be <i>Bank or Insurance guarantee</i> in the amount of <b>Kenya shillings Five Million (Kshs 5,000,000.00)</b> in the prescribed format <b>valid for 156 days</b> from the tender opening date.
ITT 20.1	In addition to the original of the Tender, the number of copies is: <b><i>See the instructions on the Invitation to tender</i></b>
ITT 20.3	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of <b><u>Delegated Authority through Power of Attorney certified by a Commissioner of Oaths.</u></b>
<b>D. Submission and Opening of Tenders</b>	
ITT 22.1	<p>A) For Tender submission purposes the Procuring Entity's address is:  The Principal Secretary  State Department for Medical Services  Afya House, Cathedral Road  P.O. BOX 30016-00100 Nairobi, Kenya</p> <p>Completed tenders to be submitted through the IFMIS SUPPLIER PORTAL:  <a href="http://www.supplier.treasury.go.ke">www.supplier.treasury.go.ke</a>. Manual Submissions will not be accepted. Except for the select specified documents as provided in the invitation to tender.</p> <p>(B) Date and time for submission of Tenders: <b>Friday 8<sup>th</sup> November ,2024 at 11.00 Am</b></p>
ITT 25.1	<p>The Tender opening shall take place at:  State Department for Medical Services.  P.O Box 30016-00100 Nairobi  GTZ Board Room  Afya House Nairobi, Cathedral Road</p> <p>Tender opening date and time will be on <b>Friday 8<sup>th</sup> November ,2024 at 11.00 Am (East Africa Time)</b></p>
ITT 25.1	Tenders to be submitted electronically through the IFIMS Supplier Portal <a href="http://www.supplier.treasury.go.ke">www.supplier.treasury.go.ke</a> . The submitted tenders will be confirmed vide a projection from the portal online.
<b>E. Evaluation, and Comparison of Tenders</b>	
ITT 30.3	The adjustment shall be based on the " <b>average</b> " price of the item or component as quoted in other substantially responsive Tenders. If the price of the item or component cannot be derived from the price of other substantially responsive Tenders, the Procuring Entity shall use its best estimate.
ITT 31.2	The error shall be considered a major deviation that leads to disqualification of the tender if the percentage of the error (error over the tender price quoted) is: <b>More than OR less than 5%</b> of the Quoted Sum.

ITT 32.0	The currency that shall be used for Tender Evaluation and comparison purposes to convert at the selling exchange rate all Tender prices expressed in various currencies into a single currency is Kenya Shillings
ITT 33.2	A margin of preference <i>shall not</i> apply.
ITT 33.4	The invitation to tender is extended to the following group that qualify for Reservations <i>All eligible, interested and qualified tenderers</i>

ITT 34.1	At this time, the Procuring Entity <i>does not intend</i> to execute certain specific parts of the Works by subcontractors selected in advance.
ITT 34.2	Contractor's may propose subcontracting: Maximum percentage of subcontracting permitted is: 40% of the total contract amount. Tenderers planning to subcontract more than 40% of total volume of work shall specify, in the Form of Tender, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience.
ITT 34.3	The parts of the Works for which the Procuring Entity permits Tenderers to propose Specialized Subcontractors are designated as follows: <i>Electrical and structural cabling</i>
	<i>Plumbing, drainage and air conditioning</i>
	<i>Medical gas piping and installation</i>
	For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors will be added to the qualifications of the Tenderer for the purpose of evaluation.
ITT 35.2 (e)	Additional requirements apply. These are detailed in the evaluation criteria in Section III, Evaluation and Qualification Criteria.
ITT 48.1	Other documents required in addition to the Performance Security are: <ul style="list-style-type: none"> <li>1. All the requisite Insurances</li> <li>2. Program of Works / Progress Chart</li> </ul>
ITT 48.2	Additional requirements are: <b>Not applicable</b>



<b>ITT 49.1</b>	<p>The procedures for making a Procurement-related Complaint are detailed in the "Notice of Intention to Award the Contract" herein and are also available from the PPRA Website <a href="http://www.ppra.go.ke">www.ppra.go.ke</a> or <a href="mailto:email-procurement@health.go.ke">email-procurement@health.go.ke</a></p> <p>If a Tenderer wishes to make a Procurement-related Complaint, the Tenderer should submit its complaint following these procedures, in writing (by the quickest means available, that is either by hand delivery or email to:</p> <p>Principal Secretary State Department for Medical Services Email address: <a href="mailto:-procurement@health.go.ke">-procurement@health.go.ke</a></p> <p>In summary, a Procurement-related Complaint may challenge any of the following (among others):</p> <ul style="list-style-type: none"> <li>(i) the terms of the Tender Documents; and</li> <li>(ii) the Procuring Entity's decision to award the contract.</li> </ul>
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## **SECTION III - EVALUATION AND QUALIFICATION CRITERIA**

### **1.0 GENERAL PROVISIONS**

**1.0** This section contains the criteria that the Employer shall use to evaluate tender and qualify tenderers. No other factors, methods or criteria shall be used other than specified in this tender document. The Tenderer shall provide all the information requested in the forms included in Section IV, Tendering Forms. The Procuring Entity shall use **the Standard Tender Evaluation Document for Goods and Works** for evaluating Tenders.

- 1.1** Wherever a Tenderer is required to state a monetary amount, Tenderers should indicate the Kenya Shilling equivalent using the rate of exchange determined as follows:
- a) For construction turnover or financial data required for each year - Exchange rate prevailing on the last day of the respective calendar year (in which the amounts for that year is to be converted) was originally established.
  - b) Value of single contract - Exchange rate prevailing on the date of the contract signature.
  - (c) Exchange rates shall be taken from the publicly available source identified in the ITT 14.3. Any error in determining the exchange rates in the Tender may be corrected by the Procuring Entity.

### **1.2 EVALUATION AND CONTRACT AWARD CRITERIA**

The Procuring Entity shall use the criteria and methodologies listed in this Section to evaluate tenders and arrive at the Lowest Evaluated Tender. The tender that (i) meets the qualification criteria, (ii) has been determined to be substantially responsive to the Tender Documents, and (iii) is determined to have the Lowest Evaluated Tender price shall be selected for award of contract.

### **2.0 PRELIMINARY EXAMINATION FOR DETERMINATION OF ESPONSIVENESS**

The Procuring Entity will start by examining all tenders to ensure they meet in all respects the eligibility criteria and other requirements in the ITT, and that the tender is complete in all aspects in meeting the requirements of "Part 2 – Procuring Entity's Works Requirements", including checking for tenders with unacceptable errors, abnormally low tenders, abnormally high tenders and tenders that are front loaded. The Standard Tender

Evaluation Report for Goods and Works for evaluating Tenders provides clear guidelines on how to deal with review of these requirements. Tenders that do not pass the Preliminary Examination will be considered irresponsible and will not be considered further.

## **EVALUATION AND QUALIFICATION CRITERIA**

After tender opening, the tenders will be evaluated in 4 stages, namely:

1. Preliminary examination
2. Technical Examination.
3. Financial Evaluation.
4. Recommendation for award
5. Post qualification: Due diligence

### **A. PRELIMINARY EVALUATION**

#### **The Following is the Preliminary / Mandatory Evaluation Criteria**

<b>No</b>	<b>Requirement</b>	<b>Condition</b>
1	Copy of certificate of Registration/Incorporation or partnership deed to show that the applicant is a registered company and legally authorized to do business in Kenya.	Must Meet
2	A valid and current KRA tax compliance certificate or its equivalent in the country of origin INCLUDING for sub-contractors if any	Must Meet
3	Copy of valid registration certificate issued by the National Construction Authority (NCA) as follows; - Main & Civil Works – NCA 4 and above Electrical & Structured Cabling Works – NCA 5 and above Plumbing, drainage & Air conditioning works – NCA 5 and above Medical gases pipeline system installation works – NCA 5 and above  The registration certificates Must be accompanied by Valid NCA practicing licenses.	Must Meet
4	Tender Security amounting to <b>Ksh.5,000,000/-</b> in the prescribed format valid for 156 days from the tender opening date.	Must Meet
5	Provide proof of power of attorney (of tender signatory if not director of the company/ partner, signed and stamped by Commissioner of Oaths).	Must Meet
6	A joint venture (or sub contract) agreement between parties if applicable	Must Meet
7	Copy of CR 12 (Not more than 6 months ) from the date of issuance	Must Meet
8.	Serialization and pagination of the tender document as uploaded on the portal	Must Meet
9.	Copy of Valid Business Permit with License Number	Must Meet
10.	Duly filled, signed and stamped form of tender	Must Meet
11.	Duly filled certificate of independent tender determination	Must Meet
12	Duly filled Form SD1	Must Meet

13	Duly filled Form SD 2	Must Meet
14	Duly filled Form on declaration and commitment to the code of ethics	Must Meet
15.	<b>Duly filled confidential business questionnaire</b>	Must Meet

**NB: Bidders who do not meet any of the above requirements will be disqualified and shall not be evaluated further**

## **B. TECHNICAL EVALUATION**

**The following is the technical qualification requirement – The Tenderer to also refer to the Qualification form**

### **i) Evaluation of the Main Works**

<b>S/No</b>	<b>Requirement</b>	<b>Comment</b>
1	<p>Copies of the following documents as proof of access to liquid assets of not less than <b>Kshs. 65 million</b> or capacity to have a minimum cash flow of <b>Kshs. 65 million</b>. This shall be evidenced by any of the following:</p> <ol style="list-style-type: none"> <li>1. Letter showing line of credit from an approved financial institution specific to this project and indicating the amount available.</li> <li>2. Overdraft facility from a commercial bank specifically for this project and indicating the amount to be availed.</li> <li>3. Current bank statement for the last six months</li> <li>4. Or a combination of the above</li> </ol>	Must Meet

2	<p><b>Qualifications and technical experience of site personnel to manage and execute the works on the site.</b></p> <p><b>Bidders shall submit the following documents which shall be certified by the employer as true copies of the original to be used for evaluation:</b></p> <ul style="list-style-type: none"> <li>• Copies of academic certificates</li> <li>• Copies of professional certificates</li> <li>• Copies of current practicing license</li> <li>• Curriculum vitae signed by the nominee</li> <li>• A written undertaking signed by the nominee confirming his/her availability to carry out the assignment upon winning the bid. The written undertaking shall be addressed to <b>The Principal Secretary – State Department for Medical Services</b> and must be specific to this tender</li> </ul> <p><b>Project Manager</b></p> <ol style="list-style-type: none"> <li>1. Bachelors in any of the following: Architecture, Quantity Surveying, Construction Project Management/Building Construction or Structural Engineering field.</li> <li>2. Registered Professional with the respective registration bodies E.g. Civil Engineer with <b>Engineers Board of Kenya (EBK)</b> and Architecture, Quantity Surveying, Construction Project Management with <b>Board of Registration of Architects &amp; Quality Surveyors (BORAQS)</b>. Must have a valid practicing license - <b>Mandatory</b></li> <li>3. General Experience – Minimum <b>Seven (7)</b> years.</li> <li>4. Specific experience on Construction of building AND CIVIL works – <b>5 years</b>.</li> </ol> <p><b>Assistant Project Manager</b></p> <ol style="list-style-type: none"> <li>1. Bachelors in any of the following: Architecture, Quantity Surveying, Construction Project Management/Building Construction or Civil / Structural Engineering field.</li> <li>2. General Experience – Minimum <b>Five (5)</b> years.</li> <li>3. Specific experience on Construction of building works – <b>3 years</b>.</li> </ol> <p><b>Site Foreman</b></p> <ol style="list-style-type: none"> <li>1. Diploma in Construction/Building Management.</li> <li>2. Experience – Minimum five <b>(5)</b> years</li> </ol>	Must Meet
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S/No	Requirement	Comment
3	Average annual turnover of not less than <b>Kshs.500 Million</b> for the last three consecutive years as demonstrated by the submitted Audited Accounts for the last three(3) years	Must Meet
4	<b>Work Plan</b> Resourced work program WITHIN THE SPECIFIED PERIOD in the form of a Gantt chart prepared using MS project or similar computer software	Must Meet
5	<b>Company past works experience in the last 5 years</b> Proof of <b>at least Three (3) similar</b> works in general building works, costing not less than Kshs. <b>200 million (Kenya Shillings Two Hundred Million)</b> on average previously undertaken in the last <b>Five</b> years Bidder shall attach copies of the following: <ol style="list-style-type: none"> <li>1. Letters of Award or,</li> <li>2. Signed Contract and Completion Certificate for the respective projects. or</li> </ol> If project is ongoing, it must be at least 70% complete. Bidder to attach copies of interim payment certificates.	Must Meet

6	<p><b>Equipment and Machinery</b></p> <p>Must demonstrate access to the following key minimum equipment (invoices, receipts, leased or hire agreement) necessary to undertake the work;</p> <ol style="list-style-type: none"> <li>1. 200 Litre Concrete Mixers – One (1)</li> <li>2. Concrete Poker Vibrator – Two (2)</li> <li>3. Lorries – Two (2)</li> <li>4. 5. Tippers – Two (2)</li> <li>6. Pick Ups – Two (1)</li> </ol> <p>Backhoe Loader – One (1)</p> <p><b>Notes</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> If the equipment is owned, must provide <b>CLEAR</b> copies of log book or proof of ownership;</li> <li><input type="checkbox"/> If equipment is hired or leased Provide a commitment letter from the lessor of the equipment addressed to the <b>Principal Secretary, State Department for Medical Services</b> indicating that the lessor shall avail the equipment upon award of the tender and submit a copy of a written agreement to lease between lessee and lessor indicating list of equipment</li> <li><input type="checkbox"/> and their corresponding copies of log books or proof of ownership by lessor;</li> <li><input type="checkbox"/> The equipment listed shall be available on site when required</li> </ul>	Must Meet
7	<p>Compliance with Mechanical &amp; Electrical <u>Key Technical Specifications</u> as set out in the bid document. In this regard, the bidders will be required to submit relevant technical brochures/catalogues with the tender document, highlighting (using a mark-pen or highlighter) the Catalogue Number/model of the proposed items. Such brochures/catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:</p> <ol style="list-style-type: none"> <li>i) Standards of manufacture</li> <li>ii) Performance ratings/characteristics</li> <li>iii) Material of manufacture</li> <li>iv) Electrical power ratings; &amp;</li> <li>v) All other requirements as indicated in the technical schedule of the bid</li> </ol> <p>The tenderer shall also fill in the Technical Schedule as specified in the tender document for Equipment and Items indicating the Country of Origin, Model/Make/Manufacturer and catalogue numbers of the Items/Equipment they propose to supply.</p> <p><b>NOTE:</b></p> <ol style="list-style-type: none"> <li>a) Compliance to all technical specifications with Electrical and UPS Equipment as detailed in Section (Particular specs) of Electrical Document shall be evaluated.</li> <li>b) Bidders who do not highlight catalogue number and model of the proposed items shall be considered non-compliant.</li> <li>c) Non-compliance to any of the specifications shall render the whole system non-compliant</li> </ol> <p><b>NOTE: REFER TO THE ELECTRICAL AND MECHANICAL DOCUMENTS FOR TECHNICAL SPECIFICATIONS FOR INDIVIDUAL ITEMS</b></p>	Must Meet
8	<p>The Contractor is highly advised to visit the site and familiarize himself with the site conditions before pricing. No Claim shall be entertained for failure to ascertain the Conditions of the site.</p>	

**Mechanical Works:** Attach manufacturers letter of authorization for installation specific to tender

**Both Mechanical & Electrical Works:** Attach technical brochures for items being offered as stipulated in the technical schedule

**Both Mechanical & Electrical Works:** Domestic sub-contractors must sign and stamp the summary page of their respective specialist works on the tender document

Main Contractor shall attach duly signed and stamped pre-contract agreement to work together with the Domestic Sub-Contractors if awarded the Tender (where Applicable). **(The agreement should be signed by both parties for it to be valid)**

**Note:** Domestic sub-contractors must sign and stamp the summary page of their respective specialist works on the tender document

### C. FINANCIAL EVALUATION

Upon completion of the technical evaluation a detailed financial evaluation shall follow. The financial evaluation shall proceed in the manner described in the Public Procurement and Disposal Act (2015) of the laws of Kenya and the Public Procurement and Disposal Regulations, 2022.

The financial evaluation shall be in **three stages**;

- a) Checking for arithmetic errors
- b) Comparison of Rates; and
- c) Consistency of the Rates.

#### A) Arithmetic errors

Arithmetic Errors will be corrected as follows; -

- i) In the event of a discrepancy between the amount as stated in the form of tender and the corrected tender figure in the main summary of the Bills of Quantities, the amount in the Form of Tender shall prevail. Pursuant to section 82 of the Public Procurement and Asset Disposal Act 2015, the tender sum as submitted and read out during the tender opening shall be absolute and final and shall not be the subject of correction, adjustment or amendment in any way by any person or entity
- ii) Errors noted shall be observed, recorded and a communication made to the Client highlighting their merits and demerits depending with the item of works.

#### B) Comparison of rates-

Items that are underpriced or overpriced may indicate potential for non-delivery and front loading respectively. The committee shall promptly write to the tenderer through the Head of Procurement asking for detailed breakdown of costs for any of the quoted items, relationship between those prices, proposed construction/installation methods and schedules.

The evaluation committee shall evaluate the responses and make an appropriate recommendation to the procuring entity giving necessary evidence. Such recommendations may include but not limited to:

- a) Recommend no adverse action to the tenderer after a convincing response;
- b) Employer requiring that the amount of the performance bond be raised at the expense of the successful tenderer to a level sufficient to protect the employer against potential losses;
- c) Recommend non-award based on the response provided and the available demonstrable evidence that the scope, quality, completion timing, administration of works to be undertaken by the tenderer, would adversely be affected or the rights of the employer or the tenderers obligations would be limited in a substantial way.

#### C) Consistency of the Rates

The evaluation committee will compare the consistency of rates for similar items and note all inconsistencies of the rates for similar items.

The financial evaluation will be based on the **lowest evaluated price**.

### 3.0 TENDER EVALUATION (ITT 35)

Price evaluation: in addition to the criteria listed in ITT 35.2 (a) – (d) the following criteria shall apply:

- (i) Alternative Completion Times, if permitted under ITT 13.2, will be evaluated as follows:  
.....
- (ii) Alternative Technical Solutions for specified parts of the Works, if permitted under ITT 13.4, will be evaluated as follows.....
- (iii) Other Criteria; if permitted under ITT 35.2(j):  
.....

### 4.0 MULTIPLE CONTRACTS

4.1 Multiple contracts will be permitted in accordance with ITT 35.4. Tenderers are evaluated on basis of Lots and a lowest evaluated tenderer identified for each Lot. The Procuring Entity will select one Option of the two Options listed below for award of Contracts.

#### OPTION 1

- (i) If a tenderer wins only one Lot, the tenderer will be awarded a contract for that Lot, provided the tenderer meets the Eligibility and Qualification Criteria for that Lot.
- (ii) If a tenderer wins more than one Lot, the tender will be awarded a contract for all won Lots, provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the won Lots. The tenderer will be awarded only the combinations for which the tenderer qualifies and the others will be considered for award to second lowest the tenderers.

#### OPTION 2

The Procuring Entity will consider all possible combinations of won Lots [contract(s)] and determine the combination with the lowest evaluated price. Tenders will then be awarded to the Tenderer or Tenderers in the combination provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the won Lots.

### 5.0 ALTERNATIVE TENDERS (ITT 13.1)

*An alternative if permitted under ITT 3.1, will be evaluated as follows:*

The Procuring Entity shall consider Tenders offered for alternatives as specified in Part 2 - Works requirements. Only the technical alternatives, if any, of the Tenderer with the Best Evaluated Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

### 6.0 MARGIN OF PREFERENCE

6.1 If the TDS so specifies, the Procuring Entity will grant a margin of preference of fifteen percent (15%) to be loaded on evaluated prices of the foreign tenderers, where the percentage of share holding of Kenyan citizens is less than fifty- one percent (51%).

- 6.2 Contractors shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contractor or group of contractors qualifies for a margin of preference.
- 6.3 After Tenders have been received and reviewed by the Procuring Entity, responsive Tenders shall be assessed to ascertain their percentage of shareholding of Kenyan citizens. Responsive tenders shall be classified into the following groups:
- i) *Group A*: tenders offered by Kenyan Contractors and other Tenderers where Kenyan citizens hold shares of over fifty one percent (51%).
  - ii) *Group B*: tenders offered by foreign Contractors and other Tenderers where Kenyan citizens hold shares of less than fifty one percent (51%).
- 6.4 All evaluated tenders in each group shall, as a first evaluation step, be compared to determine the lowest tender, and the lowest evaluated tender in each group shall be further compared with each other. If, as a result of this comparison, a tender from Group A is the lowest, it shall be selected for the award of contract. If a tender from Group B is the lowest, an amount equal to the percentage indicated in Item 6.1 of the respective tender price, including unconditional discounts and excluding provisional sums and the cost of day works, if any, shall be added to the evaluated price offered in each tender from Group B. All tenders shall then be compared using new prices with added prices to Group B and the lowest evaluated tender from Group A. If the tender from Group A is still the lowest tender, it shall be selected for award. If not, the lowest evaluated tender from Group B based on the first evaluation price shall be selected.

**7. POST QUALIFICATION AND CONTRACT AWARD (ITT 39), MORE SPECIFICALLY,**

- a) In case the tender was subject to post-qualification, the contract shall be awarded to the lowest evaluated tenderer, subject to confirmation of pre-qualification data, if so required.
- b) In case the tender was not subject to post-qualification, the tender that has been determined to be the lowest evaluated tenderer shall be considered for contract award, subject to meeting each of the following conditions.
  - i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow of Kenya Shillings **65,000,000.00**.
  - ii) Minimum average annual construction turnover of Kenya Shillings **500,000,000.00**, equivalent calculated as total certified payments received for contracts in progress and/or completed within the last **three (3)** years.
  - iii) At-least **Three (3)** of contract(s) of a similar nature executed within Kenya, or the East African Community or a broad, that have been satisfactorily and substantially completed as a prime contractor, or joint venture member or sub-contractor each of minimum value Kenya shillings **200,000,000.00** equivalent.
  - iv) Contractor's Representative and Key Personnel, which are specified as

No.	Position	Qualification	Total Work Similar Experience (years)
1	Project Manager	Bachelor's degree in Architecture, Quantity Surveying, Construction Management or Civil / Structural	7
2	Site Agent	Higher Diploma in Building Construction or equivalent	5



3	Landscape Architect	Degree in Landscape Architecture/ Ornamental science and landscaping/ Ornamental Horticulture Registered with Architectural Association of Kenya	5
4	Surveyor	Diploma / Degree in Land Surveying / Geospatial Engineering	5
5	Foremen	Certificate- Building Construction, Electrical, Mechanical	5
6	Artisan	Trade test certificate in relevant field	5

*The Tenderer shall provide details of the Key Personnel and such other Key Personnel that the Tenderer considers appropriate, together with their academic qualifications and work experience. The Tenderer shall complete the relevant Forms in Section IV, Tendering Forms.*

- v) Contractors key equipment listed on the table “Contractor's Equipment” below and more specifically listed as *[specify requirements for each lot as applicable]* \_\_\_\_\_

vi) Other conditions depending on their seriousness.

a) **History of non-performing contracts:**

Tenderer and each member of JV in case the Tenderer is a JV, shall demonstrate that nonperformance of a contract did not occur because of the default of the Tenderer, or the member of a JV in the last **ten (10) years**. The required information shall be furnished in the appropriate form.

b) **Pending Litigation**

Financial position and prospective long-term profit ability of the Single Tenderer, and in the case the Tenderer is a JV, of each member of the JV, shall remain sound according to criteria established with respect to Financial Capability under Paragraph (i) above if all pending litigation will be resolved against the Tenderer. Tenderer shall provide information on pending litigations in the appropriate form.

c) **Litigation History**

There shall be no consistent history of court/arbitral award decisions against the Tenderer, in the last **10 years**. All parties to the contract shall furnish the information in the appropriate form about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the year's specified. A consistent history of awards against the Tenderer or any member of a JV may result in rejection of the tender.



**QUALIFICATION FORM SUMMARY – BIDDERS TO USE THE CRITERIA GIVEN IN NO.2 ABOVE IN CONJUNCTION WITH THE BELOW SUMMARY AND ALL THE TENDERING FORMS REFERRED HEREIN**

1	2	3	4	5
Item No.	Qualification Subject	Qualification Requirement	Document To be Completed by Tenderer	For Procuring Entity's Use (Qualification met or Not Met)
1	Nationality	Nationality in accordance with ITT 3.6	Forms ELI - 1.1 and 1.2, with attachments	
2	Tax Obligations for Kenyan Tenderers	Has produced a current tax clearance certificate or tax exemption certificate issued by Kenya Revenue Authority in accordance with ITT 3.14.	Attachment	
3	Conflict of Interest	No conflicts of interest in accordance with ITT 3.3	Form of Tender	
4	PPRA Eligibility	Not having been declared ineligible by the PPRA as described in ITT 3.7	Form of Tender	
5	State- owned Enterprise	Meets conditions of ITT 3.8	Forms ELI - 1.1 and 1.2, with attachments	
6	Goods, equipment and services to be supplied under the contract	To have their origin in any country that is not determined ineligible under ITT 4.1	Forms ELI - 1.1 and 1.2, with attachments	
7	History of Non-• Performing Contracts	Non-performance of a contract did not occur as a result of contractor default since <b>1<sup>st</sup> January 2014.</b>	Form CON-2	
8	Suspension Based on Execution of Tender/Proposal Securing Declaration by the Procuring Entity	Not under suspension based on-execution of a Tender/Proposal Securing Declaration pursuant to ITT 19.9	Form of Tender	

9	Pending Litigation	Tender's financial position and prospective long-term profitability still sound according to criteria established in 3.1 and assuming that all pending litigation will NOT be resolved against the Tenderer.	FormCON-2	
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1	2	3	4	5
Item No.	Qualification Subject	Qualification Requirement	<i>Document To be Completed by Tenderer</i>	<i>For Procuring Entity's Use (Qualification met or Not Met)</i>
10	Litigation History	No consistent history of court/arbitral award decisions against the tenderer since <b>1<sup>st</sup> January 2014</b>	Form CON - 2	
11	Financial Capabilities	<p>(i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as Kenya Shillings <b>65,000,000.00</b> equivalent for the subject contract(s) net of the Tenderer's other commitments.</p> <p>(ii) The Tenderers shall also demonstrate, to the satisfaction of the Procuring Entity, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.</p> <p>(iii) The audited balance sheets or, if not required by the laws of the Tenderer's country, other financial statements acceptable to the Procuring Entity, for the <b>last three (3) years</b> shall be submitted and must demonstrate the current soundness of the Tenderer's financial position and indicate its prospective long-term profitability.</p>	Form FIN - 3.1, with attachments	
12	Average Annual Construction Turnover	Minimum average annual construction turnover of Kenya Shillings <b>500,000,000.00</b> , equivalent calculated as total certified payments received for contracts in progress and/or completed within the <b>last three (3) years</b> , divided by <b>three (3) years</b>	Form FIN - 3.2	





1	2	3	4	5
Item No.	Qualification Subject	Qualification Requirement	Document To be Completed by Tenderer	For Procuring Entity's Use (Qualification met or Not Met)
13	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the <b>last five (5) years</b> ,	<b>4. Form EXP - 4.1 Experience</b>	
14	Specific Construction & Contract Management Experience	<p>A minimum number of <b>Three (3)</b> similar contracts specified below that have been satisfactorily and substantially completed as a prime contractor, joint venture member, management contractor or sub-contractor</p> <p>.. .. (number) contracts, each of minimum value Kenya shillings <b>200,000,000.00</b> equivalent.</p> <p><i>[In case the Works are to be tender as individual contracts under multiple contract procedure, the minimum number of contracts required for purposes of evaluating qualification shall be selected from the options mentioned in ITT 35.4]</i></p> <p>The similarity of the contracts shall be based on the following: <i>[Based on Section VII, Scope of Works, specify the minimum key requirements in terms of physical size, complexity, construction method, technology and/or other characteristics including part of the requirements that may be met by specialized subcontractors, if permitted in accordance with ITT 34.3]</i></p>	Form EXP 4.2(a)	



## SECTION IV - TENDERING FORMS

### QUALIFICATION FORMS

#### 1. FOREIGN TENDERERS 40%RULE

Pursuant to ITT 3.9, a foreign tenderer must complete this form to demonstrate that the tender fulfils this condition.

ITEM	Description of work item	Description of location of source	COST IN Shillings	Comments, If any
A	LOCAL LABOR			
1				
2				
3				
4				
5				
B	SUB CONTRACTS FROM LOCAL SOURCES			
1				
2				
3				
4				
5				
C	LOCAL MATERIALS			
1				
2				
3				
4				
5				
D	USE OF LOCAL PLANT AND EQUIPMENT			
1				
2				
3				
4				
5				
E	ADD ANY OTHER ITEM			
1				

2.

2				
3				
4				
5				
6				
	<b>TOTAL COST OF LOCAL CONTENT</b>			
	<b>PERCENTAGE OF CONTRACT PRICE</b>			

**FORM EQU: EQUIPMENT**

The Tenderer shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Tenderer.

Item of equipment

Equipment information

Name of manufacturer

Capacity

Model and power r

Year of manufactu

Current

Current location

Indicate source of the equipment

Owned     Rented     Leased

Specially r

Omit the following information for equipment owned by the Tenderer.

Owner

Name of owner

Address of owner

Telephone

Contact name and t

Fax

Telex

Agreements

Details of rental / lease / manufacture agreements specific to th

3.


**FORM PER -1**

**Contractor's Representative and Key Personnel Schedule**

Tenderers should provide the names and details of the suitably qualified Contractor's Representative and Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

**4. Contractor' Representative and Key Personnel**

1.	<b>Title of position:</b> Contractor's Representative	
	<b>Name of candidate:</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
2.	<b>Title of position:</b> [ _____ ]	
	<b>Name of candidate :</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
3.	<b>Title of position:</b> [ _____ ]	
	<b>Name of candidate :</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
4.	<b>Title of position:</b> [ _____ ]	
	<b>Name of candidate :</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
5.	<b>Title of position:</b> <i>[insert title]</i>	
	<b>Name of candidate</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>

**FORM PER - 2:**

5.

Name of Tenderer
------------------

Position[#1]: <i>[title of position from Form PER-1]</i>		
information	Name:	Date of birth:
	Address:	E-mail:
Professional qualifications:		
Academic qualifications:		
Language proficiency: <i>[language and levels of speaking, reading and writing skills]</i>		
Details		
Address of Procuring Entity:		
Telephone:	Contact (managerial)	
Fax:	Years with present employer:	
Jobtitle:		

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	Role	Duration of involvement	Relevant experience
	<i>[role and responsibilities on the project]</i>	<i>[time in role]</i>	<i>[describe the experience relevant to this position]</i>

6.


**Declaration**

I, the undersigned [*insert either "Contractor's Representative" or "Key Personnel" as applicable*], certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Tender:



Commitment	Details
Commitment to duration of contract:	<i>[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]</i>
Time commitment:	<i>[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]</i>

I understand that any misrepresentation or omission in this Form may:

- a) be taken into consideration during Tender evaluation;
- b) result in my disqualification from participating in the Tender;
- c) result in my dismissal from the contract.

Name of Contractor's Representative or Key Personnel: *[insert name]*

Signature: \_\_\_\_\_

Date: (day month year): \_\_\_\_\_

Counter signature of authorized representative of the Tenderer:

Signature: \_\_\_\_\_

Date: (day month year): \_\_\_\_\_

## 5. TENDERERS QUALIFICATION WITHOUT PREQUALIFICATION

To establish its qualifications to perform the contract in accordance with Section III, Evaluation and Qualification Criteria the Tenderer shall provide the information requested in the corresponding Information Sheets included hereunder.

### 5.1 FORM ELI -1.1

#### Tenderer Information Form

Date: \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

Tenderer's name
In case of Joint Venture (JV), name of each member:
Tenderer's actual or intended country of registration: <i>[indicate country of Constitution]</i>
Tenderer's actual or intended year of incorporation:
Tenderer's legal address [in country of registration]:
Tenderer's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
<p>1. Attached are copies of original documents of</p> <p><input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITT 3.6</p> <p><input type="checkbox"/> In case of JV, letter of intent to form JV or JV agreement, in accordance with ITT 3.5</p> <p><input type="checkbox"/> In case of state-owned enterprise or institution, in accordance with ITT 3.8, documents establishing:</p> <ul style="list-style-type: none"><li>• Legal and financial autonomy</li><li>• Operation under commercial law</li><li>• Establishing that the Tenderer is not under the supervision of the Procuring Entity</li></ul> <p>2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.</p>

### 5.2 FORM ELI -1.2

**Tenderer's JV Information Form**  
**(to be completed for each member of Tenderer's JV)**

Date: \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

Tenderer's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mailaddress: _____
1. Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITT 3.6. <input type="checkbox"/> In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Procuring Entity, in accordance with ITT 3.5. 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

**5.3 FORM CON -2**

**Historical Contract Non-Performance, Pending Litigation and Litigation History**

Tenderer's Name: \_\_\_\_\_ Date: \_\_\_\_\_

JV Member's Name

ITT No. and title: \_\_\_\_\_

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria

- Contract non-performance did not occur since 1<sup>st</sup> January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1.
- Contract(s) not performed since 1<sup>st</sup> January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1
- Contract(s) withdrawn since 1<sup>st</sup> January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1

Year	Non- performed portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and Kenya Shilling equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Procuring Entity: <i>[insert full name]</i> Address of Procuring Entity: <i>[insert street/city/country]</i> Reason(s) for nonperformance: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>

Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria

- No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3.
- Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
		Contract Identification: Name of Procuring Entity: Address of Procuring Entity: Matter in dispute: Party who initiated the dispute: Status of dispute:	

Litigation History in accordance with Section III, Evaluation and Qualification Criteria

- No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4.
- Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.

Year of award	Outcome as percentage of Net Worth	Contract Identification	Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)
<i>[insert year]</i>	<i>[insert percentage]</i>	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Procuring Entity: <i>[insert full name]</i> Address of Procuring Entity: <i>[insert street/city/country]</i> Matter in dispute: <i>[indicate main issues in dispute]</i> Party who initiated the dispute: <i>[indicate "Procuring Entity" or "Contractor"]</i> Reason(s) for Litigation and award decision <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>

Include details relating to potential bid-rigging practices such as previous occasions where tenders were withdrawn, joint bids with competitors, subcontracting work to unsuccessful tenderers, etc.

### Financial Situation and Performance

Tenderer's Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member's Name \_\_\_ ITT No. and title: \_\_\_

**5.4.1. Financial Data**

Type of Financial information in _____ (currency)	Historic information for previous _____ years, _____ (amount in currency, currency, exchange rate*, USD ec				
	Year1	Year2	Year3	Year4	Year5
Statement of Financial Position (Information from					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					

Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

*\*Refer to ITT 15 for the exchange rate*

**5.45.4.2 FORMSources FIN of Finance – 3.1:**

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.

No.	Source of finance	Amount (Kenya Shilling equivalent)
1		
2		
3		

**5.4.3 Financial documents**

The Tenderer and its parties shall provide copies of financial statements for \_\_\_\_ years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.1. The financial statements shall:

- a) reflect the financial situation of the Tenderer or incase of JV member, and not an affiliated entity (such as parent company or group member).
- b) Be independently audited or certified in accordance with local legislation.
- c) Be complete, including all notes to the financial statements.
- d) Correspond to accounting periods already completed and audited.

Attached are copies of financial statements<sup>1</sup> for the \_\_\_\_\_ years required above; and complying with the requirements.

<sup>1</sup> If the most recent set of financial statements is for a period earlier than 12 months from the date of Tender, the reason for this should be justified.

**Average Annual Construction Turnover**

Tenderer's Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member's Name \_\_\_\_\_

Average Annual Construction Turnover *			



ITT No. and title:

Annual turnover data (construction only)			
Year	Amount Currency	Exchange rate	Kenya Shilling equivalent
<i>[indicate year]</i>	<i>[insert amount and indicate currency]</i>		

\* See Section III, Evaluation and Qualification Criteria, Sub-Factor 3.2.

## 5.6 FORMFIN-3.3:

### Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contractor contracts as specified in Section III, Evaluation and Qualification Criteria.

Financial Resources		
No.	Source of financing	Amount (Kenya Shilling equivalent)
1		
2		
3		
4		

**5.75.5 FORMFINFORM FIN-3.4: – 3.2:**

**Current Contract Commitments / Works in Progress**

Tenderers and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

<b>Current Contract Commitments</b>					
<b>No.</b>	<b>Name of Contract</b>	<b>Procuring Entity's Contact Address, Tel,</b>	<b>Value of Outstanding Work</b>  <b>[Current Kenya Shilling /month Equivalent]</b>	<b>Estimated Completion Date</b>	<b>Average Monthly Invoicing Over Last Six Months</b>  <b>[Kenya Shilling /month]</b>
2					
3					
4					
5					

**5.8 FORM EXP -4.1**

**General Construction Experience**

Tenderer's Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member's Name \_\_\_\_\_ ITT No. and title: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_ pages

**5.9 FORM EXP - 4.2(a)**

**Specific Construction and Contract Management Experience**

Tenderer's Name: \_\_\_\_\_

Date: \_\_ JV Member's Name \_\_ ITT No. and title:

\_\_\_\_\_

Similar Contract No.	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Sub-contractor <input type="checkbox"/>
Total Contract Amount				<b>Kenya Shilling</b>

Starting Year	Ending Year	Contract Identification	Role of Tenderer
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	

If member in a JV or sub-contractor, specify participation in total Contract amount			
Procuring Entity's Name:			
Address: Telephone/fax number E-mail:			
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:			
1			
Physical size of required works 2 items			
3 Complexity			
4 Methods/Technology			
5 Construction rate for key activities			
6			

#### 5.10 FORM EXP - 4.2 (b)

##### Construction Experience in Key Activities

Tenderer's Name: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ Tenderer's JV

Member Name:

Sub-contractor's Name<sup>2</sup> (as per ITT 34): \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

All Sub-contractors for key activities must complete the information in this form as per ITT 34 and Section III, Evaluation and Qualification Criteria, Sub-Factor 4.2.

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<sup>2</sup> If applicable

Year 1			
Year 2			
Year 3			
Year 4			
Procuring Entity's Name:			
Address: Telephone/fax number E-mail:			
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:			

**1. Key Activity No One:**

<b>Information</b>				
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Sub-contractor <input type="checkbox"/>
Total Contract Amount			<b>Kenya Shilling</b>	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)	Actual Quantity Performed (i) x (ii)	

**OTHER FORMS**

**6. FORM OF TENDER**

**(Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)**

***INSTRUCTIONS TO TENDERERS***

- i) All italicized text is to help the Tenderer in preparing this form.*
- ii) The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address. Tenderers are reminded that this is a mandatory requirement.*
- iii) Tenderer must complete and sign CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION FORMS OF THE TENDERER as listed under (xxii) below.*

**Date of this Tender submission:**.....*[insert date (as day, month and year) of Tender submission]* **Tender Name**  
**and Identification:**.....*[insert identification]* **Alternative**  
**No.:**.....*[insert identification No if this is a Tender for an alternative]*  
**To** ..... *[Insert complete name of Procuring Entity]*

**Date of this Tender submission:** *[insert date (as day, month and year) of Tender submission]* **Request for**  
**Tender No.:** *[insert identification]* **Name and description of Tender** *[Insert as per ITT]* **Alternative No.:**  
*[insert identification No if this is a Tender for an alternative]*

**To:** *[insert complete name of Procuring Entity]*

Dear Sirs,

- 1. In accordance with the Conditions of Contract, Specifications, Drawings and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct and complete the Works and remedy any defects therein for the sum<sup>3</sup> of Kenya Shillings *[[Amount in figures]*\_\_\_\_\_ Kenya Shillings *[amount in words]* \_\_\_\_\_

The above amount includes foreign currency<sup>4</sup> amount (s) of *[state figure or a percentage and currency]*  
*[figures]*\_\_\_\_\_ *[words]* \_\_\_\_\_

<sup>3</sup> This sum should be carried forward from the Summary of the Bills of Quantities.

<sup>4</sup> The percentage quoted above should not include provisional sums, and not more than two foreign currencies are allowed.

- 
2. We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Architect notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Special Conditions of Contract.
  3. We agree to adhere by this tender until \_\_\_\_*[Insert date]*, and it shall remain binding upon us and may be accepted at any time before that date.
  4. We understand that you are not bound to accept the lowest or any tender you may receive.
  5. We, the under signed, further declare that:
    - i) No reservations: We have examined and have no reservations to the tender document, including Addenda issued in accordance with ITT 28;
    - ii) Eligibility: We meet the eligibility requirements and have no conflict of interest in accordance with ITT 3 and 4;

Completion date

- iii) Tender - Securing Declaration: We have not been suspended nor declared ineligible by the Procuring Entity based on execution of a Tender-Securing or Proposal-Securing Declaration in the Procuring Entity's Country in accordance with ITT 19.8;
- iv) Conformity: We offer to execute in conformity with the tendering documents and in accordance with the implementation and completion specified in the construction schedule, the following Works: *[insert a brief description of the Works]*;
- v) Tender Price: The total price of our Tender, excluding any discounts offered in item 1 above is: *[Insert one of the options below as appropriate]*
- vi) Option 1, in case of one lot: Total price is: *[insert the total price of the Tender in words and figures, indicating the various amounts and the respective currencies]*; or  
Option2, in case of multiple lots:
  - (a) Total price of each lot *[insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]*; and
  - (b) Total price of all lots (sum of all lots) *[insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies]*;
- vii) Discounts: The discounts offered and the methodology for their application are:
  - viii) The discounts offered are: *[Specify in detail each discount offered.]*
- ix) The exact method of calculations to determine the net price after application of discounts is shown below: *[Specify in detail the method that shall be used to apply the discounts]*;
- x) Tender Validity Period: Our Tender shall be valid for the period specified in TDS 18.1 (as amended, if applicable) from the date fixed for the Tender submission deadline specified in TDS 22.1 (as amended, if

applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

xi) **Performance Security:** If our Tender is accepted, we commit to obtain a Performance Security in accordance with the Tendering document;

xii) **One Tender Per Tender:** We are not submitting any other Tender(s) as an individual Tender, and we are not participating in any other Tender(s) as a Joint Venture member or as a sub-contractor, and meet the requirements of ITT 3.4, other than alternative Tenders submitted in accordance with ITT 13.3;

xiii) **Suspension and Debarment:** We, along with any of our subcontractors, suppliers, Engineer, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Public Procurement Regulatory Authority or any other entity of the Government of Kenya, or any international organization.

xiv) **State-owned enterprise or institution:** *[select the appropriate option and delete the other]* *[We are not a state-owned enterprise or institution]*/*[We are a state-owned enterprise or institution but meet the requirements of ITT3.8];*

xv) **Commissions, gratuities, fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the tender process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity].*

Name of Recipient	Address	Reason	Amount

*(If none has been paid or is to be paid, indicate "none.")*

xvi) **Binding Contract:** We understand that this Tender, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

xvii) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated cost Tender, the Most Advantageous Tender or any other Tender that you may receive;

xviii) **Fraud and Corruption:** We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption; and

xix) **Collusive practices:** We hereby certify and confirm that the tender is genuine, non-collusive and made with the intention of accepting the contract if awarded. To this effect we have signed the "Certificate of Independent Tender Determination" attached below.

xx) We undertake to adhere by the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal, copy available from \_\_\_\_ *(specify website)* during the procurement process and the execution of any resulting contract.

xxi) **Beneficial Ownership Information:** We commit to provide to the procuring entity the Beneficial Ownership Information in conformity with the Beneficial Ownership Disclosure Form upon receipt of notification of intention to enter into a contract in the event we are the successful tenderer in this subject procurement proceeding.

xxii) We, the Tenderer, have duly completed, signed and stamped the following Forms as part of our Tender:

a) Tenderer's Eligibility; Confidential Business Questionnaire - to establish we are not in any conflict of interest.

(b) Certificate of Independent Tender Determination - to declare that we completed the tender without colluding with other tenderers.

(a) Self-Declaration of the Tenderer - to declare that we will, if awarded a contract, not engage in any form of fraud and corruption.



(d) Declaration and commitment to the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal.

Further, we confirm that we have read and understood the full content and scope of fraud and corruption as informed in “**Appendix 1 - Fraud and Corruption**” attached to the Form of Tender.

**Name of the Tenderer:** *\*[insert complete name of person signing the Tender]*

**Name of the person duly authorized to sign the Tender on behalf of the Tenderer:** *\*\*[insert complete name of person duly authorized to sign the Tender]*

**Title of the person signing the Tender:** *[insert complete title of the person signing the Tender]*

**Signature of the person named above:** *[insert signature of person whose name and capacity are shown above]*

**Date signed** *[insert date of signing]* day of *[insert month]*, *[insert year]*

Date signed \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

Notes

*\* In the case of the Tender submitted by joint venture specify the name of the Joint Venture as Tenderer.*

*\*\*Person signing the Tender shall have the power of attorney given by the Tenderer to be attached with the Tender.*

**(a) TENDERER'S ELIGIBILITY-CONFIDENTIAL BUSINESS QUESTIONNAIRE**

**Instruction to Tenderer**

Tender is instructed to complete the particulars required in this Form, *one form for each entity if Tender is a JV*. Tenderer is further reminded that it is an offence to give false information on this Form.

**(a) Tenderer's details**

1	Name of the Procuring Entity	
2		
3	Date and Time of Tender Opening	
4	Name of the Tenderer	

5	Full Address and Contact Details of the Tenderer.	1. Country 2. City 3. Location 4. Building 5. Floor 6. Postal Address 7. Name and email of contact person.
6	Current Trade License Registration Number and Expiring date	
7	Name, country and full address ( <i>postal and physical addresses, email, and telephone number</i> ) of Registering Body/Agency	
8	Description of Nature of Business	
9	Maximum value of business which the Tenderer handles.	
10	State if Tenders Company is listed in stock exchange, give name and full address ( <i>postal and physical addresses, email, and telephone number</i> ) of state which stock exchange	

### **General and Specific Details**

(b) **Sole Proprietor**, provide the following details.

Name in full \_\_\_\_\_ Age \_\_\_\_\_  
Nationality \_\_\_\_\_ Country of Origin \_\_\_\_\_  
Citizenship \_\_\_\_\_

(c) **Partnership**, provide the following details.

	Names of Partners		Citizenship	% Shares owned	
1					
2					
3					

(d) **Registered Company**, provide the following details.

i) Private or public Company \_\_\_\_ ii) State the nominal and issued capital of the Company \_\_\_\_\_

Nominal Kenya Shillings (Equivalent).....

Issued Kenya Shillings (Equivalent).....

Give details of Directors as follows.

iii)

	Names of Director		Citizenship	% Shares owned	
1					
2					
3					

**(e) DISCLOSURE OF INTEREST - Interest of the Firm in the Procuring Entity.**


- i) Are there any person/persons in ..... (*Name of Procuring Entity*) who has/have an interest or relationship in this firm? Yes/No.....

If yes, provide details as follows.

	Names of Person	Designation in the Procuring Entity	Interest or Relationship with Tenderer
1			
2			
3			

**(ii) Conflict of interest disclosure**

	Type of Conflict	Disclosure YES ORNO	If YES provide details of the relationship with Tenderer
1	Tenderer is directly or indirectly controls, is controlled by or is under common control with another tenderer.		
2			
3	Tenderer receives or has received any direct or indirect subsidy from another tenderer.		
4	Tenderer has the same legal representative as another tenderer		
5	Tender has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process.		

6	Any of the Tenderer's affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender.		
7	Tenderer would be providing goods, works, non-consulting services or consulting services during implementation of the contract Specified in this Tender Document.		
8			
9			
	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract.		
	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who would be involved in the implementation or supervision of the such Contract.		
	Has the conflict stemming from such relationship stated in item 7 and 8 above been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.		

## Certification

On behalf of the Tenderer, I certify that the information given above is complete, current and accurate as at the date of submission.

Full Name \_\_\_\_\_

Title or Designation \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

*(Signature)*

*(Date)*

## **b) CERTIFICATE OF INDEPENDENT TENDER DETERMINATION**

I, the undersigned, in submitting the accompanying Letter of Tender to the \_\_\_\_\_  
\_\_\_\_\_ [Name of Procuring Entity] for: \_\_\_\_\_ [Name and number of tender] in  
response to the request for tenders made by: \_\_\_\_\_ [Name of Tenderer] do hereby make the following statements  
that I certify to be true and complete in every respect:

I certify, on behalf of \_\_\_\_\_ [Name of Tenderer] that:

1. I have read and I understand the contents of this Certificate;
2. I understand that the Tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am the authorized representative of the Tenderer with authority to sign this Certificate, and to submit the Tender on behalf of the Tenderer;
4. For the purposes of this Certificate and the Tender, I understand that the word “competitor” shall include any individual or organization, other than the Tenderer, whether or not affiliated with the Tenderer, who:
  - a) Has been requested to submit a Tender in response to this request for tenders;
  - b) could potentially submit a tender in response to this request for tenders, based on their qualifications, abilities or experience;
5. The Tenderer discloses that [check one of the following, as applicable]:
  - a) The Tenderer has arrived at the Tender independently from, and without consultation, communication, agreement or arrangement with, any competitor;
  - b) the Tenderer has entered into consultations, communications, agreements or arrangements with one or more competitors regarding this request for tenders, and the Tenderer discloses, in the attached document(s), complete details thereof, including the names of the competitors and the nature of, and reasons for, such consultations, communications, agreements or arrangements;
6. In particular, without limiting the generality of paragraphs (5)(a) or(5)(b) above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
  - a) prices;
  - b) methods, factors or formulas used to calculate prices;
  - c) the intention or decision to submit, or not to submit, a tender; or
  - d) the submission of a tender which does not meet the specifications of the request for Tenders; except as specifically disclosed pursuant to paragraph (5)(b) above;
7. In addition, there has been no consultation, communication, agreement or arrangement with any competitor regarding the quality, quantity, specifications or delivery particulars of the works or services to which this request for tenders relates, except as specifically authorized by the procuring authority or as specifically disclosed pursuant to paragraph(5)(b) above;
8. The terms of the Tender have not been, and will not be, knowingly disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening, or of the awarding of the Contract, whichever comes first, unless otherwise required by law or as specifically disclosed pursuant to paragraph (5)(b) above.

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Date \_\_\_\_\_

*[Name, title and signature of authorized agent of Tenderer and Date]*

**(c) SELF- DECLARATION FORMS**

**FORM SD1**

**SELF DECLARATION THAT THE PERSON/TENDERER IS NOT DEBARRED IN THE MATTER OF THE PUBLIC PROCUREMENT AND ASSET DISPOSAL ACT 2015.**

I, ....., of Post Office Box..... being a resident of ..... in the Republic of ..... do hereby make a statement as follows: -

1. THAT I am the Company Secretary/ Chief Executive/Managing Director/Principal Officer/Direct or of ..... *(insert name of the Company)* who is a Bidder in respect of **Tender No.** ..... for ..... *(insert tender title/description)* for ..... *(insert name of the Procuring entity)* and duly authorized and competent to make this statement.
2. THAT the aforesaid Bidder, its Directors and subcontractors have not been debarred from participating in procurement proceeding under Part IV of the Act.
3. THAT what is deponed to here in above is true to the best of my knowledge, information and belief.

.....  
(Title)

.....  
(Signature)

.....  
(Date)

Bidder Official Stamp





**FORM SD2**

**SELF DECLARATION THAT THE PERSON/TENDERER WILL NOT ENGAGE IN ANY CORRUPT OR FRAUDULENT PRACTICE.**

I, .....of P.O. Box ..... being a resident of ..... in the Republic of ..... do hereby make a statement as follows: -

1. THAT I am the Chief Executive/Managing Director/Principal Officer/Director of ..... (insert name of the Company) who is a Bidder in respect of **Tender No** ..... for ..... (*insert tender title/description*) for ..... (*insert name of the Procuring entity*) and duly authorized and competent to make this statement.
2. THAT the afore said Bidder, its servants and/or agents/sub-contractors will not engage in any corrupt or fraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ..... (*insert name of the Procuring entity*) which is the procuring entity.
3. THAT the aforesaid Bidder, its servants and/or agents /subcontractors have not offered any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ..... (*name of the procuring entity*).
4. THAT the aforesaid Bidder will not engage /has not engaged in any corrosive practice with other bidders participating in the subject tender
5. THAT what is deponed to here in above is true to the best of my knowledge information and belief.

..... (Title) ..... (Signature) ..... (Date)

Bidder's Official Stamp

**DECLARATION AND COMMITMENT TO THE CODE OF ETHICS**

I ..... (person) on behalf of (*Name of the Business/ Company/Firm*) ..... declare that I have read and fully understood the contents of the Public Procurement & Asset Disposal Act, 2015, Regulations and the Code of Ethics for persons participating in Public Procurement and Asset Disposal and my responsibilities under the Code.

I do here by commit to abide by the provisions of the Code of Ethics for persons participating in Public Procurement and Asset Disposal.

Name of Authorized signatory.....

Sign.....

Position.....

Office address..... Telephone.....

E-mail.....

Name of the Firm/Company.....

Date.....

**(Company Seal/ Rubber Stamp where applicable)**

Witness

Name.....

Sign.....

Date.....

**(d) APPENDIX 1 - FRAUD AND CORRUPTION**

*(Appendix 1 shall not be modified)*

**1. Purpose**

1.1 The Government of Kenya's Anti-Corruption and Economic Crime laws and their sanction's policies and procedures, Public Procurement and Asset Disposal Act (*no. 33 of 2015*) and its Regulation, and any other Kenya's Acts or Regulations related to Fraud and Corruption, and similar offences, shall apply with respect to Public Procurement Processes and Contracts that are governed by the laws of Kenya.

**2. Requirements**

2.1 The Government of Kenya requires that all parties including Procuring Entities, Tenderers, (applicants/proposers), Consultants, Contractors and Suppliers; any Sub-contractors, Sub-consultants, Service providers or Suppliers; any Agents (whether declared or not); and any of their Personnel, involved and engaged in procurement under Kenya's Laws and Regulation, observe the highest standard of ethics during the procurement process, selection and contract execution of all contracts, and refrain from Fraud and Corruption and fully comply with Kenya's laws and Regulations as per paragraphs 1.1 above.

2.2 Kenya's public procurement and asset disposal act (*no. 33 of 2015*) under Section 66 describes rules to be followed and actions to be taken in dealing with Corrupt, Coercive, Obstructive, Collusive or Fraudulent practices, and Conflicts of Interest in procurement including consequences for offences committed. A few of the provisions noted below highlight Kenya's policy of no tolerance for such practices and behavior:

- 1) A person to whom this Act applies shall not be involved in any corrupt, coercive, obstructive, collusive or fraudulent practice; or conflicts of interest in any procurement or as set disposal proceeding;
- 2) A person referred to under subsection (1) who contravenes the provisions of that sub-section commits an offence;
- 3) Without limiting the generality of the subsection (1) and (2), the person shall be: -

- a) disqualified from entering into a contract for a procurement or asset disposal proceeding; or
  - b) if a contract has already been entered into with the person, the contract shall be voidable;
- 4) The voiding of a contract by the procuring entity under subsection (7) does not limit any legal remedy the procuring entity may have;
  - 5) An employee or agent of the procuring entity or a member of the Board or committee of the procuring entity who has a conflict of interest with respect to a procurement: -
    - a) Shall not take part in the procurement proceedings;
    - b) shall not, after a procurement contract has been entered into, take part in any decision relating to the procurement or contract; and
    - c) shall not be a subcontractor or for the tender to whom was awarded contract, or a member of the group of tenderers to whom the contract was awarded, but the subcontractor appointed shall meet all the requirements of this Act.
  - 6) An employee, agent or member described in subsection (1) who refrains from doing anything prohibited under that subsection, but for that subsection, would have been within his or her duties shall disclose the conflict of interest to the procuring entity;
  - 7) If a person contravenes subsection (1) with respect to a conflict of interest described in subsection (5)(a) and the contract is awarded to the person or his relative or to another person in whom one of them had a direct or indirect pecuniary interest, the contract shall be terminated and all costs incurred by the public entity shall be made good by the awarding officer. Etc.
3. In compliance with Kenya's laws, regulations and policies mentioned above, the Procuring Entity:
    - a) Defines broadly, for the purposes of the above provisions, the terms set forth below as follows:
      - i) "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
      - ii) "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
      - iii) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party; "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party; iv) "obstructive practice" is:
        - Deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede investigation by Public Procurement Regulatory Authority (PPRA) or any other appropriate authority appointed by Government of Kenya into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
        - acts intended to materially impede the exercise of the PPRA's or the appointed authority's inspection and audit rights provided for under paragraph 2.3 e. below.
    - b) Defines more specifically, in accordance with the above procurement Act provisions set forth for fraudulent and collusive practices as follows:

"fraudulent practice" includes a misrepresentation of fact in order to influence a procurement or disposal process or the exercise of a contract to the detriment of the procuring entity or the tenderer or the contractor, and includes collusive practices amongst tenderers prior to or after tender submission designed to establish tender prices at artificial non-competitive levels and to deprive the procuring entity of the benefits of free and open competition.

- c) Rejects a proposal for award<sup>5</sup> of a contract if PPRA determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- d) Pursuant to the Kenya's above stated Acts and Regulations, may recommend to appropriate authority(ies) for sanctioning and debarment of a firm or individual, as applicable under the Acts and Regulations;
- e) Requires that a clause be included in Tender documents and Request for Proposal documents requiring(i) Tenderers (applicants/proposers), Consultants, Contractors, and Suppliers, and their Sub-contractors, Sub-consultants, Service providers, Suppliers, Agents personnel, permit the PPRA or any other appropriate authority appointed by Government of Kenya to inspect<sup>6</sup> all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the PPRA or any other appropriate authority appointed by Government of Kenya; and
- f) Pursuant to Section 62 of the above Act, requires Applicants/Tenderers to submit along with their Applications/Tenders/Proposals a "Self-Declaration Form" as included in the procurement document declaring that they and all parties involved in the procurement process and contract execution have not engaged/will not engage in any corrupt or fraudulent practices.

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<sup>5</sup> For the avoidance of doubt, a party's in eligibility to be awarded a contract shall includee, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and tendering, either directly or as a nominated sub-contractor; nominated consultant, nominated manufacturer or supplier; or nominated service provider; in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

<sup>6</sup> Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Investigating Authority or persons appointed by the Procuring Entity to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.



2.  
**FORM OF TENDER SECURITY-DEMAND BANK GUARANTEE**

**Beneficiary:** \_\_\_\_\_

**Request for Tenders No:**

\_\_\_\_\_  
**Date:** \_\_\_\_\_

**TENDER GUARANTEE No.:** \_\_\_\_\_

**Guarantor:** \_\_\_\_\_

1. We have been informed that\_(here in after called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here in after called" the Tender") for the execution of\_ under Request for Tenders No.\_("the ITT").
2. Furthermore, we understand that, according to the Beneficiary's conditions, Tenders must be supported by a Tender guarantee.
3. At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_(\_\_\_\_\_) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:
  - (a) has withdrawn its Tender during the period of Tender validity set forth in the Applicant's Letter of Tender ("the Tender Validity Period"), or any extension thereto provided by the Applicant; or
  - b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension there to provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance.
4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) thirty days after the end of the Tender Validity Period.
5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above onor before that date.

3.

\_\_\_\_\_  
[signature(s)]

**FORM OF TENDER SECURITY (TENDER BOND)**

[The Surety shall fill in this Tender Bond Form in accordance with the instructions indicated.] BOND NO. \_\_\_\_\_

1. BY THIS BOND [name of tenderer] as Principal (hereinafter called “the Principal”), and [name, legal title, and address of surety], **authorized to transact business in** [name of country of Purchaser], as Surety (hereinafter called “the Surety”), are held and firmly bound unto [name of Purchaser] as Obligee (hereinafter called “the Purchaser”) in the sum of [amount of Bond][amount in words], for the payment of which sum, well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and as signs, jointly and severally, firmly by these presents.
2. WHERE AS the Principal has submitted or will submit a written Tender to the Purchaser dated the \_\_\_ day of \_\_\_, 20, for the supply of [name of Contract] (herein after called the “Tender”).
3. NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:
  - a) Has with drawn its Tender during the period of Tender validity set forth in the Principal's Letter of Tender (“the Tender Validity Period”), or any extension there to provided by the Principal; or
  - b) Having been notified of the acceptance of its Tender by the Purchaser during the Tender Validity Period or any extension there to provided by the Principal; (i) failed to execute the Contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to tenderers (“ITT”) of the Purchaser's Tendering document.then the Surety undertakes to immediately pay to the Purchaser up to the above amount upon receipt of the Purchaser's first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser shall state that the demand arises from the occurrence of any of the above events, specifying which event (s) has occurred.
4. The Surety here by agrees that its obligation will remain in full force and effect upto and including the date 30 days after the date of expiration of the Tender Validity Period set forth in the Principal's Letter of Tender or any extension thereto provided by the Principal.
5. IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this day of\_20.

4.

Principal: \_\_\_\_\_ Surety: \_\_\_\_\_  
Corporate Seal (where appropriate)

\_\_\_\_\_  
(Signature)  
(Printed name and title)

\_\_\_\_\_  
(Signature)  
(Printed name and title)

**FORM OF TENDER - SECURING DECLARATION**

*[The Bidder shall complete this Form in accordance with the instructions indicated]*

Date: ..... *[insert date (as day, month and year) of Tender Submission]* Tender

No. .... *[insert number of tendering process]*

To: ..... *[insert complete name of Purchaser]* I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Tender-Securing Declaration.
2. I/We accept that I/we will automatically be suspended from being eligible for tendering in any contract with the Purchaser for the period of time of [insert number of months or years] starting on [insert date], if we are in breach of our obligation(s) under the bid conditions, because we—(a) have withdrawn our tender during the period of tender validity specified by us in the Tendering Data Sheet; or (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the instructions to tenders.
3. I/We understand that this Tender Securing Declaration shall expire if we are not the successful Tenderer(s), upon the earlier of:
  - a) Our receipt of a copy of your notification of the name of the successful Tenderer; or
  - b) thirty days after the expiration of our Tender.
4. I/We understand that if Iam /we are/ in a Joint Venture, the Tender Securing Declaration must be in the name of the Joint Venture that submits the bid, and the Joint Venture has not been legally constituted at the time of bidding, the Tender Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed ..... Capacity/title (director or partner or



**5.**

sole proprietor, etc.) .....

Name: ..... Duly authorized to sign the

bid for and on behalf of: *[insert complete name of Tenderer]*

Dated on ..... day of ....., ..... *[Insert date of signing]* Seal or stamp

6.

**Appendix to Tender**

**Schedule of Currency requirements**

Summary of currencies of the Tender for \_\_\_\_\_ *[insert name of Section of the Works]*

<i>Name of currency</i>	<i>Amounts payable</i>
Local currency: _____	
Foreign currency #1: _____	
Foreign currency #2: _____	
Foreign currency #3: _____	
Provisional sums expressed in local currency _____	<i>[To be entered by the Procuring Entity]</i>

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## **PART II - WORKS REQUIREMENTS**

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## SECTION V - BILLS OF QUANTITIES

### A. Notes and Sample Items for Preparing a Bill of Quantities

1. These Notes for Preparing a Bill of Quantities are intended only as information for the Procuring Entity or the person drafting the Tender Documents. Priced Bills of Quantities shall be part and parcel of the Contract Documents.
2. The objectives and purpose of the Bills of Quantities are to provide sufficient information on the specifications, descriptions and quantities of Works to be performed to enable tenders to be prepared efficiently and accurately and when a contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed. In order to attain these objectives, Works should be itemized in the Bill of Quantities insufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and clear as possible.
3. The Bills of Quantities should be divided generally into the following sections:
  - a) Preambles
  - b) Preliminary items
  - c) Work Items
  - c) Daywork Schedule; and
  - d) Provisional items
  - e) Summary.

#### 4. NOTES TO PREPARING PREAMBLES

- 4.1 The Preambles should include only those items that constitute the cost of the works but would not be priced separately as they are expected to be included in the unit prices. Care should be taken to ensure that these items are not are petition of the conditions of contract. The Preambles should indicate the inclusiveness of the unit prices and should state the methods of measurement that have been adopted in the preparation of the Bill of Quantities, that are to be used for the measurement of any part of the Works. The units of measurement and abbreviations should be defined and any mandatory national units defined and described. The methods of and procedure for re- measurement should be described in the Preambles.
- 4.2 Units of Measurement - The following units of measurement and abbreviations shall be used, unless other national units are mandatory in Kenya.

nit	Abbreviation	Unit	Abbreviation
	$m^3$ or cu m	millimetre	mm
cubic meter	t		

- 4.3 The Bills of Quantities shall be read in conjunction with the Instructions to Tenders, General and Special Conditions of Contract, Technical Specifications, and Drawings.
- 4.4 The quantities given in the Bills of Quantities are estimated and partly provisional and are given to provide a common basis for tendering. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Architect and valued at the rates and prices tender in the priced Bills of Quantities, where applicable, and otherwise at such rates and prices as the Architect may fix within the terms of the Contract.
- 4.5 The rates and prices tender in the priced Bills of Quantities shall, except in so far as it is otherwise provided under the Contract, include all Constructional Plant, labour, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.
- 4.6 A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of Items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.
- 4.7 The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bills of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.
- 4.8 General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bills of Quantities. References to the relevant sections of the Contract documents shall be made before entering prices against each item in the priced Bills of Quantities.
- 4.9 Provisional Sums and contingency sums included and so designated in the Bills of Quantities shall be expended in whole or in part at the direction and discretion of the Architect in accordance with Sub-Clause 13.5 and Clause 13.6 of the General Conditions of contract.
- 4.10 In preparing the Bills of Quantities, notes should be removed as they are intended to guide the person preparing the Tender Documents. The Contractor must allow in his rates for any costs associated with and complying with the requirements in the Preambles.
- 4.11 Should a tenderer/contractor not price any item in any section of the Bills of Quantities including Preliminary items, it will be assumed that he/she has spread its cost in other areas that he/she will have priced. Therefore, the item or items will be executed without any additional costs or without being treated like variations.

## **5. NOTES ON PREPARING BILLS OF QUANTITIES**

- 5.1 The Preliminary Items should be limited to tangible items that should be priced by the tenderer, are identifiable and can be priced separately and included in the interim valuations precisely. Such items may include such items as site office, notice boards, and other temporary works, otherwise items such as security for the Works which are primarily part of the Contractor's obligations should be included in the Contractor's rates.
- 5.2 The work items in the Bills of Quantities should be grouped into sections to distinguish between those parts of the Works which by nature, location, access, timing, or any other special characteristics may give rise to different methods of construction, or phasing of the Works, or considerations of cost. Such groups could be ground excavations, structures, external works, services, etc. General items common to all parts of the Works may be grouped as a separate section in the Bill of Quantities.
- 5.3 Quantities should be computed net from the Drawings, unless directed otherwise in the Contract, and no allowance should be made for bulking, shrinkage or waste. Quantities should be rounded up where appropriate.
- 5.4 Where the measured items are deemed not to be exact because of the likelihood that the scope can change during the execution of the works, such items could be subject to re-measurement, the word “**provisional**” should be

used to identify such cases. Where whole sections of the work items fall in this class, for example foundations, they should be labelled “Provisional Quantities” or “Provisional Items” so that the Tenderer/Contractor is advised up front that such items are subject to re-measurement to done before such work is cover-up.

5.5 All items that have not been measured and therefore not subject to tenders pricing should be listed in the Bills of Quantities as **Provisional Sums** for particular item or class of Work, which may be subject to a nominated subcontract or separate measurements at a later date during the execution of the works. For example, if it is deemed not possible to measure electrical works before going to tender because detail designs are not ready, a provisional sum can be allowed in the Bills of Quantities for “Installation of Electrical Works” to be executed later when actual design details are completed. To the extent not covered above, there should be in the Bills of Quantities a general provision for physical and financial contingencies made as a “Provisional Sum for Contingencies” and “Provisional Sum for Fluctuations”. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises.

5.6 Provisional sums to cover specialized works normally carried out by Nominated Sub Contractors should be avoided and instead Bills of Quantities of the specialized Works should be included as a section of the main Bills of Quantities to be priced by the Main Contractor. The Main Contractor should be required to indicate the name(s) of the specialized firms he proposes to engage to carry out the specialized Works as his approved domestic sub-contractors. Only provisional sums to cover specialized Works by statutory authorities should be included in the Bills of Quantities.

5.7 A Daywork Schedule should be included if the probability of unforeseen work, outside the items included in the Bill of Quantities, is relatively high. To facilitate checking by the Procuring Entity of the realism of rates quoted by the tenderers, the Daywork Schedule should normally comprise:

i) A list of the various classes of labor, and materials for which basic.

ii) Daywork rates and prices for various categories of labor are to be inserted by the tenderer, together with a statement of the conditions under which the Contractor will be paid for Work executed on a Daywork basis.

iii) A percent a get o be entered by the tenderer against each basic Day work item.

iv) Subtotal amount for labor, materials and plant representing the Contractor's profit, overheads, supervision and other charges.

5.8 The Summary should contain a tabulation of the separate parts of the Bills of Quantities carried forward, with provisional sums for Daywork, Provisional sums and Contingencies, and provision for Total Costing. The last line should allow for tenderer to indicate any discounts before arriving at a total cost carried forward to the Form of Tender.

## **BILLS OF QUANTITIES**

### **(a) Preambles**

1. The method of measurement of completed work for payment shall be in accordance with *[insert the name of a standard reference guide, or full details of the methods to be used]*.
2. The Site is situated in *(provide full description where the site is situated, coordinates from the nearest known landmark like a town and its size)*\_\_\_\_\_ It is approximately \_\_\_\_\_ Kilometers from Nairobi. Access to the site shall be through \_\_\_\_\_

Which is an existing public road. Any damage caused to the surfaces of this road shall be made good at the Contractor's expense. The Contractor shall visit the site and acquaint itself with its nature and position, the nature of the ground, substrata and other local conditions, positions of existing power, water and other services, access roads or any other limitations that might affect his cost or progress. No claim for extras shall be considered on account of lack of knowledge in this respect.

3. The Contractor shall obtain the Architect's approval on the siting of all temporary buildings, spoil heaps, temporary access path, and storage of materials. The Contractor shall also obtain the Architect approval and direction regarding the use of any materials found on the Site.
4. The drawings used in the preparation of these Bills of Quantities can be inspected at the offices of the Procuring Entity or Procuring Entity's Representative during normal working hours. Two sets of the Working Drawings shall be provided to the contractor but additional copies shall be provided at a cost to be determined by the Engineer.
5. The Contractor shall allow for the payment of all bank charges in connection with the procurement of Bank Guarantees and stamp charges in connection with this contract Agreement.
6. The Contractor shall carry out the various sections of the Works in such an order as the Architect May direct. The Procuring Entity reserves the right to occupy the Works by sections on completion provided that such occupation is considered to be both practical and reasonable and will not interfere with the Works. The Contractor shall allow any costs associated with such occupation.
7. The main Contractor will be fully responsible for paying his Sub-Contractor but the Procuring Entity reserves the right in very exceptional circumstances to make such payments direct in the interests of the project where the completion thereof might be jeopardized by any dispute or vicariousness between the Contractor and the Sub- Contractor involve.
8. The Contractor shall complete and deliver the Works in the period inserted in the Form of Tender as his time for completion of the Works from the date for Possession, to be agreed with the Engineer. The Contract Period is presumed to have been calculated making due allowance for seasonal inclement weather conditions. No claim for extension of time due to the normal in clement weather for this area shall be entertained.
9. The Contractor shall, upon receiving instructions to proceed with the Works, draw up a Programme and Progress Chart setting out the order in which the Works are to be carried out, with the appropriate dates there of. This Chart shall be agreed with the Architect and no deviation from the order set out in it will be permitted without the written consent of the Engineer. The Contractor will be responsible for arranging the above programme with all his sub-Contractors and Specialties. The Contractor shall allow in his rates for carrying out this exercise, and for updating it as required.

10. The Contractor shall submit to the Architect on the first day of each week or such longer period as the Architect from time to time direct, a Progress Report and any information for the proceeding period, showing the progress during the period and the up-to-date cumulative progression all important items of each section or portion of the Works.
11. The Contractor shall arrange for photographs of the Site to be taken by a professional photographer approved by the Engineer. The Photographs shall provide a record of the Site and adjacent areas as prior to the commencement of the Works and shall cover such portion of the works in progress and completion as the Architect shall direct. All prints shall be full plate size, unmounted, and marked on the reverse side with the date of exposure, identification reference and brief description. The copyright of all photographs shall be vested in the Procuring Entity. The negatives and four prints from each negative shall be delivered to the Architect within two weeks of exposure.
12. Figured dimensions are to be followed in preference to dimensions scaled from the Drawings, but whenever possible dimensions are to be taken on the Site or from the buildings. Before any work is commenced by SubContractors or Specialist Firms, dimensions must be checked on the site comparable dimensions shown on the drawings. The Contractor shall be responsible for the accuracy of such dimensions.
13. Prior to commencement of any work the Contractor is to ascertain from the relevant Authorities the exact position, depth and level of all existing electric cables, waterpipes or other services in the area and he shall make whatever provisions may be required by the Authorities concerned for the support and protection of such services. Any damage or disturbance caused to any services shall be reported immediately to the Architect and the relevant Authority and shall be made good to their satisfaction at the Contractor's expense. Where appropriate the Contractor shall open up the ground in advance of the main work by hand digging if necessary, to locate precisely the position and details of the services which are likely to affect his operations.
14. The Contractor shall include in his prices for the transport of materials, workmen, etc./, to and from the site of the proposed works, at such hours and by such route as are permitted by the Authorities.
15. The Contractor will be required to make good, at his own expense and damage he may cause to the present road surface and pavements within or beyond the boundary of the Site, during the period of the works. All existing paths, storm water channels, etc., that may be destroyed or damaged during the progress of the Works shall be reinstated by the Contractor to the satisfaction of the Engineer.
16. The Contractor is to allow for complying with all instructions and regulations of the Police Authorities.
17. All water shall be fresh, clean and pure, free from earthly, vegetable or organic matter, acid or alkaline substance in solution. The Contractor shall provide at his own risk and cost all water for use in connection with the Works, (including works of sub-contractors). If need be, he shall make arrangements with the Local Water Authority for the installation of a separate meter for all water used by him throughout the Contract and pay all cost and fees in connection therewith. He shall also provide temporary storage tanks and tubing, etc., as may be necessary, and clear away at completion.
18. The Contractor shall provide all artificial lighting and power for his own use on the Works, (including Sub – Contractor's) including all temporary connections, wiring, fittings, etc., and clearing away on completion. The Contractor shall pay all fees and obtain all permits in connection therewith.
19. The Contractor shall constantly keep on the Works a Literate English-speaking Agent or Representative, competent and experienced in the kind of work involved, who shall give his whole time to the superintendence of the works. (Including works of sub – contractors). Such Agent or Representative shall receive on behalf of the Contractor directions and instruction from the Engineer, and such directions and instructions shall be deemed to be given to the contractor in accordance with the Conditions of Contract. The Agent shall not be replaced without the specific approval of the Engineer.



20. The Contractor shall ensure that the safety of his work people and all authorized visitors to the site are protected at all times. In particular, there shall be the proper provision of guard-rails to scaffolding, protection against falling materials, tools on site, dust, nail and other sharp objects. The site shall be kept tidy and clear of dangerous rubbish. The Architect shall be empowered to suspend work on site should it be considered this condition is not being observed and no claim arising from such suspension will be allowed.
21. The areas as available to the Contractor for work yards, offices and other facilities shall be directed by the Architect and any existing features to remain shall be protected from damage throughout the Contract Period and handed back in good condition when they are vacated at the end of the Contract. If additional areas are required, the contractor shall source them at own cost.
22. The Contractor shall give the Architect reasonable notice of the intention to set out or take levels for any part of the Works so that arrangements may be made for checking the work. The accuracy of setting out and leveling shall be within the tolerances specified in the Specifications or on the Drawings. The checking of setting out or leveling by the Architect shall not relieve the Contractor of his duties or responsibilities under the Contract.
23. The Contractor must take steps necessary to safeguard and shall be held fully responsible for any damage caused to existing and adjacent property, including buildings that are not a subject of demolition. He shall make good at his own cost damage to persons and property caused there on, and he shall indemnify the Procuring Entity against any loss or claim that may arise.
24. The Contractor shall take such steps and exercise such care and diligence as to minimize nuisance arising from dust, noise or any other cause to the occupiers of the existing and adjacent property. He must provide such temporary and special screens and tarpaulins or gummy bags, hoarding, barriers, warning signs etc. as he considers necessary and sufficient for the protection of the existing and adjacent property and or prevention of nuisance etc. as directed by Engineer.
25. The Contractor's attention is drawn to the standards levy order which was amended on 15<sup>th</sup> October 1998. Legal notice No.154 of 1998. The Contractor is required to pay a monthly level of 0.2% of his factory price of construction works with effect from January 1999. Tenderer shall allow for this in the build-up of his rates.
26. The Contractor shall provide temporary sheds, offices, mess-rooms, sanitary, accommodation and other temporary buildings for the use of the contractor and sub-contractors, including lighting furniture equipment and attendance.
27. Contractor shall provide/build labor camp sites to be agreed with the Engineer. Labor camps shall be complete with sanitary accommodation and fencing gates.
28. The Contractor must provide the necessary toilet facilities to the requirement and satisfaction of the Health Authorities and maintain the same in a thoroughly clean and sanitary condition and pay all conservancy fees during the period of the Works and remove when no longer required.
29. The Contractor shall provide at his own risk and cost all watching and lighting as necessary to safeguard the Works, Plant and materials against damage and theft.
30. The Contractor shall provide all necessary hoists, tackle, plant, equipment, vehicles, tools and appliances of every description for the due and satisfactory completion of the Works and shall remove the same on completion. All such plant, tools and equipment shall comply with all regulations in force throughout the period of the

Contract and shall be altered or adopted during the Contract period as may be necessary to comply with any amendments in or additions to such regulations.

31. Provide, erect and maintain all necessary scaffolding, sufficiently strong and efficient for the due performance of the works, including Sub-Contract Works, provide special scaffolding as required by Sub-Contractors, alter and adopt all scaffolding as and when required during the Works, and remove on completion. No scaffolding is measured here in after and the Contractor must allow in his rates for this.
32. The Contractor shall take all necessary precautions such as temporary fencing, hoarding fans, planked footways, guard-rails gantries screen, etc., for the safe custody of the Works, materials and public protection and adjacent properties.
33. Cover up all and protect from damage, including damage from inclement weather, all finished work and unfixed materials, including that of Sub-Contractors, etc., to the satisfaction of the Architect until the completion of the Contract.
34. The Contractor shall, after completion of the works, at his own expense, remove and clear away all surplus excavated demolition materials, plant, rubbish and unused materials and shall leave the whole of the Site and Works in a clean and tidy state to the satisfaction of the Engineer, sheds, camps, etc. Particular care shall be taken to leave clean all floors and windows and to remove all paint and cement all rubbish and dirt as it accumulates. The Contractor is to find his own dump and shall pay all charges in connection therewith.
35. Concrete test cubes shall be prepared in a set of three, as described including testing fees, labor and materials, making molds, transport, handling, etc. Allow in your rates for making at least four cubes on each occasion, from different batches; the concrete being taken from the point of deposit.
36. The Contractor shall furnish at the earliest possible opportunity before work commences, and at his own cost, any samples of materials and workmanship that may be called for by the Architect for the approval or rejection, and any further samples in the case of rejection, until such samples are approved by the Engineer. Such samples, when approved, shall be the minimum standard for the work to which they apply. The procedure for submitting samples of materials for testing or approval and the method of marking for identification shall be as laid down by the Engineer. The Contractor shall allow in his Tender for such samples and tests, including those in connection with his Sub-Contractors work.
37. The Contractor's attention is drawn to the Finance Bill of the year 2000/2001 on withholding tax on contractual payment section 35(7)(i)(ii) which became effective on 1<sup>st</sup> July 2000. A 3% withholding tax will be applicable to all interim payments exceeding Kshs ..... for work done in respect of building or civil works. The contractor shall allow for any costs arising resulting therefrom in the build-up of rates.
38. Blasting will only be allowed with the express permission of the Architect in writing. All blasting operations shall be carried out at the Contractor's sole risk and cost, in accordance with any Government regulations in force for the time being, and any special regulations laid down by the Architect governing the use and storage of explosives.
39. The National Construction Authority is a state corporation established under the national construction authority Act No.14 of 2011. The broad Mandate of the Authority is to oversee the construction industry and coordinate its development. The National Construction Authority Regulations 2014 with an effective date of 6<sup>th</sup> June 2014, regulation 25, - Allow 0.5% of the tender sum/contract sum for construction levy.
40. The Contractor's attention is drawn to Finance Bill of 1993 where VAT was introduced in all contracts for construction services. The tenderer is also drawn to VAT Act Cap 476 clause 19(9). The tenderer must allow for VAT 1.19 as instructed elsewhere.

41. The contractor shall allow and pay for all insurance to cover risks and indemnities required Items 17 and 18 of the Conditions of contract and also specified in the Special Conditions of Contract.

**BILL NO. 1 - PRELIMINARY ITEMS**

ITEM No.	DESCRIPTION	AMOUNT
1.	<p>The Contractor shall provide, or erect and maintain an approved lock-up office for the sole use of the Architect and his own site staff. The office, which will have a total floor area of not less than ..... square metres, will be divided into two separate interconnected offices. Services to be provided shall include a telephone, water sanitary and electrical supply and drainage. The offices shall be supplied with furniture and equipment that shall include:</p> <p>4 No. desks with chairs; 1 No. large table with sufficient number of chairs; drawing table along the full length of one side with plan drawers and drawing stools; 4 No. waste paper baskets; sufficient number of pin boards; and any additional furniture and fittings as may reasonably be required during the Contract period. The Contractor shall provide the Architect and site staff with computer sets or laptops, printers and telephones all that are necessary for project use.</p> <p>The office furniture and equipment shall all be to the approval of the Engineer. The Contractor shall also provide all labor, equipment and consumable stores equipment throughout the currency of the contract.</p>	
2	<p>[OPTIONAL] Contractor shall provide a house for Engineers site agent, which shall be one bedroomed temporary house with a sitting room, toilet, bathroom and a kitchen complete with electrical and sanitary installations and provide maintenance and paying of bills of water and electricity up to and including end of the contract period.</p>	
3	<p>Provide a signboard not less than _____ square meters in size of a design type, and with lettering and coloring and in a position approved by the Engineer. The signboard shall be for the display of the Main Contractor's name and the names of all his Sub-Contractors, with the Procuring Entity's name painted thereon. All Consultants names be printed in letters not exceeding 50 mm high. No other signboard or advertising shall be allowed. The signboard shall be fully maintained during the Contract Period and shall be pulled down and removed at the end of the contract.</p>	
4	<p>Add others (if any)</p>	
5		
6		
<b>TOTAL CARRIED TO GRAND SUMMARY</b>		

**BILL NO. 2: WORK ITEMS**

(organized appropriately into work sections, such as foundations, walls/structure, finishes, doors and windows, mechanical installations. etc.

**Bill No 2 - (Name of Section e.g. Foundations).**

<i>Itemno.</i>	<i>Description</i>	<i>Unit</i>	<i>Quantity</i>	<i>Rate</i>	<i>Amount</i>
Total for Bill No. 2 (carried forward to Summary, p.____)					

**Bill**

-

**No. 3: Schedule of Daywork Rates Labor**

<i>Itemno.</i>	<i>Description</i>	<i>Unit</i>	<i>Nominal quantity</i>	<i>Rate</i>	<i>Amount</i>
	Subtotal				
	Allow ____ percent <sup>a</sup> of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above.				
	Total for Daywork (carried forward to Daywork Summary, p.____)				

a. To be entered by the Tenderer.

**No. 4: Schedule of Daywork Rates Materials**



**Bill**

-

	Subtotal		
	Allow ____ percent a. of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 4 (b) above.		
	Total for Daywork: Materials (carried forward to Daywork Summary, p.		

a. To be entered by the Tenderer.

**No. 5: Schedule of Daywork Rates Contractor's Equipment**



**Bill**

<i>Itemno.</i>	<i>Description</i>	<i>Nominal quantity (hours)</i>	<i>Basic hourly rental rate</i>	<i>Extended amount</i>
	Allow ____ percent <sup>a</sup> of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 5 above.			
Total for Daywork: Contractor's Equipment (carried forward to Daywork Summary, p. ____ )				

a. To be entered by the Tenderer.

**Bill No. 6: Daywork Summary**

	<i>Amount<sup>a</sup></i>	<i>% Foreign</i>	<i>Currency</i>
1.Total for Daywork:Labor			
2.Total for Daywork:Materials			
3.Total for Daywork:Contractor's Equipment			

**Bill**

-

Total for Daywork (Provisional Sum) (carried forward to Summary of Bills of Quantities, p. _____)			
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## Bill

### No. 7: Provisional Sums

<i>Billno.</i>	<i>Itemno.</i>	<i>Description</i>	<i>Amount</i>
1			
2			
3			
4			
etc.			
Total for Specified Provisional Sums (carried forward to Grand Summary)			

## GRAND SUMMARY

<b>SUMMARY ITEMS</b>	<i>Page</i>	<i>Amount</i>
BillNo.1:Preliminary Items		
BillNo.2:Work Items		
Bill No 3: Daywork Summary		
Bill No 4: Provisional Sums		
Subtotal of Bills No 1-4		
Allow for any Discounts <sup>i</sup>		
<b>TOTAL TENDER PRICE</b> Carried forward to Form of Tender		

(i) If a percentage used, it should be indicated on which Bill No. items but on Bill No.4 – Provisional Sums.

## SECTION VI - SPECIFICATIONS

### Notes for preparing Specifications

1. Specifications must be drafted to present a clear and precise statement of the required standards of materials, and workmanship for tenderers to respond realistically and competitively to the requirements of the Procuring Entity and ensure responsiveness of tenders. The Specifications should require that all materials, plant, and other supplies to be permanently incorporated in the Works be new, unused, of the most recent or current models, and incorporating all recent improvements in design and materials unless provided otherwise in the Contract. Where the Contractor is responsible for the design of any part of the permanent Works, the extent of his obligations must be stated.
2. Specifications from previous similar projects are useful and may not be necessary to re-write specifications for every Works Contract.
3. There are considerable advantages in standardizing **General Specifications** for repetitive Works in recognized public sectors, such as high ways, urban housing, irrigation and water supply. The General Specifications should cover all classes of workmanship, materials and equipment commonly involved in constructions, although not necessarily to be used in a particular works contract. Deletions or addenda should then adapt the General Specifications to the particular Works.
4. Care must be taken in drafting Specifications to ensure they are not restrictive. In the Specifications of standards for materials, plant and workmanship, existing Kenya Standards should be used as much as possible, otherwise recognized international standards may also be used.
5. The Procuring Entity should decide whether technical solutions to specified parts of the Works are to be permitted. Alternatives are appropriate in cases where obvious (and potentially less costly) alternatives are possible to the technical solutions indicated in tender documents for certain elements of the Works, taking into consideration the comparative specialized advantage of potential tenderers.
6. The Procuring Entity should provide a description of the selected parts of the Works with appropriate reference to Drawings, Specifications, Bills of Quantities, and Design or Performance criteria, stating that the alternative solutions shall be at least structurally and functionally equivalent to the basic design parameters and Specifications.
7. Such alternative solutions shall be accompanied by all information necessary for a complete evaluation by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, proposed construction methodology, and other relevant details. Technical alternatives permitted in this manner shall be considered by the Procuring Entity each on its own merits and independently of whether the tenderer has priced the item as described in the Procuring Entity's design included with the tender documents.

## SECTION VII - DRAWINGS

**Note** A list of drawings should be inserted here. The actual drawings including Site plans should be annexed in a separate booklet.



# PREAMBLES

**PREAMBLES AND PRICING NOTES**

**A. GENERALLY**

All work to be carried out in accordance with the Ministry of Roads, Housing & Urban Development and Public Works General Specifications for Building Works issued in 1976 or as qualified or amended below.

**B. MANUFACTURERS' NAMES**

Where manufacturers' names and catalogue references are given for guidance to quality and standard only, alternative manufacturer of equal quality will be accepted at the discretion of the Project Manager.

**C. WALLING**

All precast concrete blocks shall be manufactured by the methods and to the sizes specified in the Ministry of Roads, Housing & Urban Development and Public Works "Specification for Metric Sized Concrete Blocks for Building (1972)"

Walling of 100 mm thickness or under shall be reinforced with hoop iron every alternate course.

Prices for walling must allow for all costs in preparing, packing and sending sample blocks for testing as and when required by the Project Manager.

**D. CARPENTRY**

The grading rules for cypress shall be the same for podocarpus and all timber used for structural work shall be select (second grade).

All structural timber must conform to the minimum requirements for moisture content and preservative treatment and timber prices must allow for preparing, packing and sending samples for testing when required.

Prices must also include for all nails and fasteners.

**E. JOINERY**

Cypress for joinery shall be second grade in accordance with the latest grading rules of the Kenya Government.

Where Mahogany is specified, this refers to prime grade only. The Contractor may with the approval of the Project Manager; use either Msharagi or Mvuli in lieu of Mahogany but such approval will be given only in the case of shortages of the hardwoods specified.

Plugging shall be carried out by drilling walling or concrete with masonry drill and filling with propriety plugs of the correct sizes. Cutting with hammer and chisel will not be allowed.

Prices for joinery must include for pencil rounded arises, protection against damage, nails, screws, framing and bedding in cement mortar as required.

Sizes given for joinery items are nominal sizes and exact dimensions of doors, etc, must be ascertained on site.

Preambles

PN/1

Tenderer's Sign.....

PROPOSED CONSTRUCTION OF LEVEL 4 HOSPITAL AND ASSOCIATED WORKS FOR KEGONGA

#### **A. IRONMONGERY**

Ironmongery shall be specified in the Bills of Quantities or equal and approved.

Prices must include for removing and re-fixing during and after painting, labeling all keys, and for fixing to hardwood, softwood, concrete or blockwork.

Catalogue references given for ironmongery are for purposes of indicating quality and size of item(s). Should the Contractor wish to substitute the specified item(s) with others of equal manufacture, he must inform the Project Manager and obtain approval in writing.

#### **B. STRUCTURAL STEELWORK**

All structural steelwork shall comply with the Ministry of Roads, Housing & Urban Development and Public Works "Structural Steelwork Specification (1973) and shall be executed by an approved Sub-contractor.

#### **C. PLASTERWORK AND OTHER FINISHES**

All finishing shall be as described in the general specifications and in these Bills of Quantities.

Prices for paving are to include for brushing concrete clean, wetting and coating with cement and sand grout 1:1.

Rates for glazed wall tiling are to include for a 12 mm cement and sand (1:4) backing screed unless otherwise specified in these Bills of Quantities.

#### **D. GLAZING**

Where polished plate glass is specified, this refers to general glazing quality.

Prices for glazing shall include for priming of rebates before placing putty.

The Contractor will be responsible for replacing any broken or scratched glass and handing over in perfect condition.

#### **E. PAINTING**

Painting shall be applied in accordance with the manufacturers' instructions.

Prices for painting are to include for scaffolding, preparatory work, priming coats, protection of other works and for cleaning up on completion. Prices for painting on galvanized metal are to include for mordant solution as necessary.

#### **F. TILES - CERAMIC, PORCELEIN, GRANITO ETC**



No tiles shall be fitted/installed without sample approvals.  
No claim shall be allowed on the grounds that the bidder priced an inferior quality

**G. CURTAINS & COVERS ETC**

The bidder shall be deemed to have priced the best materials  
No curtains & covers shall be fitted/installed without sample approvals.  
No claim shall be allowed on the grounds that the bidder priced an inferior quality

Preambles

PN/2

Tenderer's Sign.....

# PARTICULAR PRELIMINARIES



Item	Description	Amount KSh
	<p><b><u>PARTICULAR PRELIMINARIES</u></b></p>	
A	<p><b>EMPLOYER</b></p> <p>The Employer is <b>State Department for Medical Services</b></p> <p>The term "Employer" and "Government" wherever used in the contract document shall be synonymous.</p>	
B	<p><b>PROJECT MANAGER</b></p> <p>The term "PM" wherever used in these Bills of Quantities shall be deemed to mean the "The Engineer" as per Condition 1 of the Conditions of Contract or such person or persons as may be duly authorised to represent him on behalf of the Government .</p>	
C	<p><b>ARCHITECT</b></p> <p>The term "Architect" shall be deemed to mean "The P.M " as defined above whose address unless otherwise notified is Ministry of Lands, Public Works, Housing and Urban Development, P.O Box 30743 -00100, NAIROBI.</p>	
D	<p><b>QUANTITY SURVEYOR</b></p> <p>The term "Quantity Surveyor" shall be deemed to mean "The P.M " as defined above whose address unless otherwise notified is Ministry of Lands, Public Works, Housing and Urban Development, P.O Box 30743 -00100, NAIROBI.</p>	
E	<p><b>ELECTRICAL ENGINEER</b></p> <p>The term "Electrical Engineer" shall be deemed to mean "The P.M " as defined above whose address unless otherwise notified is Ministry of Lands, Public Works, Housing and Urban Development, P.O Box 30743 -00100, NAIROBI.</p>	
F	<p><b>MECHANICAL ENGINEER</b></p> <p>The term "Mechanical Engineer" shall be deemed to mean "The P.M " as defined above whose address unless otherwise notified is Ministry of Lands, Public Works, Housing and Urban Development, P.O Box 30743 -00100, NAIROBI.</p>	

<b>G</b>	<p><b>STRUCTURAL ENGINEER</b></p> <p>The term "Structural Engineer" shall be deemed to mean "The P.M " as defined above whose address unless otherwise notified is Ministry of Lands, Public Works, Housing and Urban Development, P.O Box 30743 -00100, NAIROBI.</p>	
	<i>Carried to collection</i>	

Item	Description	Amount KSh
A	<p><b>PRICING ITEMS OF PRELIMINARIES</b></p> <p>Prices <b>SHALL BE INSERTED</b> against items of “preliminaries” in the tenderer’s priced Bills of Quantities. The contractor is advised to read and understand all preliminary items.</p>	
B	<p><b>SCOPE OF CONTRACT</b></p> <p>The works to be carried out comprises of construction of a Five Storied Hospital Block and associated Civil, Electrical and Mechanical Installations works at Kegonga - Kuria East</p>	

<b>C</b>	<p><b>MEASUREMENTS</b></p> <p>In the event of any discrepancies arising between the Bills of Quantities and the actual works, the site measurements shall generally take precedence. However, such discrepancies between any contract documents shall immediately be referred to the PROJECT MANAGER in accordance with the Conditions of Contract. The discrepancies shall then be treated as a variation and be dealt with in accordance with the said Conditions.</p> <p>All measurements shall be as per Standard Method of Measurements (SMM) - 2008 Edition</p>	
	<i>Carried to collection</i>	

Item	Description	Amount KSh
A	<p><b>LOCATION OF SITE</b></p> <p>The site of the proposed works is <b>Kegonga (Kuria East)</b>. The Contractor is advised to visit the site to familiarize with the nature and position of the site. No claims arising from the Contractor's failure to do so will be entertained.</p>	

<b>B</b>	<b>SIGNING OF THE TENDER DOCUMENTS</b>	<p>The bidder shall append his / her signature and / or company 's rubberstamp on each and every page of tender document.</p>
<b>C</b>	<b>DEMOLITIONS AND ALTERATIONS</b>	<p>The Contractor is to allow for all temporary protection required during the works including ordinary and special dust screens, hoardings, barriers, warning signs, etc as directed by the Project Manager and as necessary for the adequate propping and protection of existing property, finishes, workmen employed on the site, employer's agents and the public. Any damage or loss incurred due to the insufficiency of such protection must be made good by the Contractor. All protective devices are to be removed on completion of the works and any necessary making good consequent upon this is to be executed to the satisfaction of the Project Manager.</p> <p>The works shall be propped, strutted and supported as necessary before any alteration or demolition work commences. Prices shall include for all cleaning and preparatory work to structure and finishes and for making good to all finishes on completion whether or not specifically described.</p> <p>Unless described as set aside for re-use all arising debris and surplus materials shall be carefully removed from building and carted away from site.</p> <p>The Contractor shall be entirely responsible for any breakage or damage which may occur to materials required for re-use during their removal unless it is certified by the Project Manager that such damage or breakage was inevitable as a result of the condition of the item concerned.</p>
	<i>Carried to collection</i>	

Item	Description	Amount KSh
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A	<p><b>CLEARING AWAY</b></p> <p>The Contractor shall remove all temporary works, rubbish, debris and surplus materials from the site as they accumulate and upon completion of the works, remove and clear away all plant, equipment, rubbish, unused materials and stains and leave in a clean and tidy state to the reasonable satisfaction of the Project Manager.</p> <p>The whole of the works shall be delivered up clean, complete and in perfect condition in every respect to the satisfaction of the Project Manager.</p>
B	<p><b>CLAIMS</b></p> <p>It shall be a condition of this contract that upon it becoming reasonably apparent to the Contractor that he has incurred losses and / or expenses due to any of the contract conditions, or by any other reason whatsoever, he shall present such a claim or intent to claim notice to the PROJECT MANAGER within the contract period. No claim shall be entertained upon the expiry of the said contract period.</p>
C	<p><b>PAYMENTS</b></p> <p>The tenderer’s attention is drawn to the fact that the <b>GOVERNMENT DOES NOT MAKE ADVANCE PAYMENTS</b> but pays for work done and materials delivered to sit: Refer with Special Conditions of Contract. In order to facilitate this, a list of the general component elements for the works is given at the summary page of these specifications and the tenderer is requested to break down his tender sum commensurate to the said elements.</p>
D	<p><b>PREVENTION OF ACCIDENT, DAMAGE OR LOSS</b></p> <p>The Contractor is notified that these works are to be carried out on a restricted site where the client is going on with other normal activities. The Contractor is thus instructed to take reasonable care in the execution of the works as to prevent accidents, damage or loss and disruption of activities being carried out by the Client. The Contractor shall allow in his rates any expense he deemed necessary by taking such care within the site.</p>
E	<p><b>WORKING CONDITIONS</b></p> <p>The Contractor shall allow in his rates for any interference that he may encounter in the course of the works for the Client may in some cases ask the Contractor not to proceed with the works until some activities within the site are completed, as the facility will be operating as usual during the course of the contract.</p>
F	<p><b>SIGNBOARD</b></p> <p>Allow for providing, erecting, maintaining throughout the course of the Contract and afterwards clearing away a signboard as designed, specified and approved by the Project Manager. The signboard shall give a brief title of the project and image</p> <p>The Signboard and lettering on same for the display of the General and Sub-Contractors' names shall be of an approved size with the Employer's name painted thereon. The Project Manager, and other Consultants' names shall be printed in 50 mm letters all to the Architect's approved design.</p> <p>No other signboard or advertising will be permitted without prior permission from the Architect.</p>
G	<p><b>LABOUR CAMPS</b></p> <p>The Contractor shall not be allowed to house labour on site. Allow for transporting workers to and from the site during the tenure of the contract.</p>
	<p><b><i>Carried to collection</i></b></p>

Item	Description	Amount KSh
A	<p><b>MATERIALS FROM DEMOLITIONS</b></p> <p>Any materials arising from demolitions and not re-used shall become the property of the client. The Contractor shall allow in his rates the cost of disposing the demolished materials as directed.</p>	
B	<p><b>PRICING RATES</b></p> <p>The tenderer shall include for all costs in executing the whole of the works, including transport, replacing damaged items, fixing, all to comply with the said Conditions of Contract.</p>	
C	<p><b>SECURITY</b></p> <p>The Contractor shall allow for providing adequate security for the works and the workers in the course of execution of this contract. No claim will be entertained from the Contractor for not maintaining adequate security for both the works and workers.</p>	
D	<p><b>URGENCY OF THE WORKS</b></p> <p>The Contractor is notified that these “ <b>works are urgent</b>” and should be completed within the period stated in these Particular Preliminaries.</p> <p>The Contractor shall allow in his rates for any costs he/ she deems that he/she may incur by having to complete these works within the stipulated contract period.</p>	
E	<p><b>PAYMENT FOR MATERIALS ON SITE</b></p> <p>All materials for incorporation in the works must be stored on site before payment is effected, unless specifically exempted by the Project Manager. This is to include materials of the Contractor, nominated sub-Contractors and nominated suppliers.</p>	
F	<p><b>EXISTING SERVICES</b></p> <p>Prior to the commencement of any work, the Contractor is to ascertain from the relevant authority the exact position, depth and level of all existing services in the area and he/she shall make whatever provisions may be required by the authorities concerned for the support, maintenance and protection of such services.</p>	



<b>G</b>	<p><b>CONTRACT COMPLETION PERIOD</b></p> <p>The contract completion period in accordance with the Conditions of contract must be adhered to.</p> <p>The ‘PROJECT MANAGER’ shall strictly monitor the Contractors progress in relation to the progress chart and should it be found necessary the ‘PROJECT MANAGER’ shall inform the Contractor in writing that his actual performance on site is not satisfactory .In all such cases the Contractor shall accelerate his rate of performance production and progress by all means such as additional labour,plant, e.t.c and working overtime all at his cost.</p>	
	<i>Carried to collection</i>	

Item	Description	Amount KSh
A	<p><b>PERFORMANCE BOND</b></p> <p>A bond of <b>5%</b> of the contract sum will be required in accordance with the Special Conditions of Contract on award of contract. No payment on account for the works executed will be made to the contractor until he has submitted the Performance Bond to the Project Manager duly signed, sealed and stamped from an approved Bank.</p>	
B	<p><b>TENDER DOCUMENTS</b></p> <p>Tender documents are as listed in Page (i) of the Tender Document.</p>	
C	<p><b>DELIVERY OF TENDER</b></p> <p>Tenders and all documents in connection therewith, as specified above must be delivered in the addressed envelope which should be properly sealed and deposited at the offices as specified in the letter accompanying these documents or as indicated in the advertisement.</p> <p>Tenders will be opened at the time specified in the letter accompanying these Tender Documents or as indicated in the advertisement. Tenders delivered/received later than the above time will not be opened.</p>	

<b>D</b>	<p><b>VALUE ADDED TAX</b></p> <p>The Contractor’s attention is drawn to the Legal Notice in the Finance Act part 3 Section 21(b) operative from 1<sup>st</sup> September, 1993 which requires payment of VAT on all contracts. The Contractor should therefore include allowance in his rates and prices for prices for VAT and any other Government taxes currently in force.</p> <p>The tenderer is advised that in accordance with Government public notice No. 35 &amp; 36 Dated 11<sup>th</sup> September 2003 operational from 1<sup>st</sup> October 2003, VAT will be deducted against the contract sum at the prevailing rate by the Employer and remitted directly to the Commissioner of VAT through all interim certificates. It should however be noted that this is not additional tax but a new mode of payment for VAT, any excess payment will be refundable once the Contractor has submitted monthly returns to the Commissioner of VAT who will do the refunds when satisfied that the VAT regulations have been complied with.</p> <p><b>NB:</b> The Contractor should therefore include the VAT tax within the rates.</p>
<b>E</b>	<p><b>EXISTING BUILDING MATERIALS</b></p> <p>NOTE: Any materials found usable for the works shall be given to the contractor on credit with the approval of the client</p>
	<i>Carried to collection</i>

PROPOSED CONSTRUCTION OF LEVEL 4 HOSPITAL AND ASSOCIATED WORKS FOR KEGONGA

Item	Description	Amount KSh
	<p><b><u>SPECIAL PRELIMINARIES</u></b></p> <p><b><u>PROJECT MANAGEMENT EXPENSES</u></b></p>	
A	<p>Provide for facilitation for the project management supervisory team for the duration of the contract worth Kenya Shillings <b>Five Million (kshs. 5,000,000.00) Only</b> for site visits and inspections for Ministry of Lands, Public Works, Housing &amp; Urban Development Officers for the duration of the contract period.</p> <p>Allow for Contractor's profit and overheads (-----%)</p>	5,000,000.00
B	<p>Provide a provisional sum of Kenya Shillings <b>Eight Hundred Thousand (Kshs 800,000.00)</b> only for <b>Clerk of works</b> expenses.</p> <p>Allow for Contractor's profit and overheads (-----%)</p>	800,000.00
	<p><b><u>TRANSPORT</u></b></p> <p>The contractor shall provide for site trips only a vehicle of type Toyota or Nissan Van to comfortably seat Nine Persons including maintaining licences and insurances, competent driver; all to the satisfaction of the Project Manager</p> <p>The vehicle shall be provided specifically for and during site visits by the State Department for Public Works Technical team. The vehicle shall be in perfect conditions for the entire duration of the trip. i.e <b>From State Department for Public Works Head Office to Kuria East - Kegonga and back to State Department for Public Works Head Office including local running.</b></p> <p>The driver shall be at the sole discretion of the Project Manager for the entire duration of the trip, untill released by him / her.</p> <p>Reimbursements to the contractor for providing the transport services will be based per trip to the site and back during the curreny of the contract a a rate as here below (<b>Contractor to insert rate - Item C</b>) inserted. Reimbursement to the contractor for providing driver, servicing, fuels, oils, lubricants and tyres will similarly be based per trip at a rate herebelow (<b>Contractor to insert rate - item D</b>).</p>	
C	<p>Allow for providing a vehicle a vehicle as above described including maintaining licenses and comprehensive insurance (..... X 30 TRIPS)</p>	
D	<p>Allow for providing a a driver, maintanance, fuels, lubricants, spares and tyers. (..... X 30 TRIPS)</p>	
	<p><b><u>STATIONERY</u></b></p>	

E	Provide a sum of <b>Kenya Shillings Two Hundred Thousand Only (Kshs. 200,000.00)</b> for Project Manager's Stationery  Allow for Contractor's profit and overheads (-----%)	200,000.00
<b><i>Carried to collection</i></b>		

Particular Preliminaries

PP / 7

Tenderer's Sign.....

PROPOSED CONSTRUCTION OF LEVEL 4 HOSPITAL AND ASSOCIATED WORKS FOR KEGONGA

<b>Item</b>	<b>Description</b>	<b>Amount KSh</b>
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**PARTICULARS OF INSERTIONS TO BE MADE IN APPENDIX TO CONTRACT AGREEMENT**

The following are the insertions to be made in the appendix to the Contract Agreement: -

**Period of Final Measurement**            3 Months From Practical completion

**Defects Liability Period**            6 Months from Practical completion

**Date for Possession**                To be agreed with the Project Manager

**Date for Completion**                As Stated in the Special Conditions of Contract

**Liquidated and Ascertained Damages** - As Stated in Special Conditions of Contract

**Prime cost** sums for which The Contractor desires to tender.....

**Period of Interim Certificates**                Monthly

**Period of Honouring Certificates**                60 days as per Conditions of contract [14.7.1]

**Percentage of Certified Value Retained**                10%

**Limit of Retention Fund**                10%

	<i>Carried to collection</i>	
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Particular Preliminaries

PP / 8

Tenderer's Sign.....

PROPOSED CONSTRUCTION OF LEVEL 4 HOSPITAL AND ASSOCIATED WORKS FOR KEGONGA

<b>Item</b>	<b>Description</b>	<b>Amount KSh</b>
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**COLLECTION**

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	<b>TOTAL FOR PARTICULAR PRELIMINARIES CARRIED TO GRAND SUMMARY</b>	

Particular Preliminaries

PP / 9

Tenderer's Sign.....

# GENERAL PRELIMINARIES

Item	Description	Amount KSh
A.	<p><b>GENERAL PRELIMINARIES</b></p> <p><b>PRICING OF ITEMS OF PRELIMINARIES AND PREAMBLES</b></p> <p>Prices will be inserted against items of Preliminaries in the Contractor's priced Bills of Quantities and Specification.</p> <p>The Contractor shall be deemed to have included in his prices or rates for the various items in the Bills of Quantities or Specification for all costs involved in complying with all the requirements for the proper execution of the whole of the works in the Contract.</p>	
	<p><b>B. ABBREVIATIONS</b></p> <p>Throughout these Bills, units of measurement and terms are abbreviated and shall be interpreted as follows:-</p> <p><b>C.M.</b>                      Shall mean cubic metre</p> <p><b>S.M.</b>                      Shall mean square metre</p> <p><b>L.M.</b>                      Shall mean linear metre</p> <p><b>MM</b>                        Shall mean Millimetre</p> <p><b>Kg.</b>                        Shall mean Kilogramme</p> <p><b>No.</b>                        Shall mean Number</p> <p><b>Prs.</b>                        Shall mean Pairs</p> <p><b>B.S.</b>                        Shall mean the British Standard specification      Published by the British Standards Institution, 2 Park Street, London W.I., England.</p> <p><b>Ditto</b>                        Shall mean the whole of the preceding description except as qualified in the description in which it occurs.</p> <p><b>m.s.</b>                        Shall mean measured separately.</p> <p><b>a.b.d</b>                        Shall mean as before described.</p>	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
A.	<p><b>EXCEPTION TO THE STANDARD METHOD OF MEASUREMENT</b></p> <p><i>Attendance</i> ; Clause B19(a) of the Standard Method of Measurement is deleted and the following clause is substituted:-</p> <p>Attendance on nominated Sub-Contractors shall be given as an item in each case shall be deemed to include: allowing use of standing scaffolding, mess rooms, sanitary accommodation and welfare facilities; provision of special scaffolding where necessary; providing space for office accommodation and for storage of plant and materials; providing light and water for their work: clearing away rubbish; unloading checking and hoisting: providing electric power and removing and replacing duct covers, pipe casings and the like necessary for the execution and testing of Sub- Contractors' work and being responsible for the accuracy of the same.</p> <p><b>Fix Only:-</b></p> <p>"Fix Only" shall mean take delivery at nearest railway station (Unless otherwise stated), pay all demurrage charges, load and transport to site where necessary, unload, store, unpack, assemble as necessary, distribute to position, hoist and fix only.</p>	
B	<p><b>FORM OF CONTRACT</b></p> <p>The Form of Contract shall be as stipulated in the Republic of Kenya's Standard Tender Document for Procurement of Building Works (2021 Edition) included herein:</p> <p>The Conditions of Contract are also included herein</p> <p><b>Conditions of Contract</b></p> <p>These are numbered from 1 to 20 as set out in the standard tender document</p> <p>Particulars of insertions to be made in the Appendix to the Contract Agreement will be found in the Particular Preliminaries part of these Bills of Quantities</p>	
C	<p><b>PLANT, TOOLS AND VEHICLES</b></p> <p>The Contractor shall provide all necessary hoists, tackle, plant, vehicles, tools and appliances of every description for the due and satisfactory completion of the Works and shall remove same on completion.</p> <p>All materials and workmanship used in the execution of the works shall be of the best quality and description for the due and satisfactory completion of the works and shall remove the same on completion.</p> <p>The Contractor shall provide, erect and maintain all temporary scaffolding, sufficiently strong and efficient for the due performance of the Works, including Sub-contract Works, provide special scaffolding as and when required during the Works including all sub-contracted works and remove on completion and make good.</p> <p>Such scaffolding shall be constructed of tubular steel or timber of sufficient scantlings and be provided with planked footways and guard-rails to approval.No timber used for scaffolding ,formwork or similar temporary works shall be used afterwards in the permanent work.</p> <p>All such plant, tools and scaffolding shall comply with all regulations whether general or local, in force throughout the period of the Contract and shall be altered or adapted during the Contract as may be necessary to comply with any amendments in or additions to such regulations.</p> <p>Scaffolding is not measured hereinafter, and the Contractor must allow here or in his rates for the above.</p>	
D	<p><b>TRANSPORT.</b></p> <p>Allow for transport of workmen, materials, etc., to and from the site at such hours and by such routes as may be permitted by the competent authorities.</p>	
	<p><b>Carried to collection</b></p>	

Item	Description	Amount KSh
A	<p><b>MATERIALS AND WORKMANSHIP.</b></p> <p>All materials and workmanship used in the execution of the work shall be of the best quality and description unless otherwise stated. The Contractor shall order all materials to be obtained from overseas immediately after the Contract is signed and shall also order materials to be obtained from local sources as early as necessary to ensure that they are onsite when required for use in the works. The Bills of Quantities shall not be used for the purpose of ordering materials.</p>	
B	<p><b>SIGN FOR MATERIALS SUPPLIED.</b></p> <p>The Contractor will be required to sign a receipt for all articles and materials supplied by the PROJECT MANAGER at the time of taking deliver thereof, as having received them in good order and condition, and will thereafter be responsible for any loss or damage and for replacements of any such loss or damage with articles and/or materials which will be supplied by the PROJECT MANAGER at the current market prices including Customs Duty and V.A.T., all at the Contractor's own cost and expense, to the satisfaction of the PROJECT MANAGER.</p>	
C	<p><b>STORAGE OF MATERIALS</b></p> <p>The Contractor shall provide at his own risk and cost where directed on the site weather proof lock-up sheds and make good damaged or disturbed surfaces upon completion to proof lock-up sheds and make good damaged or disturbed surfaces upon completion to the satisfaction of the PROJECT MANAGER Nominated Sub-Contractors are to be made liable for the cost of any storage accommodation provided especially for their use.</p>	
D	<p><b>SAMPLES</b></p> <p>The Contractor shall furnish at his own cost any samples of materials or workmanship including concrete test cubes required for the works that may be called for by the PROJECT MANAGER for his approval until such samples are approved by the PROJECT MANAGER and the PROJECT MANAGER, may reject any materials or workmanship not in his opinion to be up to approved samples. The PROJECT MANAGER shall arrange for the testing of such materials as he may at his discretion deem desirable, but the testing shall be made at the expense of the Contractor and not at the expense of the PROJECT MANAGER. The Contractor shall pay for the testing in accordance with the current scale of testing charges laid down by the Ministry of Public Works.</p> <p>The procedure for submitting samples of materials for testing and the method of marking for identification shall be as laid down by the PROJECT MANAGER The Contractor shall allow in his tender for such samples and tests except those in connection with nominated sub-contractors' work.</p> <p>No alternte rate shall be offered on account that the employer has chosen a superior finish unless the bidder had attached the sample he priced.</p>	
E	<p><b>SETTING OUT</b></p> <p>The contractor shall set out the works according to drawings and shall be responsible for its correctness and shall be required to amend any errors arising from inaccurate setting out at his own cost and expense. Any discrepancies on the dimensions or levels marked on the drawings should be reported to the architect for their immediate attention and the contractor shall only proceed after the architect's instructions to adjust the same. No claim for extra time, expense or relief fom provisions of the conditions of the contract may be made there after</p> <p>Before any works are commenced by sub-contractors or specialist, dimesnions must be checked by and agreed with the contractor. The contractor shall be responsible for the accuracy of such dimensions.</p>	
	<p><i>Carried to collection</i></p>	

Item	Description	Amount KSh
A	<p><b>GOVERNMENT ACTS REGARDING WORK, PEOPLE ETC.</b></p> <p>Allow for complying with all Government Acts, Orders and Regulations in connection with the employment of Labour and other matters related to the execution of the works. In particular the Contractor's attention is drawn to the provisions of the Factory Act 1950 and his tender must include for all costs arising or resulting from compliance with any Act, Order or Regulation relating to Insurances, pensions and holidays for workpeople or so the safety, health and welfare of the work people.</p> <p>The Contractor must make himself fully acquainted with current Acts and Regulations, including Police Regulations regarding the movement, housing, security and control of labour, labour camps , passes for transport, etc. It is most important that the Contractor, before tendering, shall obtain from the relevant Authority the fullest information regarding all such regulations and/or restrictions which may affect the organisation of the works, supply and control of labour, etc., and allow accordingly in his tender. No claim in respect of want of knowledge in this connection will be entertained.</p>	
B	<p><b>SECURITY OF WORKS ETC.</b></p> <p>The Contractor shall be entirely responsible for the security of all the works stores, materials, plant, personnel, etc., both his own and sub-contractors' and must provide all necessary watching, lighting and other precautions as necessary to ensure security against theft, loss or damage and the protection of the public.</p>	
C	<p><b>PUBLIC AND PRIVATE ROADS.</b></p> <p>Maintain as required throughout the execution of the works and make good any damage to public or private roads arising from or consequent upon the execution of the works to the satisfaction of the local and other competent authority and the PROJECT MANAGER.</p>	
D	<p><b>EXISTING AND ADJACENT PROPERTY</b></p> <p>The Contractor shall take every precaution to avoid damage to all existing property including roads, cables, drains and other services and he will be held responsible for and shall make good all such damage arising from the execution of this contract at his own expense to the satisfaction of the PROJECT MANAGER</p> <p>The Contractor will be held fully responsible for the safety of the existing and adjacent buildings and for any damage caused in consequence of these Works. They must reinstate all damages at his own expense and indemnify the Employer against any loss. There are existing paving blocks that may be damaged in course of the works and as such the contractor is advised to include in their rates the cost of making good such</p> <p>The Contractor must take such steps and exercise such care and diligence as to minimise nuisance from dust, noise or any other cause to the occupiers of the existing and adjacent property.</p>	
E	<p><b>VISIT SITE AND EXAMINE DRAWINGS.</b></p> <p>The Contractor is recommended to examine the drawings and visit the site the location of which is described in the Particular Preliminaries hereof. He shall be deemed to have acquainted himself therewith as to its nature, position, means of access or any other matter which, may affect his tender. No claim arising from his failure to comply with this recommendation will be considered.</p>	
	<p><i>Carried to collection</i></p>	

Item	Description	Amount KSh
A	<p><b>ACCESS TO SITE AND TEMPORARY ROADS.</b></p> <p>Means of access to the Site shall be agreed with the PROJECT MANAGER prior to commencement of the work and Contractor must allow for building any necessary temporary access roads (approximately 70 metres long) for the transport of the materials, plant and workmen as may be required for the complete execution of the works including the provision of temporary culverts, crossings, bridges, or any other means of gaining access to the Site. Upon completion of the works, the Contractor shall remove such temporary access roads; temporary culverts, bridges, etc., and make good and reinstate all works and surfaces disturbed to the satisfaction of the PROJECT MANAGER.</p>	
B	<p><b>AREA TO BE OCCUPIED BY THE CONTRACTOR</b></p> <p>The area of the site which may be occupied by the Contractor for use of storage and for the purpose of erecting workshops, etc., shall be defined on site by the PROJECT MANAGER</p>	
C	<p><b>OFFICE ETC. FOR THE PROJECT MANAGER</b></p> <p>The Contractor shall provide, erect and maintain where directed on site a properly ventilated lockable office for the consultants, having a minimum floor area of 40 Square Metres complete with adequate furniture (Tables, chairs e.t.c). Provision shall be made for artificial lighting and cleaning facilities for the duration of the works. He shall also provide a strong metal trunk complete with strong hasp and staple fastening and two keys. He shall provide, erect and maintain a lock-up type water or bucket closet for the sole use of the PROJECT MANAGER including making temporary connections to the drain where applicable to the satisfaction of Government and Medical Officer of Health and shall provide services of cleaner and pay all conservancy charges and keep both office and closet in a clean and sanitary condition from commencement to the completion of the works and dismantle and make good disturbed surfaces. The office and closet shall be completed before the Contractor is permitted to commence the works. The Contractor shall make available on the Site as and when required by the "PROJECT MANAGER" a modern and accurate level together with levelling staff, ranging rods and 50 metre metallic or linen tape.</p> <p>In particular, the Contractor is to note that the neighbourhood will continue with operations during the period of the works and the contractor shall ensure that construction activities do not interfere with such operations by way of noise, obstruction, dust, vibrations or trespass.</p> <p>The site office is to be fully supplied with power,with notice boards, and drawers for storage.</p> <p>The contractor to allow for provision of snacks and soft drinks to participants during site inspections and meetings</p> <p>The entire site is a non-smoking area.</p> <p>All such temporary works shall be dismantled and cleared away on completion of the construction.</p>	
D	<p><b>COMPUTER AND INTERNET CONNECTION</b></p> <p>The Contractor shall provide and maintain the Project Manager's office with, A3 printer, a high performance desk top computer and a laptop connected with unlimited high speed wifi internet connection. The Contractor is to pay all connection charges and shall allow for any other fees that may become payable during the contract period. The computer specifications shall meet the Project Manager's requirement and shall be for sole use of the Project Manager or his representative.</p>	
E	<p><b>SANITATION OF THE WORKS</b></p> <p>The Sanitation of the works shall be arranged and maintained by the Contractor to the satisfaction of the Government and/or Local Authorities, Labour Department and the PROJECT MANAGER.</p>	
	<p><b><i>Carried to collection</i></b></p>	

Item	Description	Amount KSh
A	<p><b>WATER AND ELECTRICITY SUPPLY FOR THE WORKS</b></p> <p>The Contractor shall provide at his own risk and cost all necessary water, electric light and power required for use in the works. The Contractor must make his own arrangements for connection to the nearest suitable water main and for metering the water used. He must also provide temporary tanks and meters as required at his own cost and clear away when no longer required and make good on completion to the entire satisfaction of the PROJECT MANAGER . The Contractor shall pay all charges in connection herewith. No guarantee is given or implied that sufficient water will be available from mains and the Contractor must make his own arrangements for augmenting this supply at his own cost. Nominated Sub-contractors are to be made liable for the cost of any water or electric current used and for any installation provided especially for their own use.</p>	
B	<p><b>SUPERVISION AND WORKING HOURS</b></p> <p>The works shall be executed under the direction and to the entire satisfaction in all respects of the PROJECT MANAGER who shall at all times during normal working hours have access to the works and to the yards and workshops of the Contractor and sub-Contractors or other places where work is being prepared for the contract.</p> <p>The term "Provisional Sum" wherever used in these Bills of Quantities shall have the meaning stated in Section A item A7(i) of the Standard Method of Measurement. Such sums are net and no addition shall be made to them for profit.</p>	
C	<p><b>PRIME COST (OR P.C.) SUMS.</b></p> <p>The term "Prime Cost Sum" or "P.C. Sum" wherever used in these Bills of Quantities shall have the meaning stated in Section A item A7 (ii) of the Standard Method of Measurement. Persons or firms nominated by the PROJECT MANAGER to execute work or to provide and fix materials or goods as stated in the Conditions of Contract are described herein as Nominated Sub-Contractors. Persons or firms so nominated to supply goods or materials are described herein as Nominated Suppliers.</p>	
D	<p><b>PROGRESS CHART.</b></p> <p>The Contractor shall provide within two weeks of Possession of Site and in agreement with the PROJECT MANAGER a Progress Chart for the whole of the works including the works of Nominated SubContractors ; one copy to be handed to the PROJECT MANAGER and a further copy to be retained on Site. Progress to be recorded and chart to be amended as necessary as the work proceeds.</p> <p>At the end of each month,the contractor shall incorporate actual start and finish dates into the time schedule and produce an update on the programme.The update is to show actual start and finish dates,identify out sequence of activities,critical activities and any constraints which may have or may affect the progress of the works.</p>	
E	<p><b>ADJUSTMENT OF P.C. SUMS.</b></p> <p>In the final account all P.C. Sums shall be deducted and the amount properly expended upon the PROJECT MANAGER'S order in respect of each of them added to the Contract sum. The Contractor shall produce to the PROJECT MANAGER such quotations, invoices or bills, properly receipted, as may be necessary to show the actual details of the sums paid by the Contractor. Items of profit upon P.C. Sums shall be adjusted in the final account pro-rata to the amount paid. Items of "attendance" (as previously described) following P.C. Sums shall be adjusted pro-rata to the physical extent of the work executed (not pro-rata to the amount paid) and this shall apply even though the Contractor's priced Bill shows a percentage in the rate column in respect of them.</p> <p>Should the Contractor be permitted to tender and his tender be accepted of any work for which a P.C. Sum is included in these Bill of Quantities profit and attendance will be allowed at the same rate as it would be if the work were executed by a Nominated Sub-Contractor.</p>	



	<i>Carried to collection</i>	
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Item	Description	Amount KSh
A	<p><b>NOMINATED SUB-CONTRACTORS</b></p> <p>When any work is ordered by the PROJECT MANAGER to be executed by nominated sub-contractors, the Contractor shall enter into sub-contracts as described in the Conditions of Contract and shall thereafter be responsible for such sub-contractors in every respect. Unless otherwise described the Contractor is to provide for such Sub-Contractors any or all of the facilities described in these Preliminaries. The Contractor should price for these with the nominated Sub-contract Contractor's work concerned in the P.C. Sums under the description "add for Attendance".</p>	
B	<p><b>DIRECT CONTRACTS</b></p> <p>Notwithstanding the foregoing conditions, the Government reserves the right to place a "Direct Contract" for any goods or services required in the works which are covered by a P.C. Sum in the Bills of Quantities and to pay for the same direct. In any such instances, profit relative to the P.C. Sum the priced Bills of Quantities will be adjusted as described for P.C. Sums and allowed.</p>	
C	<p><b>ATTENDANCE UPON OTHER TRADESMEN, ETC.</b></p> <p>The Contractor shall allow for the attendance of trade upon trade and shall afford any tradesmen or other persons employed for the execution of any work not included in this Contract every facility for carrying out their work and also for use of his ordinary scaffolding. The Contractor, however, shall not be required to erect any special scaffolding for them. The Contractor shall perform such cutting away for and making good after the work of such tradesmen or persons as may be ordered by the PROJECT MANAGER and the work will be measured and paid for to the extent executed at rates provided in these Bills.</p>	
D	<p><b>REMOVAL OF RUBBISH</b></p> <p>Removal of rubbish and debris from the Building and the site as it accumulates and at the completion of the works and removal all plant, scaffolding and unused materials at completion.</p>	
E	<p><b>INSURANCE</b></p> <p>The Contractor shall insure as required in the Conditions of Contract. No payment on account of the work executed will be made to the Contractor until he has satisfied the PROJECT MANAGER either by production of an Insurance Policy or and Insurance Certificate that the provision of the foregoing Insurance Clauses have been complied with in all respects. Thereafter the PROJECT MANAGER shall from time to time ascertain that premiums are duly paid up by the Contractor who shall if called upon to do so, produce the receipted premium renewals for the PROJECT MANAGER's inspection.</p>	

<b>F</b>	<p><b>PROVISIONAL WORK</b></p> <p>All work described as "Provisional" in these Bills of Quantities is subject to remeasurement in order to ascertain the actual quantity executed for which payment will be made. All "Provisional" and other work liable to adjustment under this Contract shall left uncovered for a reasonable time to allow all measurements needed for such adjustment to be taken by the PROJECT MANAGER Immediately the work is ready for measuring, the Contractor shall give notice to the PROJECT MANAGER so directs uncover the work to enable all measurements to be taken and afterwards reinstate at his own expense.</p>	
	<i>Carried to collection</i>	

Item	Description	Amount KSh
A	<p><b>ALTERATIONS TO BILLS, PRICING, ETC.</b></p> <p>Any unauthorised alteration or qualification made to the text of the Bills of Quantities may cause the Tender to be disqualified and will in any case be ignored. The Contractor shall be deemed to have made allowance in his prices generally to cover any items against which no price has been inserted in the priced Bills of Quantities. All items of measured work shall be priced in detail and the Tenders containing Lump Sums to cover trades or groups of work must be broken down to show the price of each item before they will be accepted.</p>	
B	<p><b>BLASTING OPERATIONS</b></p> <p>Blasting will only be allowed with the express permission of the PROJECT MANAGER in writing. All blasting operations shall be carried out at the Contractor's sole risk and cost in accordance with any Government regulations in force for the time being, and any special regulations laid down by the PROJECT MANAGER governing the use and storage of explosives.</p>	
C	<p><b>MATERIALS ARISING FROM EXCAVATIONS</b></p> <p>Materials of any kind obtained from the excavations shall be the property of the Government. Unless the PROJECT MANAGER directs otherwise such materials shall be dealt with as provided in the Contract. Such materials shall only be used in the works, in substitution of materials which the Contractor would otherwise have had to supply with the written permission of the PROJECT MANAGER Should such permission be given, the Contractor shall make due allowance for the value of the materials so used at a price to be agreed.</p>	
D	<p><b>PROTECTION OF THE WORKS.</b></p> <p>Provide protection of the whole of the works contained in the Bills of Quantities,including casing , casing up, covering or such other means as may be necessary to avoid damage to the satisfaction of the PROJECT MANAGER and remove such protection when no longer required and make good any damage which may nevertheless have been done at completion free of cost to the Government.</p>	

E	<b>WORKS TO BE DELIVERED UP CLEAN</b>	Clean and flush all gutters, rainwater and waste pipes, manholes and drains, wash (except where such treatment might cause damage) and clean all floors, sanitary fittings, glass inside and outside and any other parts of the works and remove all marks, blemishes, stains and defects from joinery, fittings and decorated surfaces generally, polish door furniture and bright parts of metalwork and leave the whole of the buildings watertight, clean, perfect and fit for occupation to the approval of the PROJECT MANAGER.	
F	<b>GENERAL SPECIFICATION.</b>	For the full description of materials and workmanship, method of execution of the work and notes for pricing, the Contractor is referred to the Ministry of Roads and Public Works and Housing General Specification dated 1976 or any subsequent revision thereof which is issued as a separate document, and which shall be allowed in all respects unless it conflicts with the General Preliminaries, Trade Preambles or other items in these Bills of Quantities.	
<i>Carried to collection</i>			

Item	Description	Amount KSh
A	<p><b>TRAINING LEVY</b></p> <p>The Contractor's attention is drawn to the legal notice which requires payment by the Contractor of a Training Levy at the rate of 1/4 % of the Contract sum on all contracts of more than KShs. 1,000,000.00 in value.</p>	
B	<p><b>MATERIALS ON SITE</b></p> <p>All materials for incorporation in the works must be stored on or adjacent to the site before payment is effected unless specifically exempted by the PROJECT MANAGER. This includes the materials of the Main Contractor, Nominated Sub-Contractors and Nominated Suppliers.</p>	
C	<p><b>HOARDING</b></p> <p>The Contractor shall enclose the site or part of the works under construction with a hoarding 2400 mm high consisting of iron sheets on 100 x 50 mm timber posts firmly secured at 1800 mm centres with two 75 x 50 mm timber rails. The Contractor is in addition required to take all precautions necessary for the safe custody of the works, materials, plant, public and Employer's property on the site.</p> <p>The length of the Hoarding is Approximately 900 Metres</p>	
D	<p><b>CONTRACTOR'S SUPERINTENDENCE/SITE AGENT</b></p> <p>The Contractor shall constantly keep on the works a literate English speaking Agent or Representative, competent and experienced in the kind of work involved who shall give his whole experience in the kind of work involved and shall give his whole time to the superintendence of the works. Such Agent or Representative shall receive on behalf of the Contractor all directions and instructions from the Project Manager and such directions shall be deemed to have been given to the Contractor in accordance with the Conditions of Contract.</p>	

E	<p><b>SHOP DRAWINGS</b></p> <p>The contractor shall prepare for scrutiny and issue to the architect, copies of detailed shop drawings of all specialists works. The contractor shall immediately amend after the architect has checked the drawings and when approved shall issue to the architect four copies for general use. The scrutiny of these drawing shall be for general conformity including conformity with the works of others and to co-ordinate the contract work in pace. Such approvals shall not imply any further indication or correctness.</p>	
F	<p><b>PROTECTIVE CLOTHING</b></p> <p>The Contractor shall provide all protective or any other special clothing or equipment for their employees that may be necessary.</p> <p>These shall include, inter-alia, safety helmets, gloves, goggles, earmuffs, gumboots, steel toed boots, overalls, etc according to the type of work. The Contractor shall ensure that all safety and protective gear are worn by all staff on site at all times</p>	
	<i>Carried to collection</i>	

Item	Description	Amount KSh
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	<p style="text-align: center;"><b><u>COLLECTION</u></b></p> <p>Brought Forward From Page GP/1</p> <p>Brought Forward From Page GP/2</p> <p>Brought Forward From Page GP/3</p> <p>Brought Forward From Page GP/4</p> <p>Brought Forward From Page GP/5</p> <p>Brought Forward From Page GP/6</p> <p>Brought Forward From Page GP/7</p> <p>Brought Forward From Page GP/8</p> <p>Brought Forward From Page GP/9</p>	
	<p><b>TOTAL FOR GENERAL PRELIMINARIES CARRIED TO GRAND SUMMARY</b></p>	

BUILDER'S WORK  
GROUND FLOOR

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .1. - GROUND FLOOR</u></b>				
	<b><u>ELEMENT NO. 1 - SUBSTRUCTURES (ALL PROVISIONAL)</u></b>				
	<b>Notes.</b>				
	<b>Tenderer to allow for working space in his rates.</b>				
	<b>Reinforcement to BS 4449 / 4461:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b>				
	<b>All cement to be 32.5, or equal and approved to SE approval</b>				
	<b>Excavations including trimming sides and bottoms of excavations; spoil heaping on site; double handling of excavated materials; maintaining and supporting sides; and keeping free from water, mud and fallen material; with and including destruction of termites nests within site of works,take out and destroy queens, impregnate holes and tunnels with insecticide and fill voids with approved material</b>				
	<b>All excavations shall be measured net and no allowance shall be made for working space as per SMM D5(g)</b>				
	<u>Site clearance</u>				
A	Allow for site clearance including the removal of bushes, debris and cutting down small and medium size trees girth not exceeding 600mm and grubbing up roots and carting away arisings before commencement of works	SM	2,500		
B	Excavate oversite average 200mm deep to remove vegetable soil and and wheel and Load,wheel and deposit arisings away from site	SM	2,500		
	<u>Cut down existing trees, grub up all roots and cart away and fill in voids with approved selected material well rammed and consolidated.</u>				
	<u>Tenderer to allow related costs for approvals from County Councils</u>				
C	Cut down trees : over 600 but not exceeding 900mm girth	NO	5		
D	Trees 1200 - 1500mm girth.	NO	5		
E	Trees 1500 - 1800mm girth.	NO	10		
	<u>Excavations</u>				
E	Excavate to reduce level not exceeding 1.50 metres deep	CM	600		
F	Excavate for strip footing not exceeding 1.50 metres deep from reduced level	CM	556		
G	Excavate for bases not exceeding 1.50 metres deep from reduced level	CM	939		
F	Excavate for lift bases not exceeding 1.50 metres deep from reduced level	CM	56		
G	Excavate for lift bases not exceeding 1.50 metres deep from reduced level	CM	34		
H	Extra over excavations for excavating in rock irrespective of class	CM	1,748		
	<u>Disposal</u>				
J	Load,wheel and deposit surplus excavated material away from site to an approved county government dumping site	CM	586		
K	Excavated Material: Return, fill and ram selected excavated material around foundations. <u>Disposal of Water</u>	CM	570		
L	Allow for keeping excavations free from any surface water by pumping or by any other means.	ITEM			
	<u>Planking and Strutting</u>				
M		ITEM			

Labour and Materials: To maintain and support Excavation sides; and keeping free from mud and fallen material				
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<u>Hardcore Filling</u> 300mm thick hardcore bed : hand packed : compacted in layers not exceeding 150mm thick : to the satisfaction of the Structural Engineer:	SM	1,638		
B	<u>Blinding</u> 50mm Thick (Average) quarry dust or "equal and approved" blinding to surfaces of hardcore	SM	1638		
C	<u>Filling</u> Providing & laying Approved Fill Material (Natural Gravel), compacted in uniform layers of 200 - 300mm thick with motor grader on a prepared subgrade, compacting with vibratory rollers till 95% of the maximum dry density. Including tests on completion of each GSB layer. The strength of each GSB layer shall be evaluated by conducting CBR load test for obtaining a CBR value greater than 5 as per AASHTO T99	CM	1,396		
D	<u>Thickening</u> Extra Over in hardcore for forming sinkings average 925mm wide x 300mm deep	LM	6		
E	<u>Anti - termite to treatment</u> Chemical anti-termite treatment, as " <b>Premise 200sc.</b> " or other equal and approved anti termite insecticide; applied strictly in accordance with manufacturer's printed instructions and <b>INCLUDING</b> providing a <b>TEN</b> year guarantee period,to surfaces of hardcore and vertical sides of excavated surfaces	SM	3,738		
F	<u>Damp-proof membrane</u> 1,000 gauge polythene or other equal and approved damp-proof membrane, laid over blinded hardcore (measured separately) with 300mm side and end laps (measured nett-allow for laps)	SM	1,638		
G	<u>Mass concrete class 15 (1.4.8) in:-</u> 50mm thick blinding- Strip footing	SM	371		
H	50mm thick blinding - Column bases	SM	626		
J	50mm thick blinding - Lift Base	SM	97		
K	<u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size:-</u> Strip foundation	CM	111		
L	Column bases	CM	370		
M	Lift bases	CM	59		
N	Stub Columns	CM	13		
P	Steps	CM	6		



Q	150mm thick surface bed	SM	1,638	
R	150mm thick sloping ramp complete with treating surface of unset concrete; to produce ribbed, herring bone pattern grooves diagonal to traffic flow	SM	19	
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i><u>Vibrated reinforced concrete class 25, mix (1:1:2) with minimum cube strength of 21N/mm<sup>2</sup> at 7days and 30N/mm<sup>2</sup> at 28days with 20mm maximum aggregate size; <b>INCLUDING masterseal 501WA waterproofing admixture or equal and approved in concrete mix to Manufacturer's detailed specification and S.E's approval</b></u></i>				
A	200 mm thick lift wall - Sub	SM	92		
B	200 mm thick lift wall - Super	SM	142		
	<i><u>Mineral APP modified roofing membrane or other equal and approved with surface finish weighing 4kg/sm; laid on primer with torch-on process from an approved manufacturer; finish to horizontal terraces to falls and crossfalls : all executed by a specialist under 10 years guarantee : as described</u></i>				
C	Finish to concrete wall internally	SM	190		
	<i><u>Light weight cement and sand (1:4) screeds : on concrete : to</u></i>				
D	25 mm Thick screed laid to receive waterproofing membranes (m.s)	SM	190		
	<b>Reinforcement, as described:-[PROVISIONAL]</b>				
	<i><u>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm<sup>2</sup>; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u></i>				
E	25 mm Diameter bars	KG	8,978		
F	20 mm Diameter bars	KG	3,453		
G	16 mm Diameter bars	KG	8,287		
H	12 mm Diameter bars	KG	15,883		
J	10mm Diameter bars	KG	20,717		
K	8mm Diameter bars	KG	11,740		
	<i><u>Steel mesh fabric reinforcement to BS 4483 : including setting in concrete with 300mm laps( measured nett : no allowance for laps)</u></i>				
L	Mesh reference A142 weighing 2.22 kilogrammes per square metre in floor beds	SM	1,638		
	<i><u>Sawn formwork as described to:-</u></i>				
M	Vertical sides of column base	SM	362		
N	Vertical sides of strip footing	SM	315		
P	Ditto to stub columns	SM	150		
Q	Ditto to lift walls	SM	469		

R	Edge of slab, not exceeding 150mm girth	LM	250		
S	Edge of ramps, not exceeding 150mm girth	LM	75		
T	Step stringers over 225mm but not exceeding 300mm wide	LM	14		
U	Step risers 150mm high	LM	92		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<p><u>Natural hard approved quarry stone walling with a crushing strength of 7 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:4) mortar, reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in:</u></p> <p>200mm Thick walling - foundation walling</p> <p><u>Expansion joint</u></p>	SM	1,050		
B	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	35		
C	Mastic sealant or other equal and approved filler	LM	23		
D	<p><u>Damp-proof courses, as described, to walls</u></p> <p>200mm wide</p>	LM	270		
E	<p>150mm wide</p> <p><u>Splash Apron</u></p>	LM	30		
F	Treat surface with anti termite	SM	325		
G	Provide, lay and compact 100mm thick approved murrum base	SM	325		
H	600x600x50mm PCC slabs on well compacted surface and 50mm thick stone dust blinding and cement sand mix on joints (1:3)	SM	325		
J	<p><b>Plinth</b></p> <p><u>Two coat external render cement sand (1:4) with a woodfloat</u></p> <p>12mm Thick to plinths</p>	SM	125		
K	<p><u>Two coats black bitumastic paint on:</u></p> <p>Rendered walls</p>	SM	125		

<b>Carried to Collection</b>			
<b><u>COLLECTION</u></b>			
From Page GF/1			
From Page GF/2			
From Page GF/3			
From Above			
<b><u>ELEMENT NO. 1</u></b> <b><u>SUBSTRUCTURES</u></b>	<b>Carried to the</b> <b>Main summary</b>		

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .1. - GROUND FLOOR</u></b>				
	<b><u>ELEMENT NO 2- REINFORCED CONCRETE FRAME</u></b>				
	<b>Reinforcement to BS 4449 / 4461:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b>				
	<b>All cement to be 32.5, or equal and approved to SE approval</b>				
	<i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size;-</u></i>				
A	Columns	CM	25		
B	Beams	CM	70		
C	150mm thick suspended slab	SM	112		
D	200mm thick lift shaft walls	SM	142		
E	200mm thick X Ray Concrete walls	SM	49		
	<i><u>Hollow block suspended composite slabs; all to Structural Engineer's detail</u></i>				
F	300 mm Thick slabs comprising 375 x 225 x 300 mm deep concrete block in concrete class 25/20 infilling at 500 mm centres ; 150mm solid concrete ribs; 75mm concrete class 25/20 toppings : measured overall including solid margins	SM	1,470		
	<i><u>Steel mesh fabric reinforcement to BS 4483 : including setting in concrete with 300mm laps( measured nett : no allowance for laps)</u></i>				

G	Mesh reference A142 weighing 2.22 kilogrammes per square metre in floor beds	SM	1,610		
	<b>Reinforcement, as described:-[PROVISIONAL]</b>				
	<u>Reinforcement to BS 4449:1997, Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm<sup>2</sup>; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>				
H	25 mm Diameter bars	KG	5,894		
J	20 mm Diameter bars	KG	2,267		
K	16 mm Diameter bars	KG	5,441		
L	12 mm Diameter bars	KG	10,428		
M	10mm Diameter bars	KG	13,602		
N	8mm Diameter bars	KG	7,708		
	<u>Expansion joint</u>				
P	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	69		
Q	Mastic sealant or other equal and approved filler	LM	23		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Fairface formwork as described to:-</u>				
A	Sides of columns	SM	311		
B	Sides and soffits of beams	SM	705		
C	Sides of lift walls	SM	284		
C	Sides of concrete walls	SM	98		
D	Soffits of suspended slabs	SM	1,722		
E	Edges of slab not exceeding 150mm girth	LM	80		
F	Edges of slab over 300mm but not exceeding 375mm girth	LM	343		
	<u>Sleeves (Provisional)</u>				
G	100mm diameter UPVC sleeves in 175/300mm thick slabs	NO	200		

	<p><b>Carried to Collection</b></p> <p><b><u>COLLECTION</u></b></p> <p>From Page GF/5</p> <p>From Above</p>			
	<p><b>ELEMENT NO. 2</b></p> <p><b><u>REINFORCED CONCRETE FRAME</u></b></p>	<p><b>Carried to</b></p> <p><b>Main Summary</b></p>		

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO .1. - GROUND FLOOR</u></b></p> <p><b><u>ELEMENT NO. 3 STAIRCASE CONSTRUCTION &amp; FINISHES</u></b></p> <p><i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size:-</u></i></p>				
A	Base	CM	3		
B	Staircase	CM	13		
C	Ramp beams	CM	11		
D	175mm thick staircase landing	SM	24		

E	175mm thick sloping ramp  <b>Reinforcement, as described:-[PROVISIONAL]</b>  <u>Reinforcement to BS 4449:1997, Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm<sup>2</sup>; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>	SM	106		
F	12 mm Diameter bars	KG	1030		
G	10mm Diameter bars	KG	2575		
H	8mm Diameter bars  <u>Fairface formwork as described to:-</u>	KG	1545		
J	Vertical Sides of bases	SM	2		
K	Vertical Sides and soffits of beams	SM	134		
L	Soffits of staircase landing	SM	24		
M	Sloping soffits of staircase	SM	45		
N	Sloping soffits of ramp	SM	106		
P	Edges of staircase landing 150 - 225mm girth	LM	48		
Q	Staircase stringers over 225mm but not exceeding 300mm wide	LM	54		
R	Staircase risers 150mm high	LM	271		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>FINISHES</u></b>  <u>12mm thick ( minimum ) two coat cement, sand and lime plaster (1:1:6) with PVC edge and corner strip as described to:-</u>				
A	Soffits of staircase landings	SM	24		
B	Sloping soffits of staircase	SM	45		
C	Sloping soffits of ramp	SM	106		

D	Vertical sides and soffits of beams  <i>Cement and sand (1:3) screeds, backings, beds etc</i>	SM	134		
E	30mm thick screed to Landing finished to receive terazzo (m.s)	SM	24		
F	300mm wide x 30mm thick treads to receive terazzo (m.s)	LM	245		
G	150mm high x 20mm thick Risers to receive terazzo (m.s)	LM	271		
H	Treating surface of unset concrete; to produce ribbed, herring bone pattern grooves diagonal to traffic flow : to Ramps  <i>Terazzo floor finish</i>	SM	106		
J	20mm thick monolithic floor finish from approved sources; Approved colour; cement and marble chippings (1:2); complete with and including plastic dividing strips set flush with paving; Washed and Machine Polished; to cement and sand screed backing (m/s)	SM	130		
K	20 x 300mm wide paving to treads	LM	245		
L	20 x 150mm high paving to risers	LM	271		
M	10 x 150mm high skirting	LM	27		
N	Ditto to profile of treads and risers	LM	40		
P	Extra over treads for non-slip caborandum strip	LM	245		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Painting and decorating</i>				
	<i>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</i>				

A	Plastered soffits of landings and staircase/ramp  <u>Balustrading and Railing - (Provisional)</u>  <u>Staircase railing; In Mild Steel; one coat red oxide primer; three coats enamel gloss paintwork to metal surfaces</u>  1100mm high balustrading comprising 50mm diameter mild steel handrail welded onto and including 40mm diameter mild steel vertical balusters:	SM	310		
B	1100mm high balusters at 900mm centres: 2No. 30 x 3mm mild steel flat intermediate rails infilled with and including 25mm diameter 2tier mild steel intermediate balusters at 900mm centres (Refer to architect's details)	LM	26		
C	Ditto to ramp  <u>60mm diameter mildsteel handrail fixed to masonry wall solid balustrade using 200mm long 38mm diameter mildsteel brackets at 600mm centres.</u>	LM	92		
D	Handrail fixed to the wall	LM	34		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page GF/7					
Carried from page GF/8					
Carried from Above					
<b><u>ELEMENT NO. 3</u></b>		<b>Carried to the</b>			
<b>STAIRCASE CONSTRUCTION &amp; FINISHES</b>		<b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
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<b>SECTION NO .1. - GROUND FLOOR</b>					
<b>ELEMENT NO. 4 - WALLING</b>					
	<u>Precast concrete class 20(12mm aggregate) including forwork , finishing fair face on all xposed surfaces,and bedding and jointing in cement sand (1:3) mortar</u>				
A	200 x 200mm lintol, reinforced with and including four 12mm diameter mild steel rods and 6mm stirrups at 200mm centers	LM	80		
	<u>External walling</u>				
	<u>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u>				
B	200mm thick walling externally	SM	466		
	<u>Internal walling</u>				
	<u>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u>				
C	200mm thick walling internally	SM	939		
D	150mm thick walling internally	SM	110		
E	100mm thick walling internally	SM	37		
	<u>Gypsum / Glazed Dry Wall Partition</u>				
	<u>The following in heavy duty powder coated aluminium framing of approved colour and beadings to BS 10 BS15; with channels on both sides at 1000mm centres vertically:-</u>				
	<u>150mm Thick composite partitions comprising 80x40x2.1mm thick frames supported by 75 x 50 wrot cypress timber frames, infill with 20mm thick laminated mahogany veneered MDF boarding and 20mm thick Gypsum (On both sides) 6mm clear sheet glass fixed with Aluminium glazing beads(m.s) in panes 1.00 - 1.50 SM; complete with aluminium beading; silicon filling; all assembled and fixed together as free-standing partition; All to Architects details</u>				
F	2,700mm Overall Height (Note; - 1,500mm MDF Height, 1,200mm Glazing Height)	SM	52		
	<u>Armorgard" frosted or other equal and decorative approved film; 60" clear with narrow blue strips at edges applied to glass(m/s) to</u>				
G	Partitions ; internally	SM	29		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<p><i>Aluminium Curtain Walling</i></p> <p><i>Supply, assemble and fix the following approved powder coated Aluminium structure, fabricated from approved composite extruded powder coated heavy duty approved standard hollow sections 75 x 50mm (minimum 2mm thick) , including 6mm thick clear laminated glazing secured on framing with approved with glazing strips and glazing beading including waterproofing all joints using silicon sealing compounds and approved Aluminium brackets; fixing with screws; building in lugs to jambs, plugging and screwing head and cill ;sealing with mastic, adjusting on completion and all necessary ironmongery such as fasters, stays, hinges and sliding rails to Architects details and approval and to match existing</i></p> <p>Overall structure in varying sizes</p>	SM	145		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page GF/10					
Carried from Above					

<b>ELEMENT NO. 4 WALLING</b>	<b>Carried to the Main summary</b>				
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ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .1. - GROUND FLOOR</u></b>				
	<b><u>ELEMENT NO. 5 - EXTERNAL FINISHES</u></b>				
	<b><u>External Floor finishes</u></b>				
	<i>Cement and sand (1:3) screeds, backings, beds etc</i>				
A	30mm thick bed finished to receive porcelein tiles (m.s)	SM	130		
B	300mm wide x 30mm thick treads to receive porcelein tiles (m.s)	LM	18		
C	150mm high x 20mm thick Risers to receive porcelein tiles (m.s)	LM	21		
	<i><u>Supply &amp; Fix tiles (To Architect's Approval) in regular or other approved pattern; to floor on prepared screed (m.s); with proprietary adhesive; jointed and pointed in matching coloured proprietary grouting; aluminium threshold ,including pvc spacers and expansion joint as necessary: all to Architect's approval.</u></i>				
D	600 x 600 x 10mm thick Matt Porcelein Tiles (As per Project Manager & Client's Selection )	SM	130		
E	Ditto to 300mm wide treads, Complete with 2No. grooves	LM	18		
F	Ditto to 150mm high risers	LM	21		
	<b><u>External wall finishes</u></b>				
	<i><u>15mm (minimum) two coat lime render including skimming; Plaster; 9mm thick first coat of cement and sand (1:6); 3mm second coat of cement and lime putty (1:10); steel trowelled smooth; complete with wire gauze anti-crack mechanism at the intersection of masonry walling and concrete beams as described to:-</u></i>				
G	Concrete/masonry surfaces to receive paint (m.s)	SM	878		
	<i><u>In Mild Steel;one coat red oxide primer; three coats enamel gloss paintwork to metal surfaces</u></i>				

H	1100mm high balustrading comprising 50mm diameter mild steel handrail welded onto and including 40mm diameter mild steel vertical balusters: 1100mm high balusters at 900mm centres: 2No. 30 x 3mm mild steel flat intermediate rails infilled with and including 25mm diameter 2tier mild steel intermediate balusters at 900mm centres (Refer to architect's details)	LM	11	
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>Ceiling finishes</u></b>				
	<u>12mm Thick (minimum) two coat lime plaster as described to:-</u>				
A	Concrete soffits	SM	30		
	<u>Painting and decorating</u>				
	<u>Skim, Prepare and apply three coats exterior quality silicon based external antifungal paint(including skimming): colour to approval by application strictly in accordance with suppliers printed instructions</u>				
B	Plastered soffits	SM	30		
	<u>Skim, Prepare and apply three coats exterior quality silicon based external antifungal paint(including skimming) as "Ruff n Tuff" or equal and approved: colour to approval by application strictly in accordance with suppliers printed instructions</u>				
C	Plastered vertical wall/concrete surfaces	SM	878		

<b>Total Carried to Collection</b>				
<b><u>COLLECTION</u></b>				
Carried from page GF/12				
Carried from Above				
<b>ELEMENT NO. 5 EXTERNAL FINISHES</b>		<b>Carried to the Main summary</b>		

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .1. - GROUND FLOOR</u></b>					
<b><u>ELEMENT NO. 6 - INTERNAL FINISHES</u></b>					
<b><u>Floor finishes</u></b>					
<i>Cement and sand (1:3) screeds, backings, beds etc</i>					
A	30mm thick bed finished to receive porcelein tiles (m.s)	SM	449		
B	30mm thick bed finished to receive ceramic tiles (m.s)	SM	121		
C	30mm thick bed finished to receive terazzo (m.s)	SM	992		
<i>Supply &amp; Fix tiles (To Architect's Approval) in regular or other approved pattern; to floor on prepared screed (m.s); with proprietary adhesive; jointed and pointed in matching coloured proprietary grouting; aluminium threshold including pvc spacers and expansion joint as necessary: all to Architect's approval.</i>					

D	600 x 600 x 10mm thick Matt Porcelain Tiles ( <i>As per Project Manager &amp; Client's Selection</i> )	SM	449		
E	Ditto to 100mm high skirtings	LM	78		
F	400 x 400 x 10mm thick Matt Ceramic Tiles ( <i>As per Project Manager &amp; Client's Selection</i> )	SM	121		
G	Ditto to 100mm high skirtings  <u>Terazzo floor finish</u>	LM	31		
H	20mm thick monolithic floor finish from approved sources; Approved colour; cement and marble chippings (1:2); complete with and including plastic dividing strips set flush with paving; Washed and Machine Polished; to cement and sand screed backing (m/s)	SM	992		
J	Ditto to 100mm high skirtings	LM	178		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u><b>Internal Wall finishes</b></u>				
	<u>12mm (minimum) two coat lime plaster including skimming; Plaster; 9mm thick first coat of cement and sand (1:6); 3mm second coat of cement and lime putty (1:10); steel trowelled smooth; complete with wire gauze anti-crack mechanism at the intersection of masonry walling and concrete beams as described to:-</u>				
A	Concrete/masonry surfaces internally generally  <u>Cement and sand (1:4) backings etc</u>	SM	3,067		
B	15mm backing finished to receive ceramic wall tiles (m.s)	SM	245		
C	Ditto to receive granite wall tiles (m.s)	SM	21		

D	Ditto to 400mm wide architrave to receive granite (m.s)	LM	22		
	<u>Supply &amp; Fix Approved tiles to Architect's selection &amp; approval to floor on prepared backing (m.s) in approved patterns as directed by the Architect; with proprietary adhesive; jointed and pointed in matching coloured proprietary anti-fungal waterproof grouting; aluminium threshold &amp; corner strips, including pvc spacers and expansion joint as necessary: all to Architect's approval.</u>				
E	200 x 300 x 10mm thick Matt Ceramic Tiles (As per Project Manager & Client's Selection)	SM	245		
F	300 x 600 x 25mm thick natural granite as Black Galaxy or equal and approved	SM	21		
G	400mm wide Granite to lift architrave; with mitred and rounded edges	LM	22		
	<b><u>Ceiling finishes</u></b>				
	<u>12mm Thick (minimum) two coat lime plaster as described to:-</u>				
H	Concrete soffits	SM	992		
	<u>Supply &amp; fixing of MR Grade Gypsum Board false ceiling including vertical drops, coves, boxings &amp; fascias using 12.5mm Gypsum Board Sheets MR Grade from Gyproc or equivalent as per design. complete with Aluminium suspension Tee system and all specifications as aforementioned in 12.5mm thick MR Boards; to</u>				
J	12 mm thick ceiling; horizontal	SM	449		
	<u>Suspended acoustic ceiling as "Armstrong" or any other equal and approved; on and including proprietary pressed metal brander system; measured over light fittings; including all cutting and trimming to light fittings; columns curved surfaces; finish to horizontal ceilings; edge trims, flush jointing, trap doors and shadow gaps as necessary</u>				
K	600 x 600mm ; 15mm thick Horizontal Ceiling Lining	SM	121		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<b><u>Cornice</u></b> 25 x 25mm high moulded gypsum cornice; with one labour  <u>Painting and decorating</u>  <u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>	LM	256		
B	Plastered vertical wall/concrete surfaces	SM	3,067		
C	Plastered soffits	SM	992		

D	Gypsum Ceiling Soffits	SM	449		
	<i>Prepare and apply three coats polyurethane clear polish to woodwork</i>				
E	Surfaces not exceeding 100mm girth	LM	256		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page GF/14				
	Carried from page GF/15				
	Carried from Above				
	<b>ELEMENT NO. 6 INTERNAL FINISHES</b>				<b>Carried to the Main summary</b>

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .1. - GROUND FLOOR</u></b>				
	<b><u>ELEMENT NO. 7 - WINDOWS [REFER TO WINDOW SCHEDULES]</u></b>				
	<b><u>General Notes:</u></b>				
1	All aluminium sections to be standard booth manufacturing sections only				
2	Colour to be decided later				
3	All accessories to be powdered to match frame and <b>samples of all to be approved in the first instance.</b>				
4	All flush bolts to be minimum 200mm long, chrome plated of approved quality.				



5	All corner glazing to be butt jointed with silicon sealant				
6	All bathroom windows to be glazed in opaque laminated glass. Where possible, the BQ has shown these as washroom windows; but it will be the tenderer's responsibility to crosscheck with the Architect's drawings as to the accuracy of this.  <u>Aluminium windows[Refer to theArchitect's drawing &amp; detail]</u>  <u>Supply, assemble and fix the following approved powder coated Aluminium framed windows, fabricated from approved composite extruded powder coated heavy duty approved standard hollow sections 75 x 50mm (minimum 2mm thick) , including 6mm thick clear laminated glazing secured on framing with approved with glazing strips and glazing beading including waterproofing all joints using silicon sealing compounds and approved Aluminium brackets; fixing with screws; building in lugs to jambs, plugging and screwing head and cill ;sealing with mastic, adjusting on completion and all necessary ironmongery such as fasteners, stays, hinges and sliding rails to Architects details and approval and to match existing</u>				
A	Window Overall size 6,500 x 1,500mm high	NO	1		
B	Window Overall size 6,200 x 1,500mm high	NO	3		
C	Window Overall size 5,800 x 1,500mm high	NO	1		
D	Window Overall size 5,400 x 1,500mm high	NO	4		
E	Window Overall size 4,500 x 1,500mm high	NO	2		
F	Window Overall size 3,800 x 1,500mm high  <u>Steel casement windows[Refer to theArchitect's drawing &amp; detail]</u>  <u>Purpose made steel casement windows made from heavy duty frame 3mm thick with burglar proof bars, PV units with mosquito gauze and brass iron mongery, including fasteners and stays fixed to masonry jambs and concrete head and cills, with mastic pointing all round; including all welding and priming with red oxide before fixing</u>	NO	1		
G	Window Overall size 4,500 x 1,200mm high	NO	1		
H	Window Overall size 4,000 x 900mm high	NO	1		
J	Window Overall size 3,400 x 900mm high	NO	1		
K	Window Overall size 2,500 x 1,200mm high	NO	8		
L	Window Overall size 2,000 x 1,200mm high	NO	2		
M	Window Overall size 1,800 x 1,200mm high	NO	1		
N	Window Overall size 1,500 x 1,200mm high	NO	2		
P	Window Overall size 1,200 x 1,200mm high	NO	5		
Q	Window Overall size 4,500 x 600mm high	NO	1		
R	Window Overall size 1,200 x 600mm high	NO	3		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<u>Clear Sheet Glass</u> 4mm Glass and glazing to metal with putty in panes, girth - 0.10 to 0.50 square meters	SM	61		

B	Ditto but Opaque glass <u>Window cill</u> <u>Precast concrete class 20 (12mm,aggregate), including formwork, finishing fair face on all exposed surfaces, hoisting and placing in position, bedding and jointing in cement and sand (1:3) mortar</u>	SM	5		
C	275 x 75mm thick window cill once rebated; 20 x 20mm splaged drip and jointing in cement and sand 1:3 mortar <u>Burglar proofing</u>	LM	124		
D	Supply and fix decorate mild steel grilles in 50 x 50 x 3mm thick square hollow sections external framework and infilled with 25 x 25 x3mm SHS and 25 x 8mm thick flat bars all cut and welded together in approved decorative patterns including priming with red lead oxide after fabrication <u>Curtain rod</u>	SM	51		
E	25mm diameter approved wrought iron front and rear rod curtain rail cut to lengths complete with fixings, runners and end stops and screwed or plugged to wall in accordance with manufacturer's specification. <u>In Prime Grade Wrot Cypress</u>	LM	109		
F	175 x 25mm window board, plugged, screwed and pelleted	LM	124		
G	25 x 25mm quadrant beading; plugged <u>Finishing to reveals</u> <u>15 mm cement and sand (1:3) render,finished with woodfloat to:-</u>	LM	124		
H	Concrete or masonry surfaces externally <u>12mm (minimum) two coat lime plaster as described to</u>	SM	32		
J	Concrete or masonry surfaces internally <b><u>Painting &amp; derocation</u></b> <u>Prepare and apply one undercoat and two finishing coats first quality weatheguard emulsion paint on:-</u>	SM	32		
K	Concrete or masonry surfaces externally <u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>	SM	32		
L	Plastered walls internally <u>Prepare and apply three coats polyurethane clear on woodwork</u>	SM	32		
M	Window board/Beading over 100mm but not exceeding 200mm girth	LM	124		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page GF/17					
Carried from Above					
<b><u>ELEMENT NO. 7</u></b> <b><u>WINDOWS</u></b>					
<b>Carried to the Main summary</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
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<b><u>SECTION NO .1. - GROUND FLOOR</u></b>			
<b><u>ELEMENT NO. 8 - DOORS [REFER ALL TO ARCHITECT'S SCHEDULES]</u></b>			
<u>Supply and fix hardwood Frames with and including supply of low expansion polyurethane foam ; in Wrot mahogany or equivalent hardwood and approved (stained to match the colour of veneer):</u>			
A	Ex 50 x 200mm Frame with one labour and 10mm groove to detail; plugged	LM	482
B	Ditto Transome	LM	83
C	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	963
D	Ex 25 x 25mm quadrant	LM	963
<b>Solid timber doors</b>			
<u>50mm thick solid core Mahogany panelled doors to B.S 459: part 2 faced both sides with 6mm mahogany plywood and lipped on all edges in hardwood; including grooves per detail</u>			
E	Double Door Overall size 1,800 x 2,400mm high	NO	1
F	Ditto Overall size 1,500 x 2,400mm high	NO	6
G	Ditto Overall size 1,200 x 2,400mm high	NO	7
H	Single Leaf Door Overall size 900 x 2400mm high (see Architect's details)	NO	4
<u>45mm thick semi solid core flush door to B.S 459: part 2 faced both sides faced both sides with 3mm veneer and lipped on all edges in hardwood, all as per Architects details</u>			
J	Double Door Overall size 1,200 x 2,400mm high	NO	18
K	Single Leaf Door size 900mm x 2400mm high	NO	29
L	Single Leaf Door size 800mm x 2400mm high	NO	18
<b>Fire Door; One hour rated</b>			
<u>Supply and Fix the following purpose made door with a 1.25mm thick galvanised steel sheet pressed formed to provide a 46mm thick fully flush double skin panel with lock seam joints at stile edges and filled with reinforcement at top, bottom and stile surrounds. Complete with Stainless steel ball hinges, door lock of approved make with double through locking bolt operated with one side key and other side thumb turn complete in all respect. Stainless steel cylinder Door closer include provision for required iron mongery and finished with zinc phosphate storing primer &amp; polyurethane paint with wooden lamination finish (Refer to attached door schedules)</u>			
M		NO	2

Ditto but 1800 x 2400mm high double leaf door <b>INCLUDING</b> Frames; All to Mechanical Engineer's Approval				
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<p><b>Steel Casement Doors</b></p> <p><i>Supply, assemble and fix the following purposemade heavy duty steel door complete with fixing hugs on, pin type hinges including all necessary cutting and all ironmongery as Kasmetal or equal and approved including all welding and priming with red oxide before fixing (Refer to attached door schedules)</i></p> <p>Double Door Overall Size 1,800 x 2,400mm high comprising of 2No. Equal openable door leaves size 1,200 x 2400mm high; Complete with 100 x 25 x 2mm RHS framing all round; 50 x 25 x 2mm RHS middle rails; infilled with 5mm thick glazing complete with putty</p> <p><b>Aluminium framed MDF/Glass door; complete with associated iron mongery - i.e Hinges, rubber stopper, door closure and Aluminium Handles</b></p> <p><i>100mm Thick composite partitions comprising 80x40x2.1mm thick frames, infill with 9mm thick laminated mahoany veneered MDF boarding (On both sides) 6mm clear sheet glass fixed with Aluminium glazing beads(m.s) in panes 1.00 - 1.50 SM; complete with aluminium beading; silicon filling; all assembled and fixed together as free-standing partition; All to Architects details</i></p>	NO	2		
B	Double Door Overall 1,800 x 2400mm high	NO	3		
C	<p>Ditto but sliding on both sides Overall 2,400 x 2400mm high - Complete with sliding gear</p> <p><i>Painting and decorating</i></p> <p><i>Aluminium primer or other equal and approved wood primer before fixing: -</i></p>	NO	1		
D	Frames; over 200mm but not exceeding 300mm girth	LM	83		
E	Surfaces over 300mm girth	SM	164		
	<i>Prepare and apply approved stain, sanding sealer and three coats of 'Crown Paints Solo' or other equal and approved varnish to :</i>				
F	General timber surfaces	SM	399		
G	Frames; over 200mm but not exceeding 300mm girth	LM	83		

H	Surfaces over 300mm girth	SM	164		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Ironmongery</u>				
	<u>Supply and fix the following ironmongery as approved with matching screws:-</u>				
	<u>NOTE; Tenderer to refer to the drawing &amp; schedule for iron mongery - All iron mongery to be per Architect's Approval [Tenderer to Provide a Sample board]</u>				
	<u>To softwood, hardwood or the like fixing with screw:</u>				
A	Brass ball bearing hinges; 100 mm	PRS.	166.0		
B	Three lever mortice lock complete with furniture	NO	36		
C	Two lever mortice lock complete with furniture	NO	47		
D	Coat & hat hook - Rubber tipped	NO	18		
	<u>To concrete or blockwork; fixing with bolts; plugging</u>				
E	Rubber door stop	NO	111		

	<p><b>Total Carried to Collection</b></p> <p><b><u>COLLECTION</u></b></p> <p>Carried from page GF/19</p> <p>Carried from page GF/20</p> <p>Carried from Above</p>			
	<p><b><u>ELEMENT NO. 8</u></b></p> <p><b>DOORS</b></p>	<p>Carried to the</p> <p>Main summary</p>		

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO .1. - GROUND FLOOR</u></b></p> <p><b><u>ELEMENT NO. 9- JOINERY &amp; FITTINGS</u></b></p> <p><i><u>Worktops</u></i></p> <p><i><u>600mm wide tops; 75mm thick reinforced concrete (class 25/20 mm aggregate) suspended worktop and fascia; Single layer fabric mesh reinforcement to BS 4483 ref. A142 weighing ; 2.22 kg per square metre fixed in suspended worktop; Sawn formwork to horizontal soffits and sides of worktop and vertical edges of suspended slab; build end of 75 mm thick suspended concrete slab in masonry walling, 100 mm thick; finished with 20mm thick granite to top. edges, 300mm high fascia and plaster and paint to soffits</u></i></p>				
A	11,000mm long; allow for forming holes for sink (m.s)	NO	1		
B	Ditto 7,000mm long	NO	1		

C	Ditto 5,000mm long  <i>The following in blockboard shelf, sides dividers, back etc stained moulded oak veneered blockboard drawers and doors, complete with malpha hinges viro make cylinder lock, handles and eggshell paint</i>	NO	1		
D	Low level cupboard size 8,500 x 600 x 900mm high	NO	1		
E	High level cupboard size 8,500 x 300 x 600mm high	NO	1		
<b><u>ELEMENT NO. 9</u></b> <b>JOINERY FITTINGS</b>		<b>Carried to the</b> <b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .1. - GROUND FLOOR</u></b>  <b><u>ELEMENT NO. 10- BUILDER'S WORK IN CONNECTION WITH SPECIALIST SERVICES</u></b>  <i>Inspect all architectural, mechanical, electrical and structural drawings as provided; allow for all builders work associated with all the specialist works</i>				

A	Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works	ITEM			
	<b>ELEMENT NO. 10</b> <b>BUILDER'S WORK IN CONNECTION</b>	<b>Carried to the</b> <b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .1. - GROUND FLOOR</u></b> <b><u>MAIN SUMMARY</u></b>				



1	SUBSTRUCTURES	GF/4	
2	REINFORCED CONCRETE FRAME	GF/6	
3	STAIRCASE CONSTRUCTION & FINISHES	GF/9	
4	WALLING	GF/11	
5	EXTERNAL FINISHES	GF/13	
6	INTERNAL FINISHES	GF/16	
7	WINDOWS	GF/18	
8	DOORS	GF/21	
9	JOINERY FITTINGS	GF/22	
10	BUILDER'S WORK IN CONNECTION	GF/23	
<p><b><u>SECTION NO. 2 - GROUND FLOOR</u></b>      <b><u>CARRIED TO</u></b></p> <p><b><u>TOTAL AMOUNT</u></b>                              <b><u>GRAND SUMMARY</u></b></p>			
		<b>KSHS</b>	

BUILDER'S WORK  
FIRST FLOOR

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .2. - FIRST FLOOR</u></b>					
<b><u>ELEMENT NO 1- REINFORCED CONCRETE FRAME</u></b>					
<b>Reinforcement to BS 4449 / 4461:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b>					
<b>All cement to be 32.5, or equal and approved to SE approval</b>					
<i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size:-</u></i>					
A	Columns	CM	25		
B	Beams	CM	74		
C	150mm thick suspended slab	SM	342		
D	200mm thick lift shaft walls	SM	142		
<i><u>Hollow block suspended composite slabs; all to Structural Engineer's detail</u></i>					
E	400 mm Thick slabs comprising 380 x 250 x 325 mm deep concrete block in concrete class 25/20 infilling at 500 mm centres ; 150mm solid concrete ribs; 75mm concrete class 25/20 toppings : measured overall including solid margins	SM	1,042		
<i><u>Steel mesh fabric reinforcement to BS 4483 : including setting in concrete with 300mm laps( measured nett : no allowance for laps)</u></i>					
F	Mesh reference A142 weighing 2.22 kilogrammes per square metre in floor beds	SM	1,209		
<b>Reinforcement, as described:-[PROVISIONAL]</b>					
<i><u>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u></i>					
G	25 mm Diameter bars	KG	5,728		
H	20 mm Diameter bars	KG	2,203		
J	16 mm Diameter bars	KG	5,288		
K	12 mm Diameter bars	KG	10,135		
L	10mm Diameter bars	KG	13,219		
M	8mm Diameter bars	KG	7,491		
<i><u>Expansion joint</u></i>					
N	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	69		
P		LM	23		

Mastic sealant or other equal and approved filler				
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Fairface formwork as described to:-</i>				
A	Sides of columns	SM	311		
B	Sides and soffits of beams	SM	501		
C	Sides of lift walls	SM	284		
D	Soffits of suspended slabs	SM	1,551		
E	Edges of slab not exceeding 150mm girth	LM	112		
F	Edges of slab over 300mm but not exceeding 375mm girth	LM	289		
	<i>Sleeves (Provisional)</i>				
G	100mm diameter UPVC sleeves in 175/300mm thick slabs	NO	200		

	<p><b>Carried to Collection</b></p> <p><b><u>COLLECTION</u></b></p> <p>From Page FF/1</p> <p>From Above</p>				
	<p><b>ELEMENT NO. 1</b> <b><u>REINFORCED CONCRETE FRAME</u></b></p>	<p><b>Carried to</b> <b>Main Summary</b></p>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO .2. - FIRST FLOOR</u></b></p> <p><b><u>ELEMENT NO. 2 STAIRCASE CONSTRUCTION &amp; FINISHES</u></b></p> <p><i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size;-</u></i></p>				
A	Staircase	CM	13		
B	Ramp beams	CM	11		
C	175mm thick staircase landing	SM	24		

D	175mm thick sloping ramp	SM	106		
	<b>Reinforcement, as described:-[PROVISIONAL]</b>				
	<u>Reinforcement to BS 4449:1997, Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm<sup>2</sup>; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>				
E	12 mm Diameter bars	KG	1,030		
F	10mm Diameter bars	KG	2,575		
G	8mm Diameter bars	KG	1,545		
	<u>Fairface formwork as described to:-</u>				
H	Vertical Sides of bases	SM	2		
J	Vertical Sides and soffits of beams	SM	134		
K	Soffits of staircase landing	SM	24		
L	Sloping soffits of staircase	SM	45		
M	Sloping soffits of ramp	SM	106		
N	Edges of staircase landing 150 - 225mm girth	LM	48		
P	Staircase stringers over 225mm but not exceeding 300mm wide	LM	54		
Q	Staircase risers 150mm high	LM	271		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>FINISHES</u></b>				
	<u>12mm thick ( minimum ) two coat cement, sand and lime plaster (1:1:6) with PVC edge and corner strip as described to:-</u>				
A	Soffits of staircase landings	SM	24		
B	Sloping soffits of staircase	SM	45		

C	Sloping soffits of ramp <i>Cement and sand (1:3) screeds, backings, beds etc</i>	SM	106		
D	30mm thick screed to Landing finished to receive terazzo (m.s)	SM	24		
E	300mm wide x 30mm thick treads to receive terazzo (m.s)	LM	245		
F	150mm high x 20mm thick Risers to receive terazzo (m.s)	LM	271		
G	Treating surface of unset concrete; to produce ribbed, herring bone pattern grooves diagonal to traffic flow : to Ramps  <i>Terazzo floor finish from approved sources; Approved colour; cement and marble chippings (1:2); complete with and including plastic dividing strips set flush with paving; Washed and Machine Polished; to cement and sand screed backing (m/s)</i>	SM	106		
H	20mm thick to landing slabs	SM	130		
J	20 x 300mm wide paving to treads	LM	245		
K	20 x 150mm high paving to risers	LM	271		
L	10 x 150mm high skirting	LM	27		
M	Ditto to profile of treads and risers	LM	40		
N	Extra over treads for non-slip caborandum strip	LM	245		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Painting and decorating</i> <i>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</i>				

A	Plastered soffits of landings and staircase/ramp  <i>Balustrading and Railing - (Provisional)</i>  <i>Staircase railing; In Mild Steel; one coat red oxide primer; three coats enamel gloss paintwork to metal surfaces</i>  1100mm high balustrading comprising 50mm diameter mild steel handrail welded onto and including 40mm diameter mild steel vertical balusters:	SM	310		
B	1100mm high balusters at 900mm centres: 2No. 30 x 3mm mild steel flat intermediate rails infilled with and including 25mm diameter 2tier mild steel intermediate balusters at 900mm centres (Refer to architect's details)	LM	26		
C	Ditto to ramp  <i>60mm diameter mildsteel handrail fixed to masonry wall solid balustrade using 200mm long 38mm diameter mildsteel brackets at 600mm centres.</i>	LM	92		
D	Handrail fixed to the wall	LM	34		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page FF/3					
Carried from page FF/4					
Carried from Above					
<b><u>ELEMENT NO. 2</u></b>		<b>Carried to the</b>			
<b>STAIRCASE CONSTRUCTION &amp; FINISHES</b>		<b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
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<b><u>SECTION NO .2. - FIRST FLOOR</u></b>					
<b><u>ELEMENT NO. 3 - WALLING</u></b>					
	<i><u>Precast concrete class 20(12mm aggregate) including forwork , finishing fair face on all xposed surfaces,and bedding and jointing in cement sand (1:3) mortar</u></i>				
A	200 x 200mm lintol, reinforced with and including four 12mm diameter mild steel rods and 6mm stirrups at 200mm centers	LM	50		
	<i><u>External walling</u></i>				
	<i><u>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u></i>				
B	200mm thick walling externally	SM	466		
C	Extra Over for key pointing - horizontal	SM	0		
	<i><u>Internal walling</u></i>				
	<i><u>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u></i>				
D	200mm thick walling internally	SM	899		
E	150mm thick walling internally	SM	70		
F	100mm thick walling internally	SM	143		
	<i><u>Gypsum / Glazed Dry Wall Partition</u></i>				
	<i><u>The following in heavy duty powder coated aluminium framing of approved colour and beadings to BS 10 BS15; with channels on both sides at 1000mm centres vertically:-</u></i>				
	<i><u>150mm Thick composite partitions comprising 80x40x2.1mm thick frames supported by 75 x 50 wrot cypress timber frames, infill with 20mm thick laminated mahogany veneered MDF boarding and 20mm thick Gypsum (On both sides) 6mm clear sheet glass fixed with Aluminium glazing beads(m.s) in panes 1.00 - 1.50 SM; complete with aluminium beading; silicon filling; all assembled and fixed together as free-standing partition; All to Architects details</u></i>				
G	2,700mm Overall Height (Note; - 1,500mm MDF Height, 1,200mm Glazing Height	SM	37		
	<i><u>Armorgard" frosted or other equal and decorative approved film; 60" clear with narrow blue strips at edges applied to glass(m/s) to</u></i>				
H		SM	18		

Partitions ; internally				
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<p><u>Aluminium Curtain Walling</u></p> <p><u>Supply, assemble and fix the following approved powder coated Aluminium structure, fabricated from approved composite extruded powder coated heavy duty approved standard hollow sections 75 x 50mm (minimum 2mm thick), including 6mm thick clear laminated glazing secured on framing with approved with glazing strips and glazing beading including waterproofing all joints using silicon sealing compounds and approved Aluminium brackets; fixing with screws; building in lugs to jambs, plugging and screwing head and cill ;sealing with mastic, adjusting on completion and all necessary ironmongery such as fasters, stays, hinges and sliding rails to Architects details and approval and to match existing</u></p> <p>Overall structure in varying sizes</p>	SM	145		

	<p><b>Total Carried to Collection</b></p> <p><b><u>COLLECTION</u></b></p> <p>Carried from page GF/6</p> <p>Carried from Above</p>			
	<p><b><u>ELEMENT NO. 3</u></b></p> <p><b>WALLING</b></p>	<p>Carried to the Main summary</p>		

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO .2. - FIRST FLOOR</u></b></p> <p><b><u>ELEMENT NO. 4 - EXTERNAL FINISHES</u></b></p> <p><b><u>External wall finishes</u></b></p> <p><i><u>15mm (minimum) two coat lime render including skimming; Plaster; 9mm thick first coat of cement and sand (1:6); 3mm second coat of cement and lime putty (1:10); steel trowelled smooth; complete with wire gauze anti-crack mechanism at the intersection of masonry walling and concrete beams as described to:-</u></i></p>				
A	<p>Concrete/masonry surfaces to receive paint (m.s)</p> <p><i><u>In Mild Steel;one coat red oxide primer; three coats enamel gloss paintwork to metal surfaces</u></i></p>	SM	878		

B	<p>1100mm high balustrading comprising 50mm diameter mild steel handrail welded onto and including 40mm diameter mild steel vertical balusters: 1100mm high balusters at 900mm centres: 2No. 30 x 3mm mild steel flat intermediate rails infilled with and including 25mm diameter 2tier mild steel intermediate balusters at 900mm centres (Refer to architect's details)</p> <p><u>Painting and decorating</u></p> <p><u>Skim, Prepare and apply three coats exterior quality silicon based external antifungal paint(including skimming) as "Ruff n Tuff" or equal and approved: colour to approval by application strictly in accordance with suppliers printed instructions</u></p>	LM	27		
C	Plastered vertical wall/concrete surfaces	SM	878		
<p><b>ELEMENT NO. 4</b> <b>EXTERNAL FINISHES</b></p>		<p><b>Carried to the</b> <b>Main summary</b></p>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<p><b><u>SECTION NO .2. - FIRST FLOOR</u></b></p>					
<p><b><u>ELEMENT NO. 5 - INTERNAL FINISHES</u></b></p>					
<p><b><u>Floor finishes</u></b></p>					
<p><u>Cement and sand (1:3) screeds, backings, beds etc</u></p>					
A	30mm thick bed finished to receive porcelein tiles (m.s)	SM	354		
B	30mm thick bed finished to receive ceramic tiles (m.s)	SM	56		

C	30mm thick bed finished to receive terazzo (m.s)  <i>Supply &amp; Fix tiles (To Architect's Approval) in regular or other approved pattern; to floor on prepared screed (m.s); with proprietary adhesive; jointed and pointed in matching coloured proprietary grouting: aluminium threshold including pvc spacers and expansion joint as necessary: all to Architect's approval.</i>	SM	986		
D	600 x 600 x 10mm thick Matt Porcelain Tiles (As per Project Manager & Client's Selection)	SM	354		
E	Ditto to 100mm high skirtings	LM	236		
F	400 x 400 x 10mm thick Matt Ceramic Tiles (As per Project Manager & Client's Selection)	SM	56		
G	Ditto to 100mm high skirtings  <i>Terazzo floor finish</i>	LM	18		
H	20mm thick monolithic floor finish from approved sources; Approved colour; cement and marble chippings (1:2); complete with and including plastic dividing strips set flush with paving; Washed and Machine Polished; to cement and sand screed backing (m/s)	SM	986		
J	Ditto to 100mm high skirtings	LM	147		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>Internal Wall finishes</u></b>  <i>12mm (minimum) two coat lime plaster including skimming; Plaster; 9mm thick first coat of cement and sand (1:6); 3mm second coat of cement and lime putty (1:10); steel trowelled smooth; complete with wire gauze anti-crack mechanism at the intersection of masonry walling and concrete beams as described to:-</i>				

A	Concrete/masonry surfaces internally generally <i>Cement and sand (1:4) backings etc</i>	SM	2,548		
B	15mm backing finished to receive ceramic wall tiles (m.s)	SM	505		
C	Ditto to receive granite wall tiles (m.s)	SM	21		
D	Ditto to 400mm wide architrave to receive granite (m.s)  <i>Supply &amp; Fix Approved tiles to Architect's selection &amp; approval to floor on prepared backing (m.s) in approved patterns as directed by the Architect; with proprietary adhesive; jointed and pointed in matching coloured proprietary anti-fungal waterproof grouting; aluminium threshold &amp; corner strips, including pvc spacers and expansion joint as necessary: all to Architect's approval.</i>	LM	22		
E	200 x 300 x 10mm thick Matt Ceramic Tiles As per Project Manager & Client's Selection)	SM	505		
F	300 x 600 x 25mm thick natural granite as Black Galaxy or equal and approved	SM	21		
G	400mm wide Granite to lift architrave  <b><u>Ceiling finishes</u></b>  <i>12mm Thick (minimum) two coat lime plaster as described to:-</i>	LM	22		
E	Concrete soffits  <i>Supply &amp; fixing of MR Grade Gypsum Board false ceiling including vertical drops, coves, boxings &amp; fascias using 12.5mm Gypsum Board Sheets MR Grade from Gyproc or equivalent as per design. complete with Aluminium suspension Tee system and all specifications as aforementioned in 12.5mm thick MR Boards; to</i>	SM	986		
H	12 mm thick ceiling; horizontal  <i>Suspended accoustic ceiling as "Armstrong" or any other equal and approved; on and including proprietary pressed metal brander system; measured over light fittings; including all cutting and trimming to light fittings; columns curved surfaces; finish to horizontal ceilings; edge trims, flush jointing, trap doors and shadow gaps as necessary</i>	SM	354		
J	600 x 600mm ; 15mm thick Horizontal Ceiling Lining	SM	986		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>Cornice</u></b>				

A	25 x 25mm high moulded gypsum cornice; with one labour  <i>Painting and decorating</i>  <i>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</i>	LM	158		
B	Plastered vertical wall/concrete surfaces	SM	2,548		
C	Plastered soffits	SM	986		
D	Gypsum Ceiling Soffits  <i>Prepare and apply three coats polyurethane clear polish to woodwork</i>	SM	354		
E	Surfaces not exceeding 100mm girth	LM	158		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page FF/9					
Carried from page FF/10					
Carried from Above					
<b>ELEMENT NO. 5 INTERNAL FINISHES</b>		<b>Carried to the Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
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<b><u>SECTION NO .2. - FIRST FLOOR</u></b>					
<b><u>ELEMENT NO. 6 - WINDOWS [REFER TO WINDOW SCHEDULES]</u></b>					
<b><u>General Notes:</u></b>					
1	All aluminium sections to be standard booth manufacturing sections only				
2	Colour to be decided later				
3	All accessories to be powdered to match frame and <b>samples of all to be approved in the first instance.</b>				
4	All flush bolts to be minimum 200mm long, chrome plated of approved quality.				
5	All corner glazing to be butt jointed with silicon sealant				
6	All bathroom windows to be glazed in opaque laminated glass. Where possible, the BQ has shown these as washroom windows; but it will be the tenderer's responsibility to crosscheck with the Architect's drawings as to the accuracy of this.				
<i><u>Aluminium windows[Refer to theArchitect's drawing &amp; detail]</u></i>					
<i><u>Supply, assemble and fix the following approved powder coated Aluminium framed windows, fabricated from approved composite extruded powder coated heavy duty approved standard hollow sections 75 x 50mm (minimum 2mm thick) , including 6mm thick clear laminated glazing secured on framing with approved with glazing strips and glazing beading including waterproofing all joints using silicon sealing compounds and approved Aluminium brackets; fixing with screws; building in lugs to jambs, plugging and screwing head and cill ;sealing with mastic, adjusting on completion and all necessary ironmongery such as fasters, stays, hinges and sliding rails to Architects details and approval and to match existing</u></i>					
A	Window Overall size 6,500 x 1,500mm high	NO	1		
B	Window Overall size 6,200 x 1,500mm high	NO	3		
C	Window Overall size 5,800 x 1,500mm high	NO	1		
D	Window Overall size 5,400 x 1,500mm high	NO	4		
E	Window Overall size 4,500 x 1,500mm high	NO	2		
F	Window Overall size 3,800 x 1,500mm high	NO	1		
G	Window Overall size 2,800 x 1,500mm high	NO	2		
<i><u>Steel casement windows[Refer to theArchitect's drawing &amp; detail]</u></i>					
<i><u>Purpose made steel casement windows made from heavy duty frame 3mm thick with burglar proof bars, PV units with mosquito gauze and brass iron mongery, including fasteners and stays fixed to masonry jambs and concrete head and cills, with mastic pointing all round; including all welding and priming with red oxide before fixing</u></i>					
E	Window Overall size 2,500 x 1,200mm high	NO	5		
F	Window Overall size 2,000 x 1,200mm high	NO	2		
G	Window Overall size 1,500 x 1,200mm high	NO	2		
F	Window Overall size 4,500 x 600mm high	NO	1		
G		NO	3		



Window Overall size 1,200 x 600mm high				
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Clear Sheet Glass</u>				
A	4mm Glass and glazing to metal with putty in panes, girth - 0.10 to 0.50 square meters	SM	28		
B	Ditto but Opaque glass	SM	5		
	<u>Window cill</u>				
	<u>Precast concrete class 20 (12mm,aggregate), including formwork, finishing fair face on all exposed surfaces, hoisting and placing in position, bedding and jointing in cement and sand (1:3) mortar</u>				
C	275 x 75mm thick window cill once rebated; 20 x 20mm splaged drip and jointing in cement and sand 1:3 mortar	LM	107		
	<u>Burglar proofing</u>				
D	Supply and fix decorate mild steel grilles in 50 x 50 x 3mm thick square hollow sections external framework and infilled with 25 x 25 x3mm SHS and 25 x 8mm thick flat bars all cut and welded together in approved decorative patterns including priming with red lead oxide after fabrication	SM	51		
	<u>Curtain rod</u>				
E	25mm diameter approved wrought iron front and rear rod curtain rail cut to lengths complete with fixings, runners and end stops and screwed or plugged to wall in accordance with manufacturer's specification.	LM	92		
	<u>In Prime Grade Wrot Cypress</u>				
F	175 x 25mm window board, plugged, screwed and pelleted	LM	107		
G	25 x 25mm quadrant beading; plugged	LM	107		
	<u>Finishing to reveals</u>				
	<u>15 mm cement and sand (1:3) render;finished with woodfloat to:-</u>				
H	Concrete or masonry surfaces externally	SM	27		
	<u>12mm (minimum) two coat lime plaster as described to</u>				
J	Concrete or masonry surfaces internally	SM	27		
	<b><u>Painting &amp; derocation</u></b>				
	<u>Prepare and apply one undercoat and two finishing coats first quality weatheguard emulsion paint on:-</u>				
K	Concrete or masonry surfaces externally	SM	27		
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
L	Plastered walls internally	SM	27		
	<u>Prepare and apply three coats polyurethane clear on woodwork</u>				
M	Window board/Beading over 100mm but not exceeding 200mm girth	LM	107		

	<b>Total Carried to Collection</b>			
	<b><u>COLLECTION</u></b>			
	Carried from page FF/12			
	Carried from Above			
<b><u>ELEMENT NO. 6</u></b>	<b>Carried to the</b>			
<b>WINDOWS</b>	<b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .2. - FIRST FLOOR</u></b>				
	<b><u>ELEMENT NO. 7 - DOORS [REFER ALL TO ARCHITECT'S SCHEDULES]</u></b>				
	<u>Supply and fix hardwood Frames with and including supply of low expansion polyurethane foam ; in Wrot mahogany or equivalent hardwood and approved (stained to match the colour of veneer):</u>				
A	Ex 50 x 200mm Frame with one labour and 10mm groove to detail; plugged	LM	490		
B	Ditto Transome	LM	82		
C	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	979		
D	Ex 25 x 25mm quadrant	LM	979		
	<b>Solid timber doors</b>				
	<u>50mm thick solid core Mahogany panelled doors to B.S 459: part 2 faced both sides with 6mm mahogany plywood and lipped on all edges in hardwood; including grooves per detail</u>				
E	Double Door Overall size 1,500 x 2,400mm high (see Architect's details)	NO	7		
F	Double Door Overall size 1,200 x 2,400mm high (see Architect's details)	NO	5		
G	Single Leaf Door Overall size 900 x 2400mm high (see Architect's details)	NO	4		
	<u>45mm thick semi solid core flush door to B.S 459: part 2 faced both sides faced both sides with 3mm veneer and lipped on all edges in hardwood, all as per Architects details</u>				
H	Double Door Overall size 1,200 x 2,400mm high	NO	9		
J	Single Leaf Door size 900mm x 2400mm high	NO	28		

K	Single Leaf Door size 800mm x 2400mm high  <b>Fire Door; One hour rated</b>  <i>Supply and Fix the following purpose made door with a 1.25mm thick galvanised steel sheet pressed formed to provide a 46mm thick fully flush double skin panel with lock seam joints at style edges and filled with reinforcement at top, bottom and stile surrounds. Complete with Stainless steel ball hinges, door lock of approved make with double through locking bolt operated with one side key and other side thumb turn complete in all respect. Stainless steel cylinder Door closer include provision for required iron mongery and finished with zinc phosphate storing primer &amp; polyurethane paint with wooden lamination finish (Refer to attached door schedules)</i>	NO	32		
K	Ditto but 1800 x 2400mm high double leaf door INCLUDING Frames; All to Mechanical Engineer's Approval	NO	2		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<b>Steel Casement Doors</b>  <i>Supply, assemble and fix the following purpose made heavy duty steel door complete with fixing hugs on, pin type hinges including all necessary cutting and all ironmongery as Kasmetal or equal and approved including all welding and priming with red oxide before fixing (Refer to attached door schedules)</i>  Double Door Overall Size 1,800 x 2,400mm high comprising of 2No. Equal openable door leaves size 1,200 x 2400mm high; Complete with 100 x 25 x 2mm RHS framing all round; 50 x 25 x 2mm RHS middle rails; infilled with 5mm thick glazing complete with putty	NO	2		
B	<b>Aluminium framed MDF/Glass door; complete with associated iron mongery - i.e Hinges, rubber stopper, door closure and Aluminium Handles</b>  <i>100mm Thick composite partitions comprising 80x40x2.1mm thick frames, infill with 9mm thick laminated mahoany veneered MDF boarding (On both sides) 6mm clear sheet glass fixed with Aluminium glazing beads(m.s) in panes 1.00 - 1.50 SM; complete with aluminium beading; silicon filling; all assembled and fixed together as free-standing partition; All to Architects details</i> Double Door Overall 1,800 x 2400mm high  <i>Painting and decorating</i>  <i>Aluminium primer or other equal and approved wood primer before fixing: -</i>	NO	1		
C	Frames; over 100mm but not exceeding 200mm girth	LM	82		

D	Surfaces over 300mm girth  <i>Prepare and apply approved stain, sanding sealer and three coats of 'Crown Paints Solo' or other equal and approved varnish to :</i>	SM	194		
E	General timber surfaces	SM	392		
F	Frames; over 100mm but not exceeding 200mm girth	LM	82		
G	Surfaces over 300mm girth	SM	194		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Ironmongery</i>  <i>Supply and fix the following ironmongery as approved with matching screws:-</i>  <i>NOTE; Tenderer to refer to the drawing &amp; schedule for iron mongery - All iron mongery to be per Architect's Approval [Tenderer to Provide a Sample board]</i>  <i>To softwood, hardwood or the like fixing with screw:</i>				
A	Brass ball bearing hinges; 100 mm	PRS.	138.0		
B	Three lever mortice lock complete with furniture	NO	37		
C	Two lever mortice lock complete with furniture	NO	32		
D	Coat & hat hook - Rubber tipped	NO	32		
	<i>To concrete or blockwork; fixing with bolts; plugging</i>				
E	Rubber door stop	NO	92		

<b>Total Carried to Collection</b>				
<b><u>COLLECTION</u></b>				
Carried from page FF/14				
Carried from page FF/15				
Carried from Above				
<b><u>ELEMENT NO. 7</u></b>				
<b>DOORS</b>				
<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .2. - FIRST FLOOR</u></b>				
	<b><u>ELEMENT NO. 8 - JOINERY &amp; FITTINGS</u></b>				
	<i><u>Worktops</u></i>				
	<i><u>600mm wide tops; 75mm thick reinforced concrete (class 25/20 mm aggregate) suspended worktop and fascia; Single layer fabric mesh reinforcement to BS 4483 ref. A142 weighing ; 2.22 kg per square metre fixed in suspended worktop; Sawn formwork to horizontal soffits and sides of worktop and vertical edges of suspended slab; build end of 75 mm thick suspended concrete slab in masonry walling, 100 mm thick; finished with 20mm thick granite to top. edges, 300mm high fascia and plaster and paint to soffits</u></i>				
A	7,000mm long; allow for forming holes for sink (m.s)	NO	1		

B	Ditto 2,500mm long	NO	4		
<p><b><u>ELEMENT NO. 8</u></b> <b>JOINERY FITTINGS</b></p>		<p>Carried to the Main summary</p>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO .2. - FIRST FLOOR</u></b></p> <p><b><u>ELEMENT NO. 9 - BUILDER'S WORK IN CONNECTION WITH SPECIALIST SERVICES</u></b></p> <p><i>Inspect all architectural, mechanical, electrical and structural drawings as provided; allow for all builders work associated with all the specialist works</i></p>				

A	Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works	ITEM			
	<b>ELEMENT NO. 9</b> <b>BUILDER'S WORK IN CONNECTION</b>	<b>Carried to the</b> <b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .2. - FIRST FLOOR</u></b> <b><u>MAIN SUMMARY</u></b>				

1	REINFORCED CONCRETE FRAME		FF/2		
2	STAIRCASE CONSTRUCTION & FINISHES		FF/5		
3	WALLING		FF/7		
4	EXTERNAL FINISHES		FF/8		
5	INTERNAL FINISHES		FF/11		
6	WINDOWS		FF/13		
7	DOORS		FF/16		
8	JOINERY FITTINGS		FF/17		
9	BUILDER'S WORK IN CONNECTION		FF/18		
	<b>SECTION NO. 2 - FIRST FLOOR</b>	<b><u>CARRIED TO</u></b>			
	<b><u>TOTAL AMOUNT</u></b>	<b><u>GRAND SUMMARY</u></b>			
				<b>KSHS</b>	



BUILDER'S WORK  
SECOND FLOOR



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .3. - SECOND FLOOR</u></b>					
<b><u>ELEMENT NO 1- REINFORCED CONCRETE FRAME</u></b>					
<b>Reinforcement to BS 4449 / 4461:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b>					
<b>All cement to be 32.5, or equal and approved to SE approval</b>					
<i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size:-</u></i>					
A	Columns	CM	25		
B	Beams	CM	74		
C	150mm thick suspended slab	SM	342		
D	200mm thick lift shaft walls	SM	142		
<i><u>Hollow block suspended composite slabs; all to Structural Engineer's detail</u></i>					
E	400 mm Thick slabs comprising 380 x 250 x 325 mm deep concrete block in concrete class 25/20 infilling at 500 mm centres ; 150mm solid concrete ribs; 75mm concrete class 25/20 toppings : measured overall including solid margins	SM	1,042		
<i><u>Steel mesh fabric reinforcement to BS 4483 : including setting in concrete with 300mm laps( measured nett : no allowance for laps)</u></i>					
F	Mesh reference A142 weighing 2.22 kilogrammes per square metre in floor beds	SM	1,209		
<b>Reinforcement, as described:-[PROVISIONAL]</b>					
<i><u>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u></i>					
G	25 mm Diameter bars	KG	5,728		
H	20 mm Diameter bars	KG	2,203		
J	16 mm Diameter bars	KG	5,288		
K	12 mm Diameter bars	KG	10,135		
L	10mm Diameter bars	KG	13,219		
M	8mm Diameter bars	KG	7,491		
<i><u>Expansion joint</u></i>					
N	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	69		
P		LM	23		

Mastic sealant or other equal and approved filler				
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Fairface formwork as described to:-</i>				
A	Sides of columns	SM	311		
B	Sides and soffits of beams	SM	501		
C	Sides of lift walls	SM	284		
D	Soffits of suspended slabs	SM	1,551		
E	Edges of slab not exceeding 150mm girth	LM	112		
F	Edges of slab over 300mm but not exceeding 375mm girth	LM	289		
	<i>Sleeves (Provisional)</i>				
G	100mm diameter UPVC sleeves in 175/300mm thick slabs	NO	200		

	<p><b>Carried to Collection</b></p> <p><b><u>COLLECTION</u></b></p> <p>From Page SF/1</p> <p>From Above</p>				
	<p><b>ELEMENT NO. 1</b> <b><u>REINFORCED CONCRETE FRAME</u></b></p>	<p><b>Carried to</b> <b>Main Summary</b></p>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO .3. - SECOND FLOOR</u></b></p> <p><b><u>ELEMENT NO. 2 STAIRCASE CONSTRUCTION &amp; FINISHES</u></b></p> <p><i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm<sup>2</sup> at 7days and 25N/mm<sup>2</sup> at 28days with 20mm maximum aggregate size;-</u></i></p>				
A	Staircase	CM	13		
B	Ramp beams	CM	11		
C	175mm thick staircase landing	SM	24		

D	175mm thick sloping ramp	SM	106		
<b>Reinforcement, as described:-[PROVISIONAL]</b>					
<i>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</i>					
E	12 mm Diameter bars	KG	1,030		
F	10mm Diameter bars	KG	2,575		
G	8mm Diameter bars	KG	1,545		
<i>Fairface formwork as desribed to:-</i>					
H	Vertical Sides of bases	SM	2		
J	Vertical Sides and soffits of beams	SM	134		
K	Soffits of staircase landing	SM	24		
L	Sloping soffits of staircase	SM	45		
M	Sloping soffits of ramp	SM	106		
N	Edges of staircase landing 150 - 225mm girth	LM	48		
P	Staircase stringers over 225mm but not exceeding 300mm wide	LM	54		
Q	Staircase risers 150mm high	LM	271		
<b><u>ELEMENT NO. 2</u></b>					
<b>STAIRCASE CONSTRUCTION &amp; FINISHES</b>					
		<b>Carried to the</b>			
		<b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .3. - SECOND FLOOR</u></b>					
<b><u>ELEMENT NO. 3 - WALLING</u></b>					
<i>Precast concrete class 20(12mm aggregate) including forwork , finishing fair face on all xposed surfaces,and bedding and jointing in cement sand (1:3) mortar</i>					

A	200 x 200mm lintol, reinforced with and including four 12mm diameter mild steel rods and 6mm stirrups at 200mm centers <u>External walling</u>  <u>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u>	LM	50		
B	200mm thick walling externally  <u>Internal walling</u>  <u>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u>	SM	477		
C	200mm thick walling internally	SM	1,041		
D	150mm thick walling internally	SM	61		
E	100mm thick walling internally  <u>Gypsum / Glazed Dry Wall Partition</u>  <u>The following in heavy duty powder coated aluminium framing of approved colour and beadings to BS 10 BS15; with channels on both sides at 1000mm centres vertically:-</u>  <u>150mm Thick composite partitions comprising 80x40x2.1mm thick frames supported by 75 x 50 wrot cypress timber frames, infill with 20mm thick laminated mahogany veneered MDF boarding and 20mm thick Gypsum (On both sides) 6mm clear sheet glass fixed with Aluminium glazing beads(m.s) in panes 1.00 - 1.50 SM; complete with aluminium beading; silicon filling; all assembled and fixed together as free-standing partition; All to Architects details</u>	SM	107		
F	2,700mm Overall Height (Note; - 1,500mm MDF Height, 1,200mm Glazing Height  <u>Armorgard" frosted or other equal and decorative approved film; 60" clear with narrow blue strips at edges applied to glass(m/s) to</u>	SM	52		
G	Partitions ; internally	SM	38		
<b><u>ELEMENT NO. 3</u></b> <b><u>WALLING</u></b>		<b>Carried to the</b> <b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
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<p>A</p>	<p><b><u>SECTION NO .3. - SECOND FLOOR</u></b></p> <p><b><u>ELEMENT NO. 4 - BUILDER'S WORK IN CONNECTION WITH SPECIALIST SERVICES</u></b></p> <p><i>Inspect all architectural, mechanical, electrical and structural drawings as provided; allow for all builders work associated with all the specialist works</i></p> <p>Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works</p>	<p>ITEM</p>			
	<p><b><u>ELEMENT NO. 4</u></b> <b>BUILDER'S WORK IN CONNECTION</b></p>		<p><b>Carried to the Main summary</b></p>		



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .3. - SECOND FLOOR</u></b>					
<b><u>MAIN SUMMARY</u></b>					
1	REINFORCED CONCRETE FRAME		SF/2		
2	STAIRCASE CONSTRUCTION & FINISHES		SF/3		
3	WALLING		SF/4		
4	BUILDER'S WORK IN CONNECTION		SF/5		
<b><u>SECTION NO. 3 - SECOND FLOOR</u></b>		<b><u>CARRIED TO</u></b>			
<b><u>TOTAL AMOUNT</u></b>		<b><u>GRAND SUMMARY</u></b>			
		<b>KSHS</b>			

BUILDER'S WORK

THIRD FLOOR

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .4. - THIRD FLOOR</u></b>					
<b><u>ELEMENT NO 1 - REINFORCED CONCRETE FRAME</u></b>					
<b>Reinforcement to BS 4449 / 4461:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b>					
<b>All cement to be 32.5, or equal and approved to SE approval</b>					
<i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size:-</u></i>					
A	Columns	CM	25		
B	Beams	CM	74		
C	150mm thick suspended slab	SM	342		
D	200mm thick lift shaft walls	SM	142		
<i><u>Hollow block suspended composite slabs; all to Structural Engineer's detail</u></i>					
E	300 mm Thick slabs comprising 375 x 375 x 225 mm deep concrete block in concrete class 25/20 infilling at 625 mm centres ; 125mm solid concrete ribs; 75mm concrete class 25/20 toppings : measured overall including solid margins	SM	1,042		
<i><u>Steel mesh fabric reinforcement to BS 4483 : including setting in concrete with 300mm laps( measured nett : no allowance for laps)</u></i>					
F	Mesh reference A142 weighing 2.22 kilogrammes per square metre in floor beds	SM	1,209		
<b>Reinforcement, as described:-[PROVISIONAL]</b>					
<i><u>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u></i>					
G	25 mm Diameter bars	KG	5,728		
H	20 mm Diameter bars	KG	2,203		
J	16 mm Diameter bars	KG	5,288		
K	12 mm Diameter bars	KG	10,135		
L	10mm Diameter bars	KG	13,219		
M	8mm Diameter bars	KG	7,491		
<i><u>Expansion joint</u></i>					
N	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	69		
P		LM	23		

Mastic sealant or other equal and approved filler				
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Fairface formwork as described to:-</i>				
A	Sides of columns	SM	311		
B	Sides and soffits of beams	SM	501		
C	Sides of lift walls	SM	284		
D	Soffits of suspended slabs	SM	1,551		
E	Edges of slab not exceeding 150mm girth	LM	112		
F	Edges of slab over 300mm but not exceeding 375mm girth	LM	289		
	<i>Sleeves (Provisional)</i>				
G	100mm diameter UPVC sleeves in 175/300mm thick slabs	NO	95		

	<p><b>Carried to Collection</b></p> <p><b><u>COLLECTION</u></b></p> <p>From Page TF/1</p> <p>From Above</p>				
	<p><b>ELEMENT NO. 1</b> <b><u>REINFORCED CONCRETE FRAME</u></b></p>	<p><b>Carried to</b> <b>Main Summary</b></p>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO .4. - THIRD FLOOR</u></b></p> <p><b><u>ELEMENT NO. 2 STAIRCASE CONSTRUCTION &amp; FINISHES</u></b></p> <p><i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size;-</u></i></p>				
A	Staircase	CM	13		
B	Ramp beams	CM	11		
C	175mm thick staircase landing	SM	24		

D	175mm thick sloping ramp  <b>Reinforcement, as described:-[PROVISIONAL]</b>  <i>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</i>	SM	106		
E	12 mm Diameter bars	KG	1,030		
F	10mm Diameter bars	KG	2,575		
G	8mm Diameter bars  <i>Fairface formwork as desribed to:-</i>	KG	1,545		
H	Vertical Sides of bases	SM	2		
J	Vertical Sides and soffits of beams	SM	134		
K	Soffits of staircase landing	SM	24		
L	Sloping soffits of staircase	SM	45		
M	Sloping soffits of ramp	SM	106		
N	Edges of staircase landing 150 - 225mm girth	LM	48		
P	Staircase stringers over 225mm but not exceeding 300mm wide	LM	54		
Q	Staircase risers 150mm high	LM	271		
<b><u>ELEMENT NO. 2</u></b> <b>STAIRCASE CONSTRUCTION &amp; FINISHES</b>		<b>Carried to the</b> <b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .4. - THIRD FLOOR</u></b>  <b><u>ELEMENT NO. 3 - WALLING</u></b>  <i>Precast concrete class 20(12mm aggregate) including forwork , finishing fair face on all xposed surfaces,and bedding and jointing in cement sand (1:3) mortar</i>				

A	200 x 200mm lintol, reinforced with and including four 12mm diameter mild steel rods and 6mm stirrups at 200mm centers  <u>External walling</u>  <u>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u>	LM	50		
B	200mm thick walling externally  <u>Internal walling</u>  <u>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u>	SM	466		
C	200mm thick walling internally	SM	790		
D	150mm thick walling internally	SM	180		
E	100mm thick walling internally  <u>Gypsum / Glazed Dry Wall Partition</u>  <u>The following in heavy duty powder coated aluminium framing of approved colour and beadings to BS 10 BS15; with channels on both sides at 1000mm centres vertically:-</u>  <u>150mm Thick composite partitions comprising 80x40x2.1mm thick frames supported by 75 x 50 wrot cypress timber frames, infill with 20mm thick laminated mahogany veneered MDF boarding and 20mm thick Gypsum (On both sides) 6mm clear sheet glass fixed with Aluminium glazing beads(m.s) in panes 1.00 - 1.50 SM; complete with aluminium beading; silicon filling; all assembled and fixed together as free-standing partition; All to Architects details</u>	SM	91		
F	2,700mm Overall Height (Note; - 1,500mm MDF Height, 1,200mm Glazing Height  <u>Armorgard" frosted or other equal and decorative approved film; 60" clear with narrow blue strips at edges applied to glass(m/s) to</u>	SM	33		
G	Partitions ; internally	SM	19		
<b><u>ELEMENT NO. 3</u></b> <b>WALLING</b>		<b>Carried to the</b> <b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
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<p>A</p>	<p><b><u>SECTION NO .4. - THIRD FLOOR</u></b></p> <p><b><u>ELEMENT NO. 4 - BUILDER'S WORK IN CONNECTION WITH SPECIALIST SERVICES</u></b></p> <p><i>Inspect all architectural, mechanical, electrical and structural drawings as provided; allow for all builders work associated with all the specialist works</i></p> <p>Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works</p>	<p>ITEM</p>			
	<p><b><u>ELEMENT NO. 4</u></b> <b>BUILDER'S WORK IN CONNECTION</b></p>		<p><b>Carried to the Main summary</b></p>		



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT												
<b><u>SECTION NO .4. - THIRD FLOOR</u></b>																	
<b><u>MAIN SUMMARY</u></b>																	
1	REINFORCED CONCRETE FRAME		TF/2														
2	STAIRCASE CONSTRUCTION & FINISHES		TF/3														
3	WALLING		TF/4														
4	BUILDER'S WORK IN CONNECTION		TF/5														
<table border="0" style="width: 100%;"> <tr> <td style="width: 35%;"><b><u>SECTION NO. 4 - THIRD FLOOR</u></b></td> <td style="width: 35%;"><b><u>CARRIED TO</u></b></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td><b><u>TOTAL AMOUNT</u></b></td> <td><b><u>GRAND SUMMARY</u></b></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						<b><u>SECTION NO. 4 - THIRD FLOOR</u></b>	<b><u>CARRIED TO</u></b>					<b><u>TOTAL AMOUNT</u></b>	<b><u>GRAND SUMMARY</u></b>				
<b><u>SECTION NO. 4 - THIRD FLOOR</u></b>	<b><u>CARRIED TO</u></b>																
<b><u>TOTAL AMOUNT</u></b>	<b><u>GRAND SUMMARY</u></b>																
		KSHS															

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BUILDER'S WORK  
FOURTH FLOOR



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .5. - FOURTH FLOOR</u></b>					
<b><u>ELEMENT NO 1 - REINFORCED CONCRETE FRAME</u></b>					
<b>Reinforcement to BS 4449 / 4461:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b>					
<b>All cement to be 32.5, or equal and approved to SE approval</b>					
<i><u>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size:-</u></i>					
A	Columns	CM	28		
B	Beams	CM	74		
C	Gutter Beam	CM	30		
D	Beams for Anchoring the Lift	CM	5		
E	Tank Bearer Beams	CM	8		
F	175mm thick suspended slab	SM	797		
G	200mm thick lift shaft walls	SM	82		
H	150mm thick to Lift and Staircase Slab Overrun	SM	87		
<b>Reinforcement, as described:-[PROVISIONAL]</b>					
<i><u>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u></i>					
J	25 mm Diameter bars	KG	7,459		
K	20 mm Diameter bars	KG	2,869		
L	16 mm Diameter bars	KG	6,885		
M	12 mm Diameter bars	KG	13,197		
N	10mm Diameter bars	KG	17,213		
P	8mm Diameter bars	KG	9,754		
<i><u>Expansion joint</u></i>					
Q	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	69		
R		LM	23		

Mastic sealant or other equal and approved filler				
<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Fairface formwork as described to:-</i>				
A	Sides of columns	SM	342		
B	Sides and soffits of beams	SM	697		
C	Sides and soffits of Gutter beams	SM	45		
D	Sides and soffits of Lift Anchoring Beams	SM	50		
E	Sides of Lift Tank Bearer Beams	SM	70		
F	Sides of lift walls	SM	164		
G	Soffits of suspended slabs	SM	884		
H	Edges of slab not exceeding 150mm girth	LM	54		
J	Edges of slab exceeding 150mm but not exceeding 225mm girth	LM	109		
	<i>Sleeves (Provisional)</i>				
G	100mm diameter UPVC sleeves in 175/300mm thick slabs	NO	95		

	<p><b>Carried to Collection</b></p> <p><b><u>COLLECTION</u></b></p> <p>From Page 4F/1</p> <p>From Above</p>				
	<p><b>ELEMENT NO. 1</b></p> <p><b><u>REINFORCED CONCRETE FRAME</u></b></p>	<p><b>Carried to</b></p> <p><b>Main Summary</b></p>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO .5. - FOURTH FLOOR</u></b></p> <p><b><u>ELEMENT NO. 2 STAIRCASE CONSTRUCTION &amp; FINISHES</u></b></p> <p><i>Vibrated reinforced concrete class 25, mix (1:1.5:3) with minimum cube strength of 17N/mm2 at 7days and 25N/mm2 at 28days with 20mm maximum aggregate size:-</i></p>				
A	Staircase	CM	13		
B	Ramp beams	CM	11		
C	175mm thick staircase landing	SM	24		
D	175mm thick sloping ramp	SM	106		
	<p><b>Reinforcement, as described:-[PROVISIONAL]</b></p> <p><i>Reinforcement to BS 4449:1997, Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</i></p>				
E	12 mm Diameter bars	KG	1,030		

F	10mm Diameter bars	KG	2,575		
G	8mm Diameter bars	KG	1,545		
<p><i>Reinforcement to BS 4449:1997, Grade 460B high strength type 2 Ribbed bars with proof stress of 460 N/mm<sup>2</sup>; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</i></p>					
H	Vertical Sides of bases	SM	2		
J	Vertical Sides and soffits of beams	SM	134		
K	Soffits of staircase landing	SM	24		
L	Sloping soffits of staircase	SM	45		
M	Sloping soffits of ramp	SM	106		
N	Edges of staircase landing 150 - 225mm girth	LM	48		
P	Staircase stringers over 225mm but not exceeding 300mm wide	LM	54		
Q	Staircase risers 150mm high	LM	271		
<p><b><u>ELEMENT NO. 2</u></b>  <b>STAIRCASE CONSTRUCTION &amp; FINISHES</b></p>		<p><b>Carried to the</b>  <b>Main summary</b></p>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<p><b><u>SECTION NO .5. - FOURTH FLOOR</u></b></p>					
<p><b><u>ELEMENT NO. 3 - WALLING</u></b></p>					
<p><i>Precast concrete class 20(12mm aggregate) including forwork, finishing fair face on all xposed surfaces,and bedding and jointing in cement sand (1:3) mortar</i></p>					
A	200 x 200mm lintol, reinforced with and including four 12mm diameter mild steel rods and 6mm stirrups at 200mm centers	LM	50		
B	250mm wide coping	LM	190		
<p><i>External walling</i></p>					
<p><i>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</i></p>					
C	200mm thick walling externally	SM	466		



D	200mm thick parapet wall  <i>Internal walling</i>  <i>Natural hard machine cut stone from an approved quarry with a crushing strength of 7.0 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, with and including reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</i>	SM	190		
E	200mm thick walling internally	SM	1,036		
F	150mm thick walling internally	SM	89		
G	100mm thick walling internally	SM	91		
<b><u>ELEMENT NO. 3</u></b> <b>WALLING</b>		<b>Carried to the</b> <b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .5. - FOURTH FLOOR</u></b>					
<b><u>ELEMENT NO. 4 - ROOF CONSTRUCTION &amp; FINISHES</u></b>					
<b><u>Pitched Roof Over Ramp / Staircase</u></b>					
<b><u>All the timber to be seasoned and treated with anti - termite treatment</u></b>					
<i>The following in Celcured 2nd grade sawn cypress including hoisting and fixing up to a height not exceeding 3.0 metres above ground level; all jointing to be carried out with the aid of a full size bolting template : including splice plates and all necessary fixing accesories to Structural Engineer's satisfaction.</i>					
A	150 x 50mm Rafters	LM	156		
B	Ditto tie beams	LM	25		

C	Ditto king post	LM	32		
D	100 x 50mm struts and ties	LM	62		
E	75 x 50mm Purlins.	LM	212		
F	200 x 50mm ridge board	LM	21		
G	100 x 50mm Wall plate; with and including rawl down bolts at 600mm centres to SE details  <i>Wrot Softwood; treated 2nd grade cypress or equal and approved</i>	LM	59		
H	Moulded fascia board cover : 290mm girth : to approval	LM	36		
J	Barge board; ditto	LM	18		
K	Prepare and apply 3 coats 1st grade oil paint to surfaces not exceeding 300mm girth.  <i>UPVC eaves boarding</i>	LM	54		
L	8mm thick upvc boarding in 100mm wide strips secret nailed to and including softwood brandering at 600mm centres both directions, softwood quadrant and beading  <i>New Roof covering</i>  <i>Box Profile Galvanised corrugated iron (G.C.I) sheet profile: 28 gauge;</i>	SM	32		
M	Supply and Fix Roof covering at a pitch of 30 degrees from the horizontal; 150mm laps on one end and one and a half corrugation side lap; fixed to angle section purlins with and INCLUDING self-tapping screws and neoprene washers; include all the necessary fixing accessories	SM	180		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Roof drainage (provisional)</i>				
	<i>2mm thick galvanised mild steel gutters and fittings</i>				
A	Purpose made 250 x 150mm box gutter jointed with mastic and bolts and fixed to fascia with brackets	LM	24		
B	Extra for outlet in gutter - diameter 150mm	NO	2		
C	150 x 150mm box rainwater downpipe fixed with and including mild steel straps at 900mm centres, plugged and screwed to wall	LM	60		
D	150mm shoe	NO	4		

E	150mm sawn neck downpipe  <i><u>Prepare, prime and apply one undercoats and two gloss finishing coat enamel paint on the following metal surfaces</u></i>	NO	4		
F	General surfaces of gutters	SM	38		
G	General surfaces of downpipes over 300mm girth	SM	72		
H	Extra over gutters for 100mm diameter outlet	NO	4		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page 4F/6					
Carried from Above					
<b><u>ELEMENT NO. 4</u></b>		<b>Carried to the</b>			
<b>ROOF CONSTRUCTION &amp; FINISHES</b>		<b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .5. - FOURTH FLOOR</u></b>					
<b><u>ELEMENT NO. 5 - BUILDER'S WORK IN CONNECTION WITH SPECIALIST SERVICES</u></b>					
<i><u>Inspect all architectural, mechanical, electrical and structural drawings as provided; allow for all builders work associated with all the specialist works</u></i>					

A	Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works	ITEM			
	<b>ELEMENT NO. 5</b> <b>BUILDER'S WORK IN CONNECTION</b>	Carried to the Main summary			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .5. - FOURTH FLOOR</u></b>  <b><u>MAIN SUMMARY</u></b>				

1	REINFORCED CONCRETE FRAME		4F/2		
2	STAIRCASE CONSTRUCTION & FINISHES		4F/3		
3	WALLING		4F/4		
4	ROOF CONSTRUCTION & FINISHES		4F/6		
5	BUILDER'S WORK IN CONNECTION		4F/7		
<p><b>SECTION NO. 5 - FOURTH FLOOR</b>  <b><u>TOTAL AMOUNT</u></b></p>		<p><b><u>CARRIED TO</u></b>  <b><u>GRAND SUMMARY</u></b></p>			
			<b>KSHS</b>		

# CIVIL WORKS

CIVIL WORKS  
BILL OF QUANTITIES

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**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

**PRELIMINARIES**

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>RATE</b>	<b>AMOUNT KSHS.</b>
A	Allow a Provisional Sum Kenya Shillings Three Hundred Thousand for Level Surveying works as instructed by the Project Civil Engineer	SUM	1	300,000.00
B	Allow % for Contractor's Profits and Overheads	%		
C	Allow a Provisional Sum of Kenya Shillings Two Hundred Thousand for Material Testing as instructed by the Project Civil Engineer	SUM	1	200,000.00
D	Allow % for Contractor's Profits and Overheads	%		
E	Allow a Provisional Sum Kenya Shillings Two Hundred Thousand for Engineer's Training	SUM	1	200,000.00
F	Allow % for Contractor's Profits and Overheads	%		
	<b>TOTAL CARRIED TO SUMMARY PAGE</b>			

CIVIL PRELIM.PAGE 1

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE</b>	<b>AMOUNT</b>
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**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

<b>BILL NO.1 FOUL WATER DRAINAGE</b>					
<b>MANHOLES</b>					
<b>Manhole Excavation</b>					
A	Excavate pit in normal soil for rectangular manhole type B as per drawing detail No. (50) 5301. Depth to invert max. 1.0m.	CM	48.0		
B	Excavate pit in normal soil for rectangular manhole type C as per drawing detail No. (50) 5302. Depth to invert max. 1.5m.	CM	96.0		
C	Excavate pit in normal soil for rectangular manhole type D as per drawing detail No. (50) 5303. Depth to invert max. 2.5m.	CM	96.0		
D	Excavate pit in normal soil for rectangular manhole type E as per drawing detail No. (50) 5304. Depth to invert max. 3.0m.	CM	88.0		
E	Extra over excavation for excavation in Rock Class II	CM	16.0		
F	Extra over excavation for excavation in Rock Class I	CM	12.0		
G	Excavate pit in normal soil for Circular Manhole type 'B' as per drawing detail No. (50) 5315. Depth to invert max. 2.5m.	CM	45.0		
H	Excavate pit in normal soil for Circular Manhole type 'B' as per drawing detail No. (50) 5315. Depth to invert max. 3.5m.	CM	66.0		
I	Extra over excavation for excavation in Rock Class II	CM	12.0		
J	Extra over excavation for excavation in Rock Class I	CM	10.0		
<b>Manhole Construction</b>					
K	Provide, mix and place 50mm thick concrete grade C10 (1:4:8 mix) as blinding for manholes.	CM.	43.0		
L	Provide, mix and place concrete grade C15 (1:3:6) to construct 150mm thick manholes' bases.	CM	66.0		
M	Provide, mix and place 150mm thick concrete grade C20 (1:2:4) as cover slab for manholes.	CM	66.0		
N	Provide all materials, mix and place conc. Grade C15 (1:3:6) as benching for 160mm diameter pipe. Include for forming as well as finishing benching to falls and building in pipes as per drawings.	CM	12.0		
O	Provide materials for and erect 150mm thick masonry walling for manholes type B as per drawing detail 50 (5301) and 200mm thick for manholes type C,D & E as per drawing details 50 (5302),50 (5303) and 50(5304) respectively	SM	244.0		
	Sawn formwork to vertical sides of base of Circular manhole type 'A' & 'B' walling as per Drawing Detail No.(50) 5314 and (50) 5315.	SM	150.0		
P	Provide all materials, mix and place conc. Grade C15 (1:3:6) for 300mm concrete walling as per drawing detail 50(5304).	CM	44.0		
Q	Provide BRC mesh No. 65 for the 300mm Concrete walling as per drawing detail 50(5304)	SM	34.0		
R	Provide 8mm diameter steel bars for cover slab to detail 50 (5309)	Kg	198.0		
<b>TOTAL CARRIED TO COLLCTION PAGE</b>					

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>MANHOLES cont'd</u></b>				
A	Provide and fix bitumen coated cast iron steps to B.S 1247 as per detailed drawings.	No.	160.0		
B	Provide 12mm thick cement and sand (mix 1:1) sulphate resisting rendering to the walls of the manholes.	SM	160.0		
C	Ditto but to cover slab	SM	90.0		
D	Ditto but to surface of benching.	SM	90.0		
E	Allow for keeping excavations free from both surface and underground water.	ITEM	1.0		
	<b><u>C.I MH Cover and Frame To B.S 497 &amp; B.S 556</u></b>				
F	Provide and fix 600 x 450mm medium duty Double Seal C.I manhole cover & frame and grease to detail 50 (5313)	No.	30.0		
	<b><u>Circular Manhole units to be manufactured and checked for compliance with B.S 556 and approved by the Project Civil Engineer</u></b>				
G	Provide and place 1050mm internal diameter and 2000mm deep to invert level Pre-Cast Concrete Ring manhole made up of chamber Rings ogee jointed in multiples. Include 1220mm diameter;150mm thick Pre-Cast Reinforced Concrete Cover Slab with Heavy Duty Triangular with Concrete fil type Cast Iron Manhole Cover and Frame, 50mm thick Concrete Class 15 surround compacted to the satisfaction of the Project Civil Engineer	No.	2.0		
	<b><u>SEWERLINE</u></b>				
H	Excavate trench in normal soil for 160mmØ UPVC pipe (ISO class 41) and cart away surplus material as directed by the Engineer. Excavation measured from ground level to a depth n.e. 1.0m.	CM	200.0		
I	Ditto but rock class III	CM	20.0		
J	Ditto but rock class I	CM	10.0		

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

K	Allow for mantaining sides of all excavations vertical by planking and strutting using 25mm sawn timber	ITEM	1.0		
<b>TOTAL CARRIED TO COLLECTION PAGE</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>PIPE LAYING</u></b>				
A	Provide, lay and joint 160mm diameter UPVC pipes (ISO class 41) to BS 4660 on gravel bedding and surround	LM			
B	Provide and compact 100mm approved murrum bedding and surround for uPVC pipes as per Drawing detail (50) 5310'A'	SM			
C	Provide and place 150mm thick concrete surround around pipes across the road, (mix 1:3:6) to detail (50)5310'c'. Including all the necessary formwork.	CM			
D	Back fill and compact selected material in layers of 200mm	CM			
E	Allow for testing of the whole foul drainage system in the presence of the Engineer/Project Manager and make good any defects, re-test as necessary and leave the whole system perfect and to the satisfaction of the Engineer/Project Manager.	ITEM			
F	Allow a provisional sum of Kenya Shillings Three Hundred Thousand for any other additional waste water drainage Works as Instructed by project Engineer	SUM		300,000.00	300,000.00
<b>Carried to Collection.....</b>					



**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

H	Provide and place 325x100 concrete bed and haunch in concrete (mix 1:3:6). Include for all necessary formwork as per Drawing detail (50)5332 'A'.	CM	4.0		
I	Provide, lay and joint 125x100mm precast concrete channels in cement mortar as per Drawing detail (50)5332 'A'.	LM	48.0		
<b><u>SHALLOW INVERT BLOCK DRAIN</u></b>					
J	Excavate trench for precast concrete shallow IBD (800x500x175mm ) to a depth not exceeding 300mm.	CM	80.0		
K	Provide, place and compact 100mm thick imported approved hardcore as per Drawing detail (50) 5353.	CM	14.0		
L	Provide all materials, mix and place 50mm thick concrete blinding for the shallow IBD (Mix 1:4:8).	CM	12.0		
M	Provide, lay and joint precast concrete shallow IBD as per drawing detail (50) 5353	LM	140.0		
<b><u>DEEP INVERT BLOCK DRAIN</u></b>					
N	Excavate trench for 450x600x225mm external dimensions precast concrete IBD trim sides to slope and cart away excavated material depth not exceeding 0.6m.	CM	120.0		
O	Extra over for excavation in rock	CM	10.0		
P	Provide, place and compact 100mm thick imported approved hardcore as per Drawing detail (50) 5353.	CM	80.0		
Q	Provide all materials, mix and place 50mm thick concrete blinding for the shallow IBD (Mix 1:4:8).	CM	22.0		
R	Provide, lay and joint precast concrete shallow IBD as per drawing detail (50) 5353	LM	90.0		
S	Allow a provisional sum of Kenya Shillings Four Hundred Thousand for any other additional Storm Water drainage Works as Instructed by project Engineer	SUM	1.0	400,000.00	400,000.00
<b>TOTAL CARRIED TO SUMMARY PAGE</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b>BILL NO.3 STATIONARIES</b>					
A	Photocopy paper A4 (80gm3) white	20	REAM		
B	Photocopy paper A3 (80g/cm3) white	10	REAM		
C	Letterhead quality paper as CONQUERER or equal and approved cream 80g/m3	5	REAM		
D	BOSCH GLM 150-27 C PROFESSIONAL LASER MEASURE- COMPLETE	2	NO.		
E	HP ENVY 16-h1023dx Multi-Touch Laptop 13th Gen Intel Core i9-13900H 16" 16GB DDR5-5200 RAM 1TB PCIe Gen4 NVMe M.2 SSD 8GB GDDR6 Dedicated NVIDIA GeForce RTX 4060 Laptop GPU 5MP IR Webcam Dual Mics Audio by Bang & Olufsen Quad Speakers Windows 11 Home	3	NO		

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

F	Epson EcoTank L14150 A3+ Wi-Fi Duplex Wide-Format All-in-One Ink Tank Printer	1	NO.		
	<b>TOTAL CARRIED TO SUMMARY PAGE</b>				

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>BILL NO. 04 : SEPTIC TANK AND SEWEGE SOAKAGE/DISPOSAL</u></b>				
	<b><u>45.000 LITRES CAPACITY SEPTIC TANK</u></b>				
	<b><u>Excavation</u></b>				
A	Clear the site of any vegetation	SM	42		
B	Excavate pit for septic tank commencing from ground level not exceeding 1.5m deep	CM	63		
C	Ditto, not limited to 1.5m but n.e 3.0m deep	CM	63		
	Ditto depth not limited to 3.0m but n.e 4.5m deep	CM	63		
D	Trim bottom of excavated surface	SM	17		
E	Extra over excavation in rocks in all classes	CM	5		
F	Cart away surplus excavated material from site	CM	60		
G	Return, fill and ram selected approved materials around external sides of septic tank.	CM	5		
H	Allow for planking and strutting sides of excavations	ITEM	1		
I	Allow for keeping excavations free from water	ITEM	1		
	<b><u>Concrete Class 15 (Mix 1:3:6)</u></b>				
J	Mix and place 50mm concrete blinding.	SM	15		
	<b><u>Vibrated reinforced concrete class 20/20 (Mix 1:2:4)</u></b>				
K	Mix and place 200mm thick in base slab	CM	15		
L	Ditto but in 200mm thick wall	CM	1		
M	Ditto but in 250mm thick wall	CM	37		

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

N	Ditto but in 150mm thick in scum baffle wall	CM	4		
<b>TOTAL CARRIED TO SUMMARY PAGE</b>					

CIVIL Page 8

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>45,000 LITRES CAPACITY SEPTIC TANK CONT'D</b>				
A	Ditto but in 200mm thick vertical division	SM	5		
B	Ditto in 200mm suspended cover slab	SM	36		
	<b><u>High yield reinforcement bars to BS 449:-</u></b>				
C	8mm diameter bars	KG	1,991		
D	10mm ditto	KG	278		
E	12mm ditto	KG	1,678		
	<b><u>BRC Mesh reinforcement to BS 1483</u></b>				
F	BRC Mesh No. 65/66	SM	3		
	<b><u>Formwork</u></b>				
	<b>Sawn formwork to:-</b>				
G	Interior sides of vertical walls	SM	86		
H	External sides of vertical walls	SM	90		
I	Soffitts of suspended slab	SM	35		
J	Sides of suspended slab, 150mm-225mm wide	SM	3		
K	Sides and soffites of scum baffles	SM	2		
L	Ditto to sides of entry and exit manholes	SM	3		



**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

<b>M</b>	Edges of suspended slab 75-150mm high	LM	18		
<b>N</b>	Boxing out in formwork to form opening in cover slab for size 600x450mm manhole cover and frame, 150-225mm wide	LM	4		
<b>CARRIED TO COLLECTION</b>					

CIVIL Page 9

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>45,000 LITRES CAPACITY SEPTIC TANK CONT'D</u></b>				
	<b><u>Water Proof Cement Rendering</u></b>				
A	12mm thick sulphate resting cement sand (mix 1:3) to base slab.	SM	40		
B	Ditto to sides of vertical walls	SM	96		
C	Supply and fix medium duty double seal, cast iron manhole cover size 600x450mm complete with frame including greasing before fixing.	NO	4		
D	Provide plain concrete (1:2:4), 150mm av. benching to manhole internal size 800x600mm including forming channels and finished smooth	SM	4		
E	Provide and apply bituminous water proofing membrane on external walls as per the manufacturer's specifications	SM	40		
F		NO	15		
	Provide and install 20mm diameter mild steel step irons coated with bitumen <b><u>SOAK PITS(1.2m Diameter x 6m deep)- 3NO.</u></b>				
G	Excavate pit for circular soakpit, from existing ground level, depth n.e 1.5m	CM	10		
H	Ditto 1.5-3.0m	CM	10		
I	Ditto 3.0-4.5m	CM	10		
J	Ditto 4.0-6.5m	CM	8		
K	Extra over for rock excavation in all classes	CM	8		
L	Return, fill and ram selected approved material around external sides of the soak pits	CM	8		
M	Cart away surplus excavated material from site	CM	32		
N	Allow for keeping excavations free from water	ITEM	1		
O	Allow for planking and strutting sides excavations	ITEM	1		
P	Provide and fill the soak pits with boulders diameter not exceeding 200mm	CM	30		
	<b><u>Class 15/20 concrete blinding, mix 1:3:6</u></b>				
Q	Mix and place 50mm thick concrete blinding under strip footing for soak pits, in 1:3:6 mix	CM	2		

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

	CARRIED TO COLLECTION				
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ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>45.000 LITRES CAPACITY SEPTIC TANK CONT'D</u></b>				
	<b><u>Vibrated concrete class 20/20 (mix 1:2:4)</u></b>				
A	Mix and place 150mm thick concrete class 20/20 as cover slabs.	SM	9		
B	<b><u>Walling</u></b>				
C	Provide materials for and construct 200mm masonry walling for soak pits.	SM	18		
D	Provide, mix and place water proofing sulphate resistant cement 12mm thick rendering to walls	SM	12		
	<b><u>High yield reinforcement bars:-</u></b>				
E	10mm diameter bars	KG	223		
F	12mm ditto	KG	198		
	<b><u>Sawn Formwork to:-</u></b>				
G	Sides and soffits of 150mm thick cover slabs	SM	32		
H	Provide and fix 600x450x50mm heavy duty GRP composite manhole cover and frames. Include for setting cover in grease	NO	3		
I	12mm thick cement/sand (1:3) plaster on soak pit externally	SM	40		
J	Allow for testing the drainage system to the satisfaction of the Project Manager	ITEM	1		
	<b>CARRIED TO COLLECTION</b>				
	<b><u>COLLECTION</u></b>				
	<b>Brought Forward from Page.....8</b>				
	<b>Brought Forward from Page.....9</b>				
	<b>Brought Forward from Page.....10</b>				
	<b>Brought Forward from Page.....11</b>				

**PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST**

**CIVIL WORKS-BILL OF QUANTITIES**

	<b>TOTAL CARRIED TO SUMMARY PAGE</b>				

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE</b>	<b>AMOUNT</b>
	<b><u>SUMMARY PAGE - CIVIL WORKS</u></b>				
1	<b>PRELIMINARIES</b> Carried forward from Prel-1				
2	<b><u>BILL NO.1 FOUL WATER DRAINAGE</u></b> Carried forward from page 5				
3	<b><u>BILL NO.02 :STORM WATER DRAINAGE</u></b> Carried forward from page 6				
6	<b><u>BILL NO.3 STATIONARIES</u></b> Carried forward from page 7				

PROPOSED CONSTRUCTION OF KEGONGA LEVEL IV HOSPITAL - KURIA EAST

CIVIL WORKS-BILL OF QUANTITIES

4	<b>BILL NO. 05 : SEPTIC TANK AND SEWEGE SOAKAGE/DISPOSAL</b> Carried forward from page 11				
	<b>TOTAL FOR CIVIL WORKS CARRIED TO MAIN SUMMARY</b>				

# MECHANICAL WORKS

**PROPOSED CONSTRUCTION OF KEGONGA  
LEVEL IV SUB COUNTY HOSPITAL**

**MECHANICAL DOCUMENT-PHASE 1**

## SECTION 2

### GENERAL MECHANICAL SPECIFICATION



## SECTION 2

### GENERAL MECHANICAL SPECIFICATION

<u>CLAUSE</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
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2.02	QUALITY OF MATERIALS	2-1
2.03	REGULATIONS AND STANDARDS	2-1
2.04	ELECTRICAL REQUIREMENTS	2-2
2.05	TRANSPORT AND STORAGE	2-2
2.06	SITE SUPERVISION	2-3
2.07	INSTALLATION	2-3
2.08	TESTING	2-3
2.09	COLOUR CODING	2-4
2.10	WELDING	2-5

(i)  
SECTION 2  
GENERAL MECHANICAL SPECIFICATION

2.01 General

This section specifies the general requirement for plant, equipment and materials forming part of the Sub-contract Works and shall apply except where specifically stated elsewhere in the Specification or on the Contract Drawings.

1. 2.02 Quality of Materials

All plant, equipment and materials supplied as part of the Sub-contract Works shall be new and of first-class commercial quality, shall be free from defects and imperfections and where indicated shall be of grades and classifications designated herein.

All products or materials not manufactured by the Sub-contractor shall be products of reputable manufacturers and so far as the provisions of the Specification is concerned shall be as if they had been manufactured by the Sub-contractor.

Materials and apparatus required for the complete installation as called for by the Specification and Contract Drawings shall be supplied by the Sub-contractor unless mention is made otherwise.

Materials and apparatus supplied by others for installation and connection by the Sub-contractor shall be carefully examined on receipt. Should any defects be noted, the Sub-contractor shall immediately notify the Engineer.

Defective equipment or that damaged in the course of installation or tests shall be replaced as required to the approval of the Engineer.

2.03 Regulations and Standards

The Sub-contract Works shall comply with the current editions of the following:

- a) The Kenya Government Regulations.
- b) The United Kingdom Institution of Electrical Engineers (IEE) Regulations for the Electrical Equipment of Buildings.
- c) The United Kingdom Chartered Institute of Building Services Engineers (CIBSE) Guides.

- d) British Standard and Codes of Practice as published by the British

Standards Institution (BSI)

- f) The County Government Laws.
- g) The Electricity Supply Authority By-laws.
- h) The Kenya Building Code Regulations.
  
- i) The Kenya Bureau of Standards

2.04 Electrical Requirements

Plant and equipment supplied under this Sub-contract shall be complete with all necessary motor starters, control boards, and other control apparatus. Where control panels incorporating several starters are supplied, they shall be complete with a main isolator.

The supply power up to and including local isolators shall be provided and installed by the Electrical Sub-contractor. All other wiring and connections to equipment shall form part of this Sub-contract and be the responsibility of the Sub-contractor.

The Sub-contractor shall supply three copies of all schematic, cabling and wiring diagrams for the Engineer's approval.

The starting current of all electric motors and equipment shall not exceed the maximum permissible starting currents described in the Kenya Power and Lighting Company (KPLC) By-laws.

All electrical plant and equipment supplied by the Sub-contractor shall be rated for the supply voltage and frequency obtained in Kenya, that is 415 Volts, 50Hz, 3-Phase or 240Volts, 50Hz, 1-phase.

Any equipment that is not rated for the above voltages and frequencies shall be rejected by the Engineer.

2.05 Transport and Storage

All plant and equipment shall, during transportation be suitably packed, crated and protected to minimize the possibility of damage and to prevent corrosion or other deterioration.

On arrival at site all plant and equipment shall be examined and any damage to parts and protective priming coats made good before storage or installation.

Adequate measures shall be taken by the Sub-contractor to ensure that plant and equipment do not suffer any deterioration during storage.

Prior to installation all piping and equipment shall be thoroughly cleaned. If, in the opinion of the Engineer any equipment has deteriorated or been damaged to such an extent that it is not suitable for installation, the Sub-contractor shall replace this equipment at his own cost.

2.06 Site Supervision

The Sub-contractor shall ensure that there is an English-speaking supervisor on the site at all times during normal working hours.

2.07 Installation

Installation of all special plant and equipment shall be carried out by the Subcontractor under adequate supervision from skilled staff provided by the plant and equipment manufacturer or his appointed agent in accordance with the best standards of modern practice and to the relevant regulations and standards described under Clause 2.03 of this Section.

2.08 Testing and Inspection – Manufactured Plant

2.08.1 General

The Engineer reserves the right to inspect and test or witness of all manufactured plant equipment and materials.

The right of the Engineer relating to the inspection, examination and testing of plant during manufacture shall be applicable to Insurance companies and inspection authorities so nominated by the Engineer.

The Contractor shall give two weeks' notice to the Engineer of his intention to carry out any inspection or tests and the Engineer or his representative shall be entitled to witness such tests and inspections.

Six copies of all test certificates and performance curves shall be submitted as soon as possible after the completion of such tests, to the Engineer for his approval.

Plant or equipment which is shipped before the relevant test certificate has been approved by the Engineer shall be shipped at the Contractor's own risk and should the test certificate not be approved new tests may be ordered by the Engineer at the Contractor's expense.

The foregoing provisions relate to tests at manufacturer's works and as appropriate to those carried out at site.

2.08.2 Material Tests

All material for plant and equipment to be installed under this Sub-contract shall be tested, unless otherwise directed, in accordance with the relevant B.S Specification concerned.

For materials where no B.S. Specification exists, tests are to be made in accordance with the best modern commercial methods to the approval of the Engineer, having regard to the particular type of the materials concerned.

The Sub-contractor shall prepare specimens and performance tests and analyses to demonstrate conformance of the various materials with the applicable standards.

If stock material, which has not been specially manufactured for the plant and equipment specified is used, then the Sub-contractor shall submit satisfactory evidence to the Engineer that such materials conform to the requirements stated herein in which case tests of material may be partially or completely waived.

Certified mill test reports of plates, piping and other materials shall be deemed acceptable.

### 2.08.3 Manufactured Plant and Equipment – Work Tests

The rights of the Engineer relating to the inspection, examination and testing of plant and equipment during manufacture shall be applicable to the Insurance Companies or Inspection Authorities so nominated by the Engineer.

The Sub-contractor shall give two week's notice to the Engineer of the manufacturer's intention to carry out such tests and inspections.

The Engineer or his representative shall be entitled to witness such tests and inspections. The cost of such tests and inspections shall be borne by the Subcontractor. Six copies of all test and inspection certificates and performance graphs shall be submitted to the Engineer for his approval as soon as possible after the completion of such tests and inspections.

Plant and equipment which is shipped before the relevant test certificate has been approved by the Engineer shall be shipped at the Sub-contractor's own risk and should the test and inspection certificates not be approved, new tests may be ordered by the Engineer at the Sub-contractor's expense.

### 2.08.4 Pressure Testing

All pipework installations shall be pressure tested in accordance with the requirements of the various sections of this Specification. The installations may be tested in sections to suit the progress of the works but all tests must be carried out before the work is buried or concealed behind building finishes. All tests must be witnessed by the Engineer or his representative and the Subcontractor shall give 48 hours notice to the Engineer of his intention to carry out such tests.

Any pipework that is buried or concealed before witnessed pressure tests have been carried out shall be exposed at the expense of the Sub-contractor and the specified tests shall then be applied.

The Sub-contractor shall prepare test certificates for signature by the Engineer and shall keep a progressive and up-to-date record of the section of the work that has been tested.

### 2.09 Colour Coding

Unless stated otherwise in the Particular Specification all pipework shall be colour coded in accordance with the latest edition of B.S 1710 and to the approval of the Engineer or Architect.

## 2.10 Welding

### 2.10.1 Preparation

Joints to be made by welding shall be accurately cut to size with edges sheared, flame cut or machined to suit the required type of joint. The prepared surface shall be free from all visible defects such as lamination, surface imperfection due to shearing or flame cutting operation, etc., and shall be free from rust scale, grease and other foreign matter.

### 2.10.2 Method

All welding shall be carried out by the electric arc processing using covered electrodes in accordance with B.S. 639.

Gas welding may be employed in certain circumstances provided that prior approval is obtained from the Engineer.

### 2.10.3 Welding Code and Construction

All welded joints shall be carried out in accordance with the following Specifications:

a) Pipe Welding

All pipe welds shall be carried out in accordance with the requirements of B.S.806.

b) General Welding

All welding of mild steel components other than pipework shall comply with the general requirements of B.S. 1856.

### 2.10.4 Welders Qualifications

Any welder employed on this Sub-contractor shall have passed the trade tests as laid down by the Government of Kenya.

The Engineer may require to see the appropriate certificate obtained by any welder and should it be proved that the welder does not have the necessary qualifications the Engineer may instruct the Sub-contractor to replace him by a qualified welder.

2-5

## SECTION 3

# PARTICULAR SPECIFICATIONS FOR PLUMBING AND DRAINAGE

## SECTION 3

### PARTICULAR PLUMBING AND DRAINAGE SPECIFICATIONS

1.	CLAUSE No.	DESCRIPTION	PAGE
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3.3		Installation.....	3-6
3.3.1		General.....	3-6
3.3.2		Above Ground Installation.....	3-6
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(i)

## SECTION 3 PARTICULAR SPECIFICATIONS FOR PLUMBING AND DRAINAGE

### 3.1 GENERAL

This section specifies the general requirements for plant, equipment and materials forming part of the plumbing and drainage installations.

### 3.2 MATERIALS AND STANDARDS

#### 3.2.1 Pipework and Fittings

Pipework materials are to be used as follows:

##### a) Galvanized Steel Pipework

Galvanized steel pipe work up to 65mm nominal bore shall be manufactured in accordance with B.S. 1387 Medium Grade, with tapered pipe threads in accordance with B.S. 21. All fittings shall be malleable iron and manufactured in accordance with B.S. 143.

Pipe joints shall be screwed and socketed and sufficient coupling unions shall be allowed so that fittings can be disconnected without cutting the pipe. Running nipples and long screws shall not be permitted unless exceptionally approved by the Engineer.

Galvanized steel pipe work, 80mm nominal bore up to 150mm nominal bore shall be manufactured to comply in all respects with the specification for 65mm pipe, except that screwed and bolted flanges shall replace unions and couplings for the jointing of pipes to valves and other items of plant. All flanges shall comply with the requirements of B.S. 10 to the relevant classifications contained hereinafter under Section 'C' of the Specification.

Galvanizing shall be carried out in accordance with the requirements of B.S. 1387 and B.S. 143 respectively.

##### b) Copper Tubing

All copper tubing shall be manufactured in accordance with B.S. 2871 from C.160 'Phosphorous De-oxidized Non-Arsenical Copper' in accordance with B.S. 1172.

Pipe joints shall be made with soldered capillary fittings and connections to equipment shall be with compression fittings manufactured in accordance with B.S. 864.

3-1

Short copper connection tubes between galvanized pipe work and sanitary fittings shall not be used because of the risk of galvanic action.

If, as may occur in certain circumstances, it is not possible to make the connection in any way than the use of copper tubing, then a brass straight connector shall be positioned between the galvanized pipe and the copper tube in order to prevent direct contact.

c) P.V.C. (Hard) Pressure Pipes and Fittings

All P.V.C. pipes and fittings shall be manufactured in accordance with B.S. 3505: 1968.

Jointing

The method of jointing to be employed shall be that of solvent welding, using the pipe and manufacturer's approved cement. Seal ring joint shall be introduced where it is necessary to accommodate thermal expansion.

Testing

Pipelines shall be tested in sections under an internal water pressure normally one and a half times the maximum allowable working pressure of the class of pipe used. Testing shall be carried out as soon as practical after laying and when the pipeline is adequately anchored. Precautions shall be taken to eliminate all air from the test section and to fill the pipe slowly to avoid risk of damage due to surge.

d) A.B.S. Waste System

Where indicated on the Drawings and Schedules, the Sub-contractor shall supply and fix A.B.S. waste pipes and fittings.

The pipes, traps and fittings shall be in accordance with the relevant British Standards, including B.S. 3943, and fixed generally in accordance with manufacturer's instructions and B.S. 5572: 1978.

Jointing of pipes shall be carried out by means of solvent welding, the manufacturer's instructions and B.S. 5572: 1978.

Jointing of pipes shall be carried out by means of solvent welding. The manufacturer's recommended method of joint preparation and fixing shall be followed.

Standard brackets, as supplied for use with this system, shall be used wherever possible. Where the building structure renders this impracticable the Sub-contractor shall provide purpose made supports, centers of which shall not exceed one meter.

3-2

Expansion joints shall be provided as indicated. Supporting brackets and pipe clips shall be fixed on each side of these joints.

e) PVC Soil System

The Sub-contractor shall supply and fix PVC soil pipes and fittings as indicated on the Drawings and Schedules.

Pipes and fittings shall be in accordance with relevant British Standards, including B.S. 4514 and fixed to the manufacturer's instructions and B.S. 5572.

The soil system shall incorporate synthetic rubber gaskets as provided by the manufacturer whose fixing instructions shall be strictly adhere to.

Connections to WC pans shall be effected by the use of a WC connector, gasket and cover, fixed to suit pan outlet.

Suitable supporting brackets and pipe clips shall be provided at maximum of one metre centres.

The Sub-contractor shall be responsible for the joint into the Gully Trap on Drain as indicated on the Drawings.

3.2.2 Valves

a) Draw-off Taps and Stop Valves (Up to 50mm Nominal Bore)

Draw-off taps and valves up to 50mm nominal bore, unless otherwise stated or specified for attachment or connection to sanitary fitment shall be manufactured in accordance with the requirements of B.S.1010.

b) Gate Valves

All gate valves 80mm nominal bore and above, other than those required for fitting to buried water mains shall be of cast iron construction, in accordance with the requirements of B.S. 3464. All gate valves required for fitting to buried water mains shall be of cast iron construction in accordance with the requirements of B.S.1218.

All gate valves up to and including 65mm nominal bore shall be of bronze construction in accordance with the requirements of B.S. 1952.

The pressure classification of all valves shall depend upon the pressure conditions pertaining to the site of works.

3-3

c) Globe Valves

All globe valves up to and including 65mm nominal bore shall be of bronze construction in accordance with the requirements of B.S.3061.

The pressure classification of all globe valves shall depend upon the pressure conditions pertaining to the site of works.

3.2.3 Waste Fitment Traps

a) Standard and Deep Seal P & S Traps

Where standard or deep seal traps are specified they shall be manufactured in suitable non-ferrous materials in accordance with the full requirements of B.S. 1184.

In certain circumstances, cast iron traps may be required for cast iron baths and in these instances bath traps shall be provided which are manufactured in accordance with the full requirements of B.S.1291.

b) Anti-Syphon Traps

Where anti-syphon traps are specified, these shall be similar or equal to the range of traps manufactured by Greenwood and Hughes Limited, Deacon Works Littlehampton, Sussex, England.

The trade name for traps manufactured by this company is 'Grevak'.

3.2.4 Pipe Supports

a) General

This sub-clause deals with pipe supports securing pipes to the structure of buildings for above ground application.

The variety and type of support shall be kept to a minimum and their design shall be such as to facilitate quick and secure fixings to metal, concrete, masonry or wood.

Consideration shall be given, when designing supports, to the maintenance of desired pipe falls and the restraining of pipe movements to a longitudinal axial direction only.

The Sub-contractor shall supply and install all steelwork forming part of the pipe support assemblies and shall be responsible for making good damage to builders work associated with the pipe support installation.

The Sub-contractor shall submit all his proposals for pipe supports to the Engineer for approval before any erection works commence.

3-4

b) Steel and Copper Pipes and Tubes

Pipe runs shall be secured by clips connected to pipe angers, wall brackets, or trapeze type supports. 'U' bolts shall not be used as a substitute for pipe clips without the prior approval of the Engineer.

An approximate guide to the maximum permissible supports spacing in metres for steel and copper pipe and tube is given in the following table for horizontal runs.

Size Nominal Bores	Copper Tube to B.S. 659	Steel Tube to B.S. 1387
15mm	1.25m	2.0m
20mm	2.0m	2.5m
25mm	2.0m	2.5m
32mm	2.5m	3.0m
40mm	2.5m	3.0m

50mm	2.5m	3.0m
65mm	3.0m	3.5m
80mm	3.0m	3.5m
100mm	3.0m	4.0m
125mm	3.0m	4.5m
150mm	3.5m	4.5m

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The support spacing for vertical runs shall not exceed one and a half times the distances given for horizontal runs.

c) Expansion Joints and Anchors

Where practicable, cold pipework systems shall be arranged with sufficient bends and changes of direction to absorb pipe expansion providing that the pipe stresses are contained within the working limits prescribed in the relevant B.S. specification.

3-5

Where piping anchors are supplied, they shall be fixed to the main structure only. Details of all anchor design proposals shall be submitted to the Engineer for approval before erection commences.

The Sub-contractor when arranging his piping shall ensure that no expansion movements are transmitted directly to connections and flanges on pumps or other items of plant.

The Sub-contractor shall supply flexible joints to prevent vibrations and other movements being transmitted from pumps to piping systems or vice versa.

3.2.5 Sanitary Appliances

All sanitary appliances supplied and installed as part of the Sub-contract works shall comply with the general requirements of B.S. Code of Practice 305 and the particular requirements of the latest B.S. Specifications.

### 3.2.6 Pipe Sleeves

Main runs of pipework are to be fitted with sleeves where they pass through walls and floors. Generally the sleeves shall be of P.V.C. except where they pass through the structure, where they shall be mild steel. The sleeves shall have 6mm – 12mm clearance all around the pipe or for insulated pipework all around the installation. The sleeve will then be packed with slag wool or similar.

## 3.3 INSTALLATION

### 3.3.1 General

Installation of all pipework, valves, fittings and equipment shall be carried out under adequate supervision from skilled staff to the relevant codes and standards as specified herein. The Sub-contractor shall be responsible to the Main Contractor for ensuring that all builders work associated with his piping installation is carried out in a satisfactory manner to the approval of the Engineer.

### 3.3.2 Above Ground Installation

#### a) Water Services

Before any joint is made, the pipes shall be hung in their supports and adjusted to ensure that the joining faces are parallel and any falls which shall be required are achieved without springing the pipe.

Where falls are not shown on the Contract Drawings or stated elsewhere in the Specification, pipework shall be installed parallel to the lines of the buildings and as close to the walls, ceilings, columns, etc., as is practicable.

All water systems shall be provided with sufficient drain points and automatic air vents to enable them to function correctly.

3-6

Valves and other user equipment shall be installed with adequate access for operation and maintenance. Where valves and other operational equipment are unavoidably installed beyond normal reach or in such position as to be difficult to reach from a small step ladder, extension spindles with floor or wall pedestals shall be provided.

Screwed piping shall be installed with sufficient number of unions to facilitate easy removal of valves and fittings, and to enable alterations of pipework to be carried out without the need to cut the pipe.

Full allowances shall be made for the expansion and contraction of pipework, precautions being taken to ensure that any force produced by the pipe movements are not transmitted to valves, equipment or plant.

All screwed joints to piping and fittings shall be made with P.T.F.E. tape.

The test pressure shall be maintained by the pump for about one hour and if there is any leakage, it shall be measured by the quantity of water pumped into the main in that time. A general leakage of 4.5 litres per 25mm of diameter, per 1.6 kilometres per 24 hours per 30 metres head, may be considered reasonable but any visible individual leak shall be repaired.

b) Sanitary Services

Soil, waste and vent pipe system shall be installed in accordance with the best standard of modern practice as described in B.S. 5572 to the approval of the Engineer.

The Sub-contractor shall be responsible for ensuring that all ground waste fittings are discharged to a gully trap before passing to the sewer via a manhole.

The Sub-contractor shall provide all necessary rodding and inspection facilities within the draining system in positions where easy accessibility is available.

Where a branch requires rodding facilities in a position to which normal access is unobtainable, then that branch shall be extended so as to provide a suitable purpose made rodding eye in the nearest adjacent wall or floor to which easy access is available.

The vent stacks shall terminate above roof level and where stack passes through roof, a weather skirt shall be provided. The Sub-contractor shall be responsible for sealing the roof after installation of the stacks.

The open end of each stack shall be fitted with a plastic coated or galvanised steel wire guard.

Access for rodding and testing shall be provided at the foot of each stack.

c) Sanitary Appliances

All sanitary appliances associated with the Sub-contract works shall be installed in accordance with the best standard of modern practice as described in C.P. 305 to the approval of the Engineer.

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1.1. TESTING AND INSPECTION

3.4.1 Site Tests – Pipework Systems

a) Above Ground Internal Water Services Installation



All water service pipe system installed above ground shall be tested hydraulically for a period of one hour to not less than one and half times to design working pressure.

If preferred, the Sub-contractor may test the pipelines in sections. Any such section found to be satisfactory need not be the subject of a further test when system has been completed, unless specifically requested by the Engineer.

During the test, each branch and joint shall be examined carefully for leaks and any defects revealed shall be made good by the Sub-contractor and the section re-tested.

The Sub-contractor shall take all necessary precautions to prevent damage occurring to special valves and fittings during the tests. Any item damaged shall be repaired or replaced at the Sub-contractor's expenses.

b) Above Ground Soil Waste and Ventilation System

All soil, waste and ventilating pipe system forming part of the above ground installation, shall be given appropriate test procedures as described in B.S. 5572, 1972.

Smoke tests on above ground soil, waste and ventilating pipe system shall not be permitted.

Pressure tests shall be carried out before any work which is to be concealed is finally enclosed.

In all respects, tests shall comply with the requirements of B.S. 5572.

3.4.2 Site Test – Performance

Following satisfactory pressure test on the pipework system operational tests shall be carried out in accordance with the relevant B. S. Code of practice on the systems as a whole to establish that special valves, gauges, control, fittings, equipment and plant are functioning correctly to the satisfaction of the Engineer.

All hot water pipework shall be installed with pre-formed fibre glass lagging to a thickness of 25mm where the pipe runs above a false ceiling or in areas where the ambient temperature is higher than normal with the result that pipe "sweating", due to condensation will cause nuisance.

All lagged pipes which run in a visible position after erection shall be given a canvas cover and prepared for painting as follows:

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- i) Apply a coating of suitable filler until the canvas weave disappears and allow to dry.

- ii) Apply two coats of an approved paint and finish in suitable gloss enamel to colors approved by the Engineer.

All lagging for cold and hot water pipes erected in crawlways, ducts and above false ceiling which after erection are not visible from the corridors of rooms, shall be covered with a reinforced aluminium foil finish banded in colours to be approved by the Engineer.

In all respects, unless otherwise stated, the hot and cold water installation shall be carried out in accordance with the best standard of modern practice and described in C.P.342 and C.P.310 respectively to the approval of the Engineer.

The test pressure shall be applied by means of a manually operated test pump or, in the case of long main or mains of large diameter, by a power driven test pump which shall not be left unattended. In either case precautions shall be taken to ensure that the required pressure is not exceeded.

Pressure gauges should be recalibrated before the tests.

The Sub-contractor shall be deemed to have included in his price for all test pumps, and other equipment required under this specification.

The test pressure shall be one and a half times the maximum working pressure except where a pipe is manufactured from a material for which the relevant B.S. specification designates a maximum test pressure.

### 3.5 STERILISATION OF COLD WATER SYSTEM

All water distribution system shall be thoroughly sterilised and flushed out after the completion of all tests and before being fully commissioned for handover.

The sterilisation procedures shall be carried out by the Sub-contractor in accordance with the requirements of B.S. Code of Practice 301, Clause 409 and to the approval of the Engineer.

## SECTION 4

PARTICULAR SPECIFICATION FOR PORTABLE FIRE  
EXTINGUISHER BOOSTED HOSE REEL SYSTEM,  
INSTALLATIONS

## PART 4

### PARTICULAR SPECIFICATIONS FOR PORTABLE FIRE EXTINGUISHER

#### 6.1 GENERAL

The particular specification details the requirements for the supply and installation and commissioning of the Portable Fire Extinguishers and Boosted Hose Reel System. The Sub-contractor shall include for all appurtenances and appliances not necessarily called for in this specification or shown on the contract drawings but which are necessary for the completion and satisfactory functioning of the works.

If in the opinion of the Sub-contractor there is a difference between the requirements of the Specifications and the Contract Drawings, he shall clarify these differences with the Engineer before tendering.

#### 6.2 SCOPE OF WORKS

The Sub-contractor shall supply, deliver, erect, test and commission all the portable fire extinguishers and Hose Reel which are called for in these Specifications and as shown on the Contract Drawings.

#### 6.3 WATER/CO2 EXTINGUISHERS

These shall be 9-litre water filled CO2 cartridge operated portable fire extinguishers and shall comply with B.S. 1382: 1948 and to the requirements of B.S.4523: 1977. Unless manufactured with stainless steel, bodies shall have all internal surfaces completely coated with either a lead tin, lead alloy or zinc applied by hot dipping. There shall be no visibly uncoated areas.

The extinguishers shall be clearly marked with the following:

- a) Method of operation.
- b) The words 'WATER TYPE' (GAS PRESSURE) in prominent letters.
- c) Name and address of the manufacturer or responsible vendor.
- d) The nominal charge of the liquid in imperial gallons and litres.
- e) The liquid level to which the extinguisher is to be charged.
- f) The year of manufacture.
- g) A declaration to the effect that the extinguisher has been tested to a pressure of 24.1 bar (350 psi.).
- h) The number of British Standard 'B.S' 1382 or B.S. 5423: 1977.

#### 6.4 PORTABLE CARBON DIOXIDE FIRE EXTINGUISHERS

These shall be portable carbon dioxide fire extinguishers and shall comply with B.S.

3326: 1960 and B.S. 5423: 1977.

The body of extinguisher shall be a seamless steel cylinder manufactured to one of the following British Standards; B.S. 401 or B.S. 1288.

The filling ratio shall comply with B.S. 5355 with valves fittings for compressed gas cylinders to B.S.341. Where a hose is fitted it shall be flexible and have a minimum working pressure of 206.85 bar (3000 p.s.i.). The hose is not to be under internal pressure until the extinguisher is operated.

The nozzle shall be manufactured of brass gunmetal, aluminium or stainless steel and may be fitted with a suitable valve for temporarily stopping the discharge if such means are not incorporated in the operating head.

The discharge horn shall be designed and constructed so as to direct the discharge and limit the entrainment of air. It shall be constructed of electrically non-conductive material.

The following markings shall be applied to the extinguishers:-

- a) The words "Carbon Dioxide Fire Extinguisher" and to include the appropriate nominal gas content.
- b) Method of operation.
- c) The words "Re-charge immediately after use".
- d) Instructions for periodic checking.
- e) The number of the British Standard B.S. 3326: 1960 or B.S. 5423. f) The manufacturers name or identification markings

DRY CHEMICAL POWDER PORTABLE FIRE EXTINGUISHER

The portable dry powder fire extinguishers shall comply with BS3465: 1962 and BS 5423. The body shall be constructed to steel not less than the requirements of BS 1449 or aluminium to BS 1470: 1972 and shall be suitably protected against corrosion.

The dry powder charge shall be not-toxic and retain its free flowing properties under normal storage conditions. Any pressurizing agent used as an expellant shall be in dry state; in particular compressed air.

The discharge tube and gas tube if either is fitted shall be made of steel, brass, copper or other not less suitable material. Where a hose is provided it shall not exceed 1,060mm and shall be acid and alkali resistant. Provision shall be made for securing the nozzle when not in use.

The extinguisher shall be clearly marked with the following information a)

The word "Dry Powder Fire Extinguisher"

b) Method of operation in prominent letters.

c) The working pressure and the weight of the powder charge in Kilogramme. d) Manufacturers name or identification mark

e) The words "RECHARGE AFTER USE" if rechargeable type.

- f) Instructions to regularly check the weight of the pressure container (gas Cartridge) or inspect the pressure indicator on stored pressure types when fitted, and remedy any loss indicated by either.
- g) The year of manufacture.
- h) The Pressure to which the extinguisher was tested.
- i) The number of this British Standard BS 3465 or BS 5423: 1977.
- j) When appropriate complete instructions for charging the extinguisher shall be clearly marked on the extinguisher or otherwise be supplied with the refill.

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## 6.6 AIR FOAM FIRE EXTINGUISHER

These shall be of 9 litres capacity complete with refills cartridges and wall fixing brackets and complying with B.S. 5423 with the following specifications:-

Cylinder: to B.S. 1449

Necking: to be 76mm outside diameter steel EN 3A 2<sup>3</sup>/<sub>4</sub> X 8TPI female thread.

Head cap: to be plastic moulding acetyl resin.

CO<sub>2</sub> Cylinder: to be 75gm P.V.C coated.

Internal Finish: to be polythene lining on phosphate coating.

External finish: to be phosphated - One coat primer paint and one coat stove enamel B.S. 381 C.

## 6.7 FIRE BLANKET

The fire blanket shall be made from cloth woven with pre-asbestos yarn or any other fire proof material and to measure 1800 x 1210 mm and shall be fitted with special tapes folded so as to offer instantaneous single action to release blanket from storing jacket.

## 6.8 BOOSTED HOSE REEL SYSTEM

### 6.8.1 General

The Particular Specification details the requirements for the supply, installation and commissioning of the hose reel installation. The hose reel installation shall comply in all respects to the requirements set out in C.O.P 5306 Part 1: 1976, B.S 5041 and B.S 5274. The System shall comprise of a pumped system.

### 6.8.2 Hose Reel Pumps

The fire hose reel pumps shall consist of a duplicate set of multi-line centrifugal pumps from approved manufacturers. The pumps shall be capable of delivering 0.76 lit/sec at a running pressure of 2 bars.

The pump casing shall be of cast iron construction with the impeller shaft of stainless steel with mechanical seal.

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### 6.8.3 Control Panel

The control panel shall be constructed of mild steel 1.0mm thick sheet, be moisture, insect and rodent proof and shall be provided complete with circuit breakers and a wiring diagram enclosed in plastic laminate.

The pump shall be controlled by a flow switch therefore; the control panel shall include the following facilities:

- (a) 'On' push button for setting the control panel to live.
- (b) Green indicator light for indicating control panel live.
- (c) Duty / Stand-by pump auto change over.
- (d) Duty pump run green indicator light.
- (e) Stand-by pump run green indicator light.
- (f) Duty pump fail red indicator light.
- (g) Stand-by pump fail red indicator light.
- (h) Low water condition pump cut-out with red indicator light.



The pumps are to be protected by a low level cut-out switch to prevent dry pump run when low level water conditions occur in the water storage tank.

#### 6.8.4 Hose Reel

The hose reel to the installation shall consist of a recessed, swing-type hose reel as Angus Fire Armour Model III or from other approved manufacturers.

The hose reel shall comply with B.S. 5274: 1975 and B.S 3161: 1970 and is to be installed to the requirements of C.P. 5306 Part 1: 1976.

The hose reel shall be supplied and installed complete with a first-aid Non-kinking hose 30 meters long with a nylon spray / jet / shut-off nozzle fitted. A screw down chrome - plated globe valve to B.S 1010 to the inlet to the reel is to be supplied.

The orifice to the nozzle is to be not less than 4.8mm to maintain a minimum flow of 0.4 lit / sec to jet.

The hose reels shall be installed complete with electro-galvanised cabinet recessed on the wall. The hose reels shall be installed at 1.5 metres centre above the finished floor level in locations shown in the contract drawings.

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#### 6.8.5 Pipe Work

3. The pipe work for the hose reel installation shall be galvanised wrought steel tubing heavy grade Class C to B.S 1387: 1967 with pipe threads to B.S 21. The pipe work and all associated fittings shall be in approved colour for fire fittings.

#### 6.8.6 Pipe Fittings

The pipe fittings shall be wrought steel pipe fittings, welded or seamless fittings conforming to B.S. 1740 or malleable iron fittings to B.S 143.

All changes in direction will be with standard bends or long radius fittings. No elbows will be provided.

#### 6.8.7 Non-return Valves

The non-return valves up to and including 80mm diameter shall be to B.S. 5153: 1974. The valves shall be of cast iron construction with gunmetal seat and bronze hinge pin.

#### 6.8.8 Gate Valves

The gate valves up to and including 80mm diameter shall be non-rising stem and wedge disc to B.S 5154: 1974 with screwed threads to B.S. 21 tapes thread

#### 6.8.9 Sleeves

Where pipe work passes through walls, floors or ceilings, a sleeve shall be provided one diameter larger than the diameter of the pipe, the space between them to be packed with mineral wool, to the Engineer's approval.

#### 6.8.10 Earthing

The hose reel installation shall be electrically earthed by a direct earth connection. The installation of the earthing shall be carried out by the Electrical Sub- contractor.

6.8.11 Finish Painting

Upon completion of testing and commissioning the hose reel installation, the pipework shall be primed and finish painted with 2 No. coats of paints to the Engineer's requirements.

6.8.12 Testing and Commissioning

The hose reel installation shall be flushed out before testing to ensure that no builder's debris has entered the system. The installation is to be then tested to one and half times the working pressure of the installation to the approval of the Engineer. Simulated fault conditions of the pumping equipment are to be carried out before acceptance of the System by the Engineer.

6.8.13 Instruction Period

The Sub-contractor shall allow in his contract sum for instructing of the use of the equipment to the Client's maintenance staff. The period of instruction may be within the contract period but may also be required after the contract period has expired.

The period of time required shall be stipulated by the Client but will not exceed two days in which time the Client's staff shall be instructed on the operation and maintenance of the equipment.

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6.8.14 Signage-Fire Instruction /Fire Exit

6.8.14.1 Fire Instruction Notice

Print fire instruction on the Perspex plates with White Colour

Background measuring 510mm length x 380mm width x 4mm thick as follows;

FIRE INSTRUCTION NOTICE	
In the event of fire;	
1. Raise the alarm by actuating the nearest alarm system point, /gong or Shout Fire	Sound Siren
2. Attack fire using the nearest available equipment	
3. Call nearest fire Brigade or Police 999 and inform your (PABX) Operator	switchboard
4. Ensure that all personnel not involved in firefighting evacuation outside the building.	to safety
5. Close but DO NOT LOCK doors behind as you leave.	
6. Evacuate the building using stairs or fire escapes. Do not use	

Lifts/escalators. Walk calmly. Avoid panic. Do not stop or return for personal belongings.

7. Assemble as per floor outside the building for roll call.

#### 6.8.14.2 Fire Exit Sign

Print Fire Exit signs on the Perspex plate, 4mm thick, with white colour background as follows:- 1.

Lettering IN RED COLOUR of not less than 50mm in height.

2. A pendant sign bearing words, FIRE EXIT and with a directional arrow.

The sign must be capable of being read from both approaches to exit and so is double sided.

#### 6.8.14.3 Hose Reel Label

Print Fire Exit signs on the Perspex plate, 4mm thick, with white colour background as follows:- 1.

Lettering IN RED COLOUR of not less than 50mm in height.

2. A pendant sign bearing words, HOSE REEL and with a directional arrow.

The sign must be capable of being read from both approaches to exit and so is double sided.

## SECTION 5

# PARTICULAR SPECIFICATIONS FOR AIR CONDITIONING & MECHANICAL VENTILATION INSTALLATION

## GENERAL SPECIFICATION FOR MECHANICAL VENTILATION INSTALLATIONS CONTENT

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## GENERAL SPECIFICATION FOR MECHANICAL VENTILATION INSTALLATIONS

### 1.0 SCOPE OF WORK

The scope of the works comprises Installation, Testing, and Commissioning of Mechanical Ventilation and Air Conditioning systems in accordance with Specifications and drawings.

All the necessary elements and details for complete system are to be included. Excluded from the specifications are the following:-

- All concrete works
- All block work
- Electrical wiring, isolators and switch boards, except internal wiring for control system from a local isolator.

### 2.0 SYSTEM COMPONENTS

Dimensions and capacities of ducts and fans are calculated and based on a Specific requirements of air, and on an assumed resistance through grilles, silencers etc. However the installer shall be responsible for the correct functioning of the system. Subsequently it is therefore his duty to size the systems' components with consideration to his offered equipment.

### 3.0 DRAWINGS

The Engineer's drawings show the main layout and principles for the Ventilation and Air Conditioning Systems. If need for further detailing is required in order to carry out the work, working drawings and details shall be produced for approval by the Engineer before the work is executed.

In preparation of the working drawings care should be taken to coordinate the Ventilation and Air Conditioning works with other services involved and avoid any interference with these.

### 4.0 MATERIALS AND WORKMANSHIP GENERALLY

In the specification, equipment is generally described according to capacities and a given standard in order to aid in identification of the particular equipment to satisfy specifications. The equipment selected shall be of reputable manufacture with adequate Back-Up service.

If the Engineer finds it necessary, samples of the materials will be submitted for approval before placing an order. The Engineer shall reject any materials which he finds to be of unsatisfactory quality.

Works shall be carried out by competent workmen under experienced supervision.

The Engineer shall have the authority to have any substandard work or equipment redone and/ or equipment replaced.

## 5.0 DUCTWORK GENERALLY

### 5.1 Ductwork

All seams, joints and connections to plant shall be so made as to reduced air leakage to a minimum. Internal roughness and obstructions to airflow will not be accepted. Sharp edges or corners on the outside of ductwork, flanges, supports, etc will not be accepted. Any part of galvanized ductwork where the galvanizing is damaged during manufacture or erection shall be painted with two coats of aluminum, zinc or other corrosion – resisting paint to the approval of the Engineer.

Where ducts pass through roofs (and external walls where applicable) these shall be fitted with angle flanges and weather cravats to ensure a weather-proof fitting to the building structure.

Connections to equipment shall be made with angle flanged joints. Ductwork which may have to be moved to enable plant to be removed shall incorporate angle flanged joints. For long duct runs, angle flanged joints shall be included at intervals to facilitate any subsequent alternations.

Bends and offsets shall have a minimum throat radius equal to the width of the duct. Where short radius elbows are indicated or agreed by the Engineer as necessary due to site limitations the dimensions and internal vane (s) shall be in accordance with HVCA publication DW/121.

Ductwork shall be constructed by galvanized, cold rolled, close annealed patent flattened sheets. Tests ho

les shall be provided in branch ducts from grilles and there shall be three or four tests holes on side of duct according to duct depth at each test position. At branch positions there shall be one test hole. Air tight swivel type metal covers shall be fitted over the test holes in such a manner that they shall be readily removed as required.

### 5.2 Rectangular ductwork

Construction of ductwork shall be as per the following Guidelines:

- Up to 300mm longer side – 22 S.W.G.
- over 300mm and up to 460mm longer size – 20 S.W.G.
- over 460mm and up to 900mm longer side 18 S.W.G (stiffening to be 25mm x 25mm x 3mm. M.S angle at slip joints at 180mm spacing) • Over 900mm and up to 1370mm. longer side 16 S.W.G. (stiffening to be 30mm x 30mm x 3mm M.S angle at 900mm spacing).
- Over 1370mm longer side – 14 S.W.G. (Stiffening to be 40mm x



40mm x5mm M.S angle at 900mm. spacing).

Ductwork constructed from 22 and 20 S.W.G sheet shall have folded locked seams and ductwork constructed from 18, 16 and 14 S.W.G. sheets shall have riveted seam with 8 S.W.G rivets at 2" pitch.

Joints for ductwork having a side greater in width than 610mm shall be flanged by means of 30mm x 30mm x 3mm mild steel angles.

Mild steel used as flanges or stiffeners shall be riveted to the ductwork, with 8 S.W.G rivets at 2" pitch. The joint faces of flanges shall be drilled for 10mm bolts at 75mm pitch.

Air tight access doors shall be provided on the ductwork wherever indicated on the drawings. The access doors, of sufficiently heavy construction to avoid distortion, complete with handles, shall be secured by brass wing nuts screwed into studs provided, on galvanized mild steel stiffening frames riveted, or bolted to the ductwork. The access doors shall be provided with felt or rubber gaskets to ensure that when closed they are perfectly tight.

The ductwork shall be installed with all joints air tight and adequately stiffened and braced shall have the largest radius possible with a minimum throat radius of one diameter if possible. Square or miter elbows will only be allowed where shown on the drawings. Turning vanes shall be fitted in square or miter elbows.

Transformer pieces except where situated on fan suction shall be constructed so that the angle on any side does not exceed 15° to the axis of the duct where possible.

Branch ducts shall enter main ducts expansion sections where possible. Where branch ducts occur, at taper or transformation pieces, the length of such pieces in the main duct shall be symmetrical about the axis of the branch.

## 6. BRACKETS AND SUPPORTS

Supports and brackets for ductworks shall be made adjustable for height, spaced to ensure support and where practicable shall be fitted at each joint of the ductwork. Vertical ductwork shall be supported at each floor level, horizontal ducts at intervals not exceeding 2280mm and adjacent to fans, canvas joints and other equipment. All members of supports in contact with metal ductwork shall be galvanized after fabrication. Socketed joints shall have a minimum overlap of 50mm in the direction of flow. The joint shall be made with an approved type jointing compound with bolts or rivets at centres not exceeding 50mm. wherever access cannot be made for riveting or bolting self tapping screw of the shortest length which will give a satisfactory joint shall be used in lieu of the rivets or bolts, on size or diameters up to 530mm. All slip joints on circular ductwork are to have a spigot carefully swaged damper leaves shall be multi leaf type. The quadrants shall be of robust

construction and securely fixed to the ductwork. The leaves shall be linked with a connecting rod and the ends of the spindle shall be housed in bearings. Dampers are to indicate the full and closed positions and are to be marked and then locked after air Volume has been set.

## 7.0 JOINTS

### 7.1 Flexible Joints

Flexible joints shall be provided on fan inlet and outlet connections and elsewhere on the ductwork where indicated. They shall be over the full cross-sectional area of the mating fan inlet or outlet section. The ends of the duct and fan connections shall be in line.

Flexible joints shall consist of, or be protected by, material having a fire penetrating time of at least fifteen minutes when tested in accordance with BS476 Part 1 Section 3. The material shall be of the glass fibre cloth type, canvas or other approved material. The width of joints from metal edge to metal edge shall not be less than 80mm and more than 250mm.

All flexible joints other than fan inlet connections shall be between flanged ends. The flexible material flange shall be backed by an angle or flat iron flange and the flexible joint flat iron bar used with fan inlets shall not be less than 5mm thick.

### 7.2 Flexible Connections.

Where flexible connections are indicated or required between rigid ductwork and particular components or items of equipment, the internal diameter of the flexible duct shall be equal to the external diameter of the rigid ductwork and of the spigot type. The use of flexible duct between rigid sections of sheet metal ductwork to change direction or plane will not be permitted except where indicated or expressly authorized by the Engineer. The flexible duct shall have a liner a cover of tough tea-resistant fabric equal in durability and flexibility to glass fibre shall be impregnated and coated with plastics. It shall be reinforced with a bonded galvanized spring steel wire helix or glass fibre cord or equal and shall be bonded to cover to ensure regular convolutions.

Alternatively the flexible duct shall consist of flexible corrugated metal tubing of stainless steel, aluminium, tinplated steel or aluminium coated steel. The metal may be lined on the inside or the outside or both with plastics materials.

The joints to rigid spigots shall be sealed with a brush coat of pipe jointing paste or mastic compound. Ducts up to 150mm diameter shall be secured with a worm drive type hose clip complying with BS 3628. Ducts over 150mm diameter shall be secured with band clip.

The frictional resistance to air flow per unit length of the flexible duct shall not exceed 50% more than the frictional resistance per unit length of galvanized steel ducts of equivalent diameter. The radius ratio R/D for bends shall not be

less than 2, where R is the centre line radius and D is the diameter of the flexible duct.

Flexible ducts shall be suitable for an operating temperature range of 18oC to 120oC and shall comply with BS 476 Part 1, Section 2, Clause 7 (Clause 1; surface of very low flame spread).

#### 8.0 FINISH PAINTING

Upon completion of the installation and after all tests have been carried out to the satisfaction of the Engineer, the plant, equipment, supports, etc. shall be examined and all priming coats damaged during erection made good.

Any plant or equipment, ductwork, etc., which is to be insulated, shall have had the priming paint protection made good before the application of the insulation. After the above procedures have been carried out to the satisfaction of the Project Manager, the various surface shall be given the necessary preparation as recommended by the paint and insulation manufacturers and finish painted in colours to be agreed between the Sub-Contractor and Project Manager, at a later date.

For the purposes of the Specification, however, it shall be deemed that the sub-contractor's tender price was based on the identification requirements for the various services detailed in Code of Practice DW/161 Identification of Ductwork as published by the H.V.A.

#### 9.0 AIR INTAKES AND OUTLETS

Unless otherwise indicated fixed louvers on external walls will be fitted at air intake and outlet positions. A galvanized steel wire mesh screen of 20mm diamond mesh and at 2mm diameter wire and complete with a frame of galvanized steel rod with securing lugs or of flat iron shall also be fitted on the inner side of the louvers.

#### 10.0 FANS

##### 10.1 General

Fans shall be capable of giving the specified performance when tested in accordance with BS 848. Although estimated values of the resistance to airflow of items of equipment may be indicated, this does not relieve the Contractor of the responsibility for providing fans capable of delivering the required air volume flow through the system.

The make and design of fans shall be approved by the Engineer and evidence supporting noise levels and fan efficiencies shall be provided. Where fans are supplied with noise attenuations, full details of the attenuations shall be given.

Belt driven fans shall be fitted with pulleys suitable for V-belts; pulleys of the taper lock type may be used for drivers up to 30KW output. Alternatively, and in any case above 30KW output, pulleys shall be secured to the fan and the motor shafts by keys fitted into machined keyways. Pulleys shall be keyed to the fan shaft in the overhung position. Keys shall be easily accessible so that

they can be withdrawn or tightened and they shall be accurately fitted so that the gib head does not protrude beyond the end of the shaft.

Machined bolts, nuts and washers only shall be used for the assembly of fans; all bearing surfaces for the heads of bolts or washers shall be count faced. Holding down bolts for fans and meters shall be square section under the head or be fitted with snugs to prevent them tuning in the fan base plate when the nuts are tightened.

Any fan which is too large or too heavy for safe manhandling shall provided with eyebolts or other lifting facilities to enable mechanical lifting equipment to be used.

## 10.2 Axial Flow Fans

Axial flow fans shall be of either the single stage type or the multi-stage contra-rotating type with each impeller mounted on an independent motor. Casings shall be rigidly constructed of mild steel stiffened and braced to obviate drumming and vibration. Cast iron or fabricated steel feet shall be provided where necessary for bolting to the base or supports. Inlet and outlet ducts shall terminate in flanged rings for easy removal. The length of the fan (s) and motors(s) shall also terminate in flanges in order that the complete section may be removed without disturbing adjacent ductwork. Electrical connections to the motor(s) shall be through an external terminal box secured to the casing.

Impellers shall be of steel or aluminium, the blades shall be secured to the hub or the blades and the hub shall be formed in one piece. The hub shall be keyed to a substantial mild steel shaft and the whole statically balanced. Blades shall be of aerofoil section. Shafts shall be carried in two bearings which may be ball roller or sleeve type. Lubricators shall be extended to the outside of the casing.

Where axial flow fans are driven by a motor external to the casing the requirements for pulleys and for V-belt drives and guards shall be met. Unless otherwise indicated a guard is not required for any part of a drive which is within the fan casing. An access door of adequate size shall be provided.

Where axial flow fans of the bifurcated type are indicated the motors shall be out of the air stream. Motors may be placed between the two halves of the casing in the external air or may be placed within the fan casing provided that effective ventilation is given to the motor. Where hot gases or vapours are beings handled the motor and the bearings shall be suitable for operation at the temperature they may experience.

## 11.0 DAMPERS

### 11.1 General

Sufficient dampers shall be provided to regulate and balance the system. Dampers on grills or diffusers shall be used for fine or secondary control. All dampers shall be sufficiently rigid to prevent fluttering. Unless otherwise indicated, the air leakage past dampers in the fully-closed position shall not exceed 5% of maximum design air flow in the duct. All duct dampers except fire dampers and selfclosing flaps shall be fitted with locking devices and position indicators. Dampers shall be generally in accordance with the appropriate HVCA Specification.

Each Primary control damper shall be fitted with a non-corrodible label stating the actual air flow in M3/S and the cross-sectional area. Alternatively, these figures shall be painted in a visible position on the adjoining ductwork or insulation. The position of a damper as set after final regulation and balancing be indelibly marked on the damper quadrant

- 11.2 Butterfly dampers  
Butterfly dampers shall each consist of two plates edge seamed, and of the same thickness of material as that from which the associated duct is made, and rigidly fixed to each side of a mild steel operating spindle, the ends of which shall be turned and housed in non-ferrous bearings.
- 11.3 Bifurcating dampers  
Bifurcating dampers shall be of 2mm thick sheet for sizes up to 450mm square. For larger sizes, the thickness shall be as indicated. Damper plates shall be rigidly fixed to square section mild steel spindles the ends of which shall be turned and housed in nonferrous bearings.
- 11.4 Multi-leaf dampers  
Multi – leaf dampers shall consist of two plates of material of the same thickness as the associated duct and rigidly fixed to each side of an operating spindle, the ends of which shall be housed in brass, nylon, oil impregnated sintered metal, PTFE impregnated or ball bearings. The ends of the spindles shall be linked such that one movement of the operating handle shall move each leaf an equal amount. An inspection door shall be provided adjacent to each multi-leaf damper. On low velocity systems only, multi-leaf damper blades may be of a single plate, at least 1.6mm thick and suitably stiffened, and the blade linkages may be within the duct. Those dampers shall have bearings and inspection doors as specified above.
- 11.5 Damper Quadrants and Operating Handles  
Quadrants and Operating handles shall be of die-cast aluminium with the words "OPEN" and "SHUT" cast on the Quadrants. Quadrants shall be securely fixed to the damper spindles and shall be close-fitting in the quadrant hubs to prevent any damper movement when the damper levers are locked.
- 11.6 Self-closing dampers  
Self-closing dampers shall be designed so as to present the minimum of resistance to airflow under running conditions, to take up a firm, non- fluctuating position under running conditions and to give a tight shut-off when closed. They shall incorporate rubber stops to prevent rattling and to give a tight shut-off when closed. They shall incorporate rubber stops to prevent rattling.
- 11.7 Sliding Dampers  
Sliding dampers shall be provided only where indicated. They shall be of 2mm. thick sheet steel for size up to 450mm square. For larger sizes the thickness shall be as indicated. They shall run in guides lined with felt.

- 11.8 Iris type dampers.  
Iris type dampers may be used in ducting up to 600mm, dia. Or 450mm square. The control shall be on the outside of the damper. The design shall be such that the leaves of the damper can be easily moved for adjustment.
- 12.0 GRILLES
- 12.1 Supply & Return Registers  
Supply registers shall be manufactured from high grade, extruded Aluminium sections with lacquered finish and fixing shall be 32mm with bevelled edges.  
The registers shall have a front set of blades parallel to the long dimension, of rear set of blades parallel to the short dimension, the blades being at 17mm centres and individually adjustable with opposed blade dampers.
- 12.2 Extract grilles  
Extract grilles shall be similar to the Supply Registers described above with the exception that they have only one set of blades parallel to the long dimension.
- 12.3 Fresh Air Grilles  
These shall be manufactured from sheet steel with steel fixing flanges and shall be galvanized after manufacture. An insect screen shall be fixed downstream.
- 12.4 Diffusers  
These shall be manufactured from high grade extruded sections with lacquered finish, bevelled flanges and removable core. Fixing shall be by self-tapping screws through the duct into neck of the diffuser.
- 12.5 Louvres  
Discharge and Fresh air Intake louvres shall be manufactured from mild steel and be galvanized after manufacture. A screen shall be fixed to the back of the louvers
- 13.0 ATTENUATORS
- 13.1 General  
Purpose made attenuators and sound absorbing material shall be designed to air flow, have adequate strength and cohesion to resist erosion by air flow and do not produce dust. They shall be free of odour and proof against rot, damp and vermin and shall comply with the requirements as to fire and smoke hazards. Adhesives shall be

compatible with the sound absorbent material and should preferably be nonflammable.

Where sound absorbent material and /or special attenuators are indicated they shall either reduce the sound level in the space, due to the equipment, to the specified value or shall give the specified sound level attenuation over the specified range of frequencies. Purpose made attenuators shall be tested in accordance with HVRA Laboratory Report No. 55 (Code for the measurement of the performance of unit silencers). The insertion loss and generated noise level for each octave band and the pressure loss of the silencer shall be stated. Attenuators shall be suitable for internal air pressure of 100N/m<sup>2</sup>, air stream temperatures of up to 40oc and free from air stream erosion for velocities up to 25m/s. The mineral wool lining shall be rot, vermin and fire-proof. Attenuator casing shall be pregalvanized sheet steel with galvanized pre-drilled flanges.

### 13.2 Rectangular Attenuators

These shall be rectangular in section with splitters forming air passages in parallel. The mineral wool lining shall be resin bonded.

### 13.3 Circular Attenuators

Circular section attenuators will have a central pod. The mineral wool lining shall be retained by expanded steel. The end flanges shall be match drilled to suit the fan which they are fixed to.

### 13.4 Acoustic lining

Where indicated on the contract drawings, the ductwork shall be acoustically lined. The lining shall consist of resin bonded mineral wool 25mm, thick fixed to the ductwork by a suitable adhesive



## 14.0 INSTRUMENTS

### 14.1 General

The instruments, gauges etc, detailed in this section shall be provided in addition to those associated with specific items of plate and detailed elsewhere, they shall be mounted in accessible positions and shall be easily read.

### 14.2 System Static Pressure Gauge

A system static pressure gauge shall be provided for the system. It shall consist of a small inclined manometer gauge similar to a filter gauge. The edge of the gauge shall be connected to the system and the other end shall be left open to the plant room but where fluctuation of the static pressure in the plant room may occur the gauge shall be connected across the main fan. Such fluctuations may be caused by wind pressure affecting large open air intakes to the plant room.

## 15.0 VIBRATION, NOISE AND SOUND INSULATION

### 15.1 Anti-Vibration Mountings

Fans, compressors, motors and any other vibration-inducing equipment shall be isolated from the building structure by anti-vibration mountings which shall be compressed machinery cork, spring or rubber dampers or rubber/metal bearers as indicated.

### 15.2 Noise

The noise produced by the installation in the spaces served, in any adjacent buildings and in the open air surrounding plant rooms shall be kept as low as possible. This shall be specially considered in the selection of fan motors, grilles and the internal finish and arrangements of extraction ducting.

Noise level information for fans based on octave analysis data, shall be stated. The reference level and the testing technique shall be stated.

The sound level in the spaces served, due to the equipment shall comply with the recommended design criteria given in the IHVE Guide (Table 13.1 of 1965 Edition). The maximum sound pressure level due to ventilation system must not exceed value mentioned below measured by a reference value of  $2 \times 10^{-5}$

N/m<sup>2</sup> transferred to a logarithmic scale, and measured at any point 1.5 meters above the floor and 1.0 meters from the walls.

The maximum sound pressure level measured at any point 4 metres from the extract point must not exceed 55dB.

The maximum sound pressure level measured at any point 4 metres from fans must not exceed 60dB.

## 16.0 THERMAL INSULATION -

## 16.1 General Description

All heated, cooled, and recirculated air ductwork shall be insulated. Insulation shall be of 25mm thick expanded polystyrene sheet, or spray applied polyurethane foam to a uniform thickness of 25mm. Polystyrene shall be fixed so that the edges butt closely without gap and the insulation shall overlap at corners by the thickness of the insulation. The sheet shall be fixed by means of a suitable adhesive and plastic impingement pins attached to the ductwork.

## 16.2 Ductwork In Plant Room

The insulation described above in Clause 5.1 above shall be finished by the application of a 15mm thick layer of hard setting finish. Insulation shall bevelled thick to angle of 45o at all connecting flanges, access hatches and all other places where operation or maintenance is likely to cause the breaking of the insulation.

The insulation shall then be given a vapour sealing by the application of two coats of anti-condensation paint.

## 16.3 Ductwork External to plant Rooms

The insulation described in Clause 5.1 above shall finish by the application of two coats of bitumastic.

## 17.0 ELECTRICAL EQUIPMENT AND WIRING

## 17.1 Scopes

The responsibility for electrical equipment and wiring shall be as defined as below:-

An on-off starter shall be provided and placed in the appropriate position for connection of the fans required for the installation and within a time agreed with the Engineer fully detailed wiring diagrams for all connections to them shall be availed.

The Installer shall be responsible for the accuracy of all wiring diagrams provided by him and for the correct internal wiring of all pre-wired equipment supplied. The Installer shall reimburse the full cost of abortive or remedial work arising from any error in these aspects.

## 17.2 General

Unless otherwise indicated all electrical equipment and installation shall be suitable for use in ambient temperatures up to 40°C and relative humidities up to 90%. For tropical climates, electrical equipment shall be suitable for use in the temperature and humidity as indicated; it shall be proof against atmospheric corrosion, including that of saline air where relevant, and materials shall not be susceptible to mould growth or attack by termite and similar hazards.

### 17.3 Electrical Motors

Electrical motors shall comply with BS 170 2048 or with BS 2613 and BS 3979 as appropriate. All motors shall have Class E insulation (BS2757) and can be continuously rated.

They shall be screen protected (BS2817) unless otherwise indicated. Under all normal conditions without being overloaded. All motors larger than 0.75kw output shall be three phase, for motors above 15kw output the type of motor and method of starting shall be such as to limit the starting and run-up currents to three times the rated full load current unless otherwise indicated. No motor shall run faster than 25 rev/s unless otherwise indicated.

## 18.0 INSPECTION, COMMISSION AND TESTING

### 18.1 General

Unless otherwise indicated tests shall be carried out in accordance with the appropriate BS or CP. Test certificates for works tests, site tests and tests required by BS shall be submitted in duplicate to the Engineer.

### 18.2 Testing

Where an individual inspection or tests take place at outside the site of the works representatives of the Engineer will be required to be present. Unless otherwise indicated the contract shall include the cost of all tests, necessary instruments, plant supervision and labour both at work and on site. The accuracy of the instruments shall be demonstrated where so directed by the Engineer.

The site test shall be of at least six hours duration. Any defects or workmanship, materials and performance maladjustments or other irregularities which become apparent during the tests shall be rectified by the supplier at his expense and the tests shall be repeated at his expense to the satisfaction of the Engineer.

The Supplier/Installer's representative present at the site tests shall be fully conversant with the operation of the thermostatic controls and shall be expected to explain the operation and safety controls forming part of the installation to the employer's representatives.

#### 18.2.1 Site Tests

The Installer shall supply all instruments and equipment necessary to carry out site tests and shall arrange with other parties for the testing of associated equipment which may affect the performance of the plants installed under these works.

#### 18.2.2 Site Tests-Fans

All fans shall be charged with suitable lubricant and shall be tested upon completion of the auxiliary system erection to ascertain that the performance of each fan complies with the requirements of the specification.

#### 18.2.3 Completion of Works – Balancing and Commissioning

Following the site tests and prior to handover, Mechanical Ventilation or Air-Conditioning systems shall be balanced by means of grills, dampers and other special controls installed so to give the required air flow rates and where applicable the required temperatures, pressures and humidity conditions in all areas served by the said systems.

The complete system shall be balanced and commissioned as a whole. Sectional balancing and commissioning on any part of the system where this excludes final complete system balancing and commissioning shall not be accepted. Test volumes within ducts shall be within +5% of the design volumes, and volumes at grills and diffusers shall be within +10% of the design volumes.

When the system has been balanced to the satisfaction of the project manager, it shall be run under complete automatic control for 72 hours continuous operation to ascertain any faults in operation before acceptance and handover. Any faults discovered during this time shall be corrected and another test or tests of 72 hours duration shall be carried out to ensure satisfactory operation, all at the expense of the Supplier/Installer.

During this phase, particular attention shall be paid to:

- The maintenance of cleanliness of all plant and extraction systems during construction and ensuring that extraction systems are cleaned through as part of commissioning.
- The protection of plant, particularly sensitive or fragile items, from the activities of other trades during construction and from dirt and mal operation during commissioning.
- The protection of electrical of electrical equipment from damp during construction and commissioning.

#### 19.0 CONTROL SYSTEM

Particular attention shall be paid to the following features:

- Satisfactory operation of any automatic or manually operated sequence to be used in the event of fire.
- Safety in the event of failure and of sudden resumption of electricity supply.
- Satisfactory operation of safety interlocks designed for the protection of personnel, such as those associated with the high voltage electrically operated plant.

The following items shall be checked and/or tested and recorded on the site

TestCertificate: -

- Set devised value of all control devices
- Satisfactory operation of equipment protection devices.
- Satisfactory operation of all sequencing operations and alternate working selections and automatic or manual change-over of duplicate plant.

## 20.0 NOISE AND SOUND CONTROL

Sound level reading shall be taken with a simple sound level meter using the 'A' scale weighting network. The spaces in which readings shall be taken shall be as agreed with the Engineer but will in general be the following:-

- Plant rooms
- Occupied rooms adjacent to plant rooms
- Outside plant rooms facing air intakes and exhaust to assess possible nuisance to adjacent accommodation. If the adjacent accommodation is private residential building
- tests may be required at night.
- In the space served by the first grille or diffuser after a fan outlet.
- In any space where, by the addition of special silencing material or techniques of by classification of use, a low level of noise is clearly required.

Alternatively, sound level reading shall be taken using a sound analyzer to give an octave band analysis of the ground spectrum and to pinpoint the frequency values of peak sound levels. The spaces in which readings shall be taken shall be as agreed with the Engineer but will in general be as detailed in paragraph above.

## 21.0 OPERATING AND MAINTAINANCE INSTRUCTION

The Supplier/Installer shall demonstrate and explain the plant and the method of starting, running and stopping to such staff as the Engineer shall nominate. He shall provide three sets of operating and maintenance instructions which shall be enclosed in durable covers. The operating and maintenance instructions shall include:-

- A brief outline of the operation of the plant.
- Instructions on how to start and stop the plant, noting any safety and / or sequencing arrangements.
- Details of required maintenance with suggested frequency of action
- Details of all lubricating oils and greases required and filter replacement
- Details of each item of plant including the name and address of the manufacturer, type and model, serial number, duty and rating.

The operating and maintenance instructions shall be handed to the Engineer not later than at the end of the commissioning period.

## 22.0 SPARE PARTS

The Installer shall submit a priced list of any extra materials which he recommends should be purchased for the Ventilating and Air Conditioning Plants and all associated equipment and control gear and extras not supplied as standard. He shall be required to give a guarantee that he will hold sufficient running stock of spare parts for the maintenance of the equipment.

The works to be carried out comprises of the supply, delivery, installation, setting to work, testing and commissioning of all materials and equipment called for in this specification and/or shown in the contract drawings.

The tenderer shall include for all appurtenances and appliances not particularly called for in this specification or on the contract drawings but which are necessary for the completion and satisfactory functioning of the system.

No claim for extra payment shall be accepted from the contractor for non-compliance with the above requirements.

If in the opinion of the tenderer there exists difference between the specification and the contract drawings, the tenderer shall clarify the difference with the engineer before tendering.

The Works to be installed under the contract shall comply with the State Department for Public Works requirements for contract works under “GENERAL MECHANICAL SPECIFICATION”.

#### 5. CLIMATIC CONDITIONS

The following climatic conditions apply at the sites of the works and all materials and equipment used shall be suitable for these conditions:-

PARAMETERS	(CONDITIONS) Kegonga Town
Maximum mean outdoor dry bulb Temperature, $t_o$	29 °C
Minimum Temperature	19°C
Relative Humidity	52.4%
Altitude	1,643 m ASL
Longitude	34° 39' 12" E
Latitude	1° 15' 43" S
Max. solar radiation occurs during the month of March	

#### 6. SYSTEMS DESIGN DATA

The air-conditioning systems are designed to maintain the following internal conditions with ambient conditions of 26.1°C DB and 63% RH

Internal Temperature                      23 ± 1°C  
 Relative Humidity                              55± 5%

The equipment described here under covers the specific requirements of equipment to be used for this contractor work and shall be used in conjunction with the accompanying contract drawings. It shall be deemed that the tenderer has based his tender on plant and equipment which is equal in performance to that stated within the specification.

#### 7. SPLIT AIR CONDITIONING SYSTEM

The system shall be complete with;

Indoor cooling unit (Evaporator)

Each coil unit shall consist of a cooling coil, air circulating fan, fan-guard and a thermostatic expansion valve. A timer unit shall be mounted in the control panel to both the de-frosting intervals and defrosting periods, both of which shall be variable.

The evaporator unit shall be of capacity as specified under the specified conditions, and shall be of the dry expansion type, and preferably of similar make as that of the condensing units. The unit shall be cassette type, high wall mounted or ceiling mounted as will be specified by the Engineer.

The coil shall be manufactured from seamless copper tubing with aluminium fins mechanically bonded to the tubes.

The panel shall be interlocked such, that on energizing the heater, the compressor, condenser and evaporator fan shall be de-energized and only re-energized when the heater is switched off by a evaporator mounted thermostat. A manual overriding switch shall by-pass the timer switch.

The air-circulating fan shall be manufactured from rigid aluminium sheet and finished in white casing. A drip tray with 25mm diameter connections shall be incorporated in the base of the casing.

The Unit shall be complete with the following: - 1

No. air purifying filter.

- Built in condensate drain pump to automatically drain water.
- Refrigeration pipe work with flared connections
- Fixing brackets/wall mounting kit/ground mounting kit
- Thermostat to control room temperature
- High and low pressure units
- Condensate discharge pipe work in Black PVC, 25mm diameter
- Service access valves
- Voltage Surge Protector

The system shall be suitable for 240V, 1 – Phase, 50Hz power supply

The split air-conditioning system shall be designed to maintain room inside temperature of  $23\pm 1^{\circ}\text{C}$  and relative humidity of  $55\pm 5\%$ .

Outdoor Units.

The outdoor units shall be installed and mounted on the wall using appropriate and approved mounting brackets. It shall be complete with hermetically sealed compressors. Safety devices shall include overload/surge protection among others.

The unit shall be connected to power provided by others. It shall also be connected to refrigerant piping and control wiring. It shall have adequate charge of refrigerator oil and R 410A refrigerant or any other non ozone depleting refrigerant. The air conditioning units shall be as LG or approved equivalent and shall be provided with approved mounting brackets.

The Unit shall be complete with the following:

- Casing constructed of 18 gauge zinc coated mild steel, zinc phosphate bonderized, coated with oven baked polyester paint and weatherized for outdoor installation. It shall have weep holes on base to allow ease of drainage.

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- Hermetically sealed compressor mounted to unit base with rubber isolated hold down bolts, uniform in oil & pressures and shall have internal overload protection.
- Refrigeration pipe work with flared connections
- Distributor with refrigeration control

- Fixing brackets/wall mounting kit/ceiling mounting kit
- Heat exchanger capacity controls
- Precise inverter frequency controls
- New oil returning system (refrigerant oil control system)
- High and low pressure units
- An innovation of installation with automatic address settings for indoor units with twin multiplex transmission system of no polarity.
- Condensate discharge pipe work
- Service access valves
- Voltage Surge Protector Refrigeration Piping.

Refrigerant pipe work shall be approved copper tubing and fittings, and shall be properly sized in conformity with the system manufacturer specifications. Pipework shall be joined together by soldering/brazing and shall be complete with all necessary joints, reducers and accessories. The Ozone friendly refrigerant flow shall be controlled with either a capillary tube or thermostatic expansion valve. Installation shall be carried out by competent and qualified craftsmen. The Engineer may demand proof of qualifications and experience in installation of refrigeration systems.

Pipe work shall be tested for leaks after installation to the Engineers satisfaction. It shall be properly anchored, insulated and no vibration of pipes shall be allowed during the running of the systems. An electronic leak detector shall be used to test for leaks.

#### 8. VARIABLE REFRIGERANT FLOW (VRF) SYSTEM

The VRF system shall be a cooling system with reduced energy & maintenance costs. The system shall be complete with flexible and user friendly central management system that will be integrated to building management system. The system shall be capable of more personalized & accurate calculations of energy consumption. The required capacity and the relating technical parameters for the indoor units shall be electronically relayed to the system management and outdoor unit.  
Inverter Controlled Outdoor Unit

The three-way pipe outdoor units shall be installed and mounted on the terraces using appropriate and approved anti-vibration mounting/base. They shall be complete with hermetically sealed compressors. Safety devices shall include overload/surge protection among others.

The air conditioning unit shall allow for maximum 5 indoor units of different capacity & types to be connected to a single refrigerant circuit. It shall have an outdoor unit capacity ratio of 80-130% with nominal cooling load as stated in the bill of quantities and capacity control in the range of 10 - 130% according to the indoor cooling load.

There shall be one outdoor unit operating as duty connected to three indoor units through control panel.

The Unit shall be complete with the following:

- Casing constructed of 18 gauge zinc coated mild steel, zinc phosphate bonderized, coated with oven baked polyester paint and weatherized for outdoor installation. It shall have weep holes on base to allow ease of drainage. . It shall have permanently attached base rails with 3-way forklift access and lifting holes.



- Hermetically sealed compressors mounted to unit base with rubber isolated hold down bolts, uniform in oil & pressures and shall have internal overload protection.
- Advanced compressor oil management system
- Compact flow selector unit
- TCC link: state-of-the-art communication bus system with automatically configured addressing and shall be Building management system (BMS) compatible.
- Heat exchanger capacity controls
- Precise inverter frequency controls with intelligent power drive unit (IPDU)
- New oil returning system (refrigerant oil control system)
- High and low pressure units
- An innovation of installation with automatic address settings for indoor units with twin multiplex transmission system of no polarity.
- Condensate discharge pipe work
- Service access valves
- Voltage Surge Protector

Energy Recovery Ventilator with DX coil (Indoor cooling unit) for VRF system. Shall be selectable multi-speed blower and electronically controlled variable speed blower units to allow individual speed adjustments of the intake and exhaust blower to dial in airflow.

This unit shall function to

- Mechanically ventilate the room by supplying fresh air and extracting return air to outside
- Filter the supply air using high performance filters fitted. ERV to remove various harmful substances, such as micro dust and viruses through 3 air purifying steps. First, basic filter which is installed front and behind of heat exchanger filters out harmful substances. Then, heat exchanger equipped with antiviral coating blocks the breeding of harmful viruses. In addition, high efficiency filter (F8) installed in front of heat exchanger, the optional filter, blocks 80-90% of dust sized 0.4 $\mu$ m can remove micro dust.
- Maintain negative pressure in the room by controlling the supply fan at 800CMH and exhaust fan at 1012CMH using the wired controls. Maintain air flow differential of 212CMH exhaust versus supply □ 220-240V/1Ph/50Hz power supply is standard.
- Temperature Exchange Efficiency: 76% to 87%.
- ERV DX can further decrease the temperature of outdoor air with the help of DX coil.
- LG ERV DX can control condition of incoming air with the DX coil and humidifier for making comfortable indoor air.

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- High Efficiency energy recovery central core which recovers energy from the indoor air and transfers it to the fresh incoming air without mixing air stream.
- LG ERV can be interlocked with air conditioners and controlled individually.
- The exhausting system using high static sirocco fan removes contaminants effectively from indoor air.
- Can control the pressure level by using the remote controller.

Each unit shall consist of a cooling coil, air supply and extract fans, F7 high efficiency filter/HEPA filters, fan-guard, a thermostatic expansion valve. A timer unit shall be mounted in the control panel to both the de-frosting intervals and defrosting periods, both of which shall be variable.

The evaporator unit shall be of capacity as specified under the specified conditions, and shall be of the dry expansion type, and preferably of similar make as that of the condensing units. The unit shall be high static pressure ducted unit, cassette type, high wall mounted or ceiling mounted as will be specified by the Engineer.

The coil shall be manufactured from seamless copper tubing with aluminium fins mechanically bonded to the tubes.

The panel shall be interlocked such, that on energizing the heater, the compressor, condenser and evaporator fan shall be de-energized and only re-energized when the heater is switched off by a evaporator mounted thermostat. A manual overriding switch shall by-pass the timer switch.

The air-circulating fan shall be manufactured from rigid aluminium sheet and finished in white casing. A drip tray with 25mm diameter connections shall be incorporated in the base of the casing.

The Unit shall be complete with the following:

- 1 No. air purifying filter.
- Built-in condensate drain pump to automatically drain water.
- Refrigeration pipe work with flared connections
- Fixing brackets/wall mounting kit/ground mounting kit
- Thermostat to control room temperature
- High and low pressure units
- Condensate discharge pipe work in Black PVC, 32mm diameter
- Service access valves
- Voltage Surge Protector
- Pulsed modulating valves (PMV) to permit linear variation of refrigerant flow in any circuit directly proportional to the thermal load.

The system shall be suitable for 240V, 1 – Phase, 50Hz power supply

Centralized Controller (Touch screen intelligent controller)

The controller to be as described in the catalogue for the ERV to be installed but to have the following features;

- Individual supply and exhaust fan speeds and ESP control (AC 3 speeds DC 10 speeds)
- Outdoor temperature, indoor temperature, supply air temperature and exhaust air temperature display
- Weekly timer function
- Auto bypass and auto defrost function
- Integrated RS485 connector for BMS control(on PCB)
- External on/off control and fire alarm control, inter lock function (on PCB)

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- Faulty signal output for monitoring function (on PCB)
- Night free cooling function (on PCB)
- Optional CO2 sensor and humidity sensor to control CO2 concentration and indoor humidity
- Optional electrical heater for supply air or outdoor air (alternative for comfort ventilation or extreme winter low temperature defrost)
- Optional central control by one multi controller (up to 16pcs ERV controlled by one controller)
- WIFI function

9. Wired Remote Controller

The controller to be as described in the catalogue for the ERV to be installed but to have the following features;

- Full touch screen
- Comfort cooling setting, smart load setting, Outdoor unit low noise setting and defrost mode setting
- Design with User's convenience
- Energy saving functions
- Group control
- 2-Set point control

#### 10. ELECTRICAL WORKS

The tenderer shall include for supply, installation and commissioning of all starters, control apparatus, control panels and interconnecting wiring and conduits for equipment that the tenderer is supplying.

Power points shall be provided within 5 metres of the equipment installation point and the tenderer shall connect his equipment from this point.

#### 11. BUILDERS WORKS

The tenderers shall allow for perforation of holes, hacking of walls etc. All disturbed surfaces shall thereafter be made good by the tenderer upon satisfactory completion of the works.

#### AS-BUILT-DRAWINGS AND MAINTENANCE MANUALS

Once the air conditioning system has been tested and commissioned, drawings and maintenance manuals shall be provided. They shall be a true and accurate representation of what has been commissioned.

#### TRAINING

Adequate personnel shall be trained to perform normal operations and routine maintenance of the air conditioning system. The number of personnel to be trained shall be specified for particular pool.

#### 12. TESTING & COMMISSIONING

The system shall be balanced to the satisfaction of the project engineer. It shall be run under complete automatic controls for 72 hours continuous operation to ascertain any faults in operation before acceptance and handover.

Any faults discovered during this time shall be corrected and a further test or tests of 72 hours duration shall be carried out to ensure satisfactory operation, all at the expenses of the contractor.

All accessories/equipment have to tested for capacity, efficiency, leakages and other human errors and shall meet standards and specifications.

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All the pipe work and connections herein described shall be tested in the presence of the Engineer and to the hydraulic pressure the Engineer deems satisfactory and for a minimum period of 1 hour.

These tests must be before any insulation work is undertaken or any pipe work is finally enclosed in any ducts, etc and due allowance is to be made in the tender for these tests.

The tenderer is to include for providing for all the testing equipment, temporary plugging and refilling etc.



SECTION 6:

PARTICULAR SPECIFICATIONS FOR  
MEDICAL GAS PIPE LINE SYSTEM

## Particular Specifications for Medical Gas Pipeline System (MGPS)

### 1 Scope of Works

The work shall include for supplying, installing, testing, commissioning, demonstrating and leaving in proper working order a piped centralized supply system for medical gases comprising oxygen, nitrous oxide, medical air -4 bar, surgical air – 7 bar, medical vacuum and anaesthetic gas scavenging system (AGSS) at JM Kariuki Memorial County Referral Hospital- Nyandrua County.

Tender shall comply in all respects with the specification.

The areas to be supplied with the medical gases, vacuum, and anaesthetic gas scavenging system shall be in accordance with Health Technical Memorandum No. 02-01 (HTM 02-01) and Contract Drawings.

### 2. Oxygen Systems

#### 2.1 Oxygen generating plant 1900L/min

The oxygen production system allows to produce oxygen mainly by means of air compressors and an oxygen producer and shall conform to NHS Health Technical Memorandum HTM02-01. The system is mainly formed by: n°2 air compressors water cooled with a single stage rotary compressor driven by an electrical motor with high efficiency TEFC (IP 55), skid, hood soundproof, injection oil screw rotating elements, air valve air filter for intake, oil filter, oil and water cooling coil water cooled, water separator with electronic discharge for elimination of condensate, air-oil separator, control panel board; n°3 oil separators; n° 3 air dryers with refrigerant R404a (CFC free) with condensate separator, hermetic type of compressor for refrigerant gas equipped with pressure switch to prevent ice formations on the suction side equipped with an electrical heater, cooling circuit equipped with pressure switch against high pressure, expansion valve and receiver tank, air coolant condenser, electric fan motor IP54, heat

exchangers made of aluminium, control panel on board; n°3 air filter 1 in backup; n°1 oxygen producer based on Pressure Swing Adsorption equipped with inlet pressure regulator, n°2 tanks with zeolites to contain the nitrogen molecules, pneumatic inlet and outlet valves (one pair for each tower), silencer on the exhaust to reduce the noise level during depressurization and regeneration phases, safety valves, microprocessor control panel; n°1 compressed air reservoir; n°1 compressed oxygen reservoir.

## 2.2 Oxygen Manifold - secondary

The oxygen Manifold system shall be installed in the plant room as shown in the contract drawings.

### 2.2.1 Capacity

The oxygen manifold system shall be capable of supplying medical grade oxygen (90-95% pure).

### 2.2.2 Main Features

The system shall consist of gas storage cylinders and automatic changeover from primary to standby system

## 2.3 Automatic Manifold Systems for Secondary and Third Supplies

Secondary and Third Supplies shall be provided by automatic manifold systems.

The manifold control system shall conform to NHS Health Technical Memorandum No. 02-01 (HTM02-01).

The manifold control system shall provide an uninterrupted supply of medical oxygen gas from equally sized high pressure cylinder banks via a suitable arrangement of pressure regulators, providing a constant downstream nominal pipeline gauge pressure of 400 kPa.

The entire system shall be 'duplexed' such that any single functional component failure will not affect the integrity of the medical oxygen gas supply. The manifold shall be supplied fully assembled and tested.

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### 2.3.1 Manifold Control System Design

There shall be two separate stages of regulation to enable high peak flow rates without a reduction in line pressure.

Regulators shall comply with BS EN ISO 10524-2 and shall have documented test reports available confirming successful completion of the oxygen ignition tests stated therein. The manifold control system shall be capable of supplying a flow of 1900 l/min to the 400 kPa distribution system.

All regulators shall be protected from over-pressurisation by relief valves that are vented to atmosphere.

There shall be a bypass valve fitted across the to the 2nd stage relief valve to enable gas to be vented outside the manifold room during the commissioning stage.

A test point (supplied separately) shall be isolated from the supply with a 15mm ball valve.

The manifold shall be supplied with a non-return valve for connection to the distribution system. The Control Panel shall be housed in a single panel having a solid construction using epoxy technology in a glass- reinforced polymer moulding for high chemical and corrosion resistance and high impact strength.

The cover shall hinge upwards but shall remain facing outward for manual operation and maintenance accessibility.

To aid maintenance the connections within the panel shall use 'O' rings sealing against flat-face connectors to facilitate easy removal and replacement of components.

For added safety the voltage inside the panel shall not exceed 12V D.C.

The mains supply transformer shall be in its own housing in a moulded recess at the rear of the panel. To simplify installation there shall be an installation bracket attached to the wall with four screws, the main panel then shall locate on to this bracket and be secured.

### 2.3.2 Control System Operation

Either the left or right hand manifold bank may be designated "Duty" and the Manifold Control System shall automatically changeover to supply the distribution system from the "Standby" bank when pressure in the "Duty" bank falls to a pre-determined level.

Each side of the Manifold Control System shall be capable of being fully isolated via a full flow ball valve in order to change any regulator without cessation of supply.

The inlet of the 1st stage regulator shall be protected from the particulate matter by a 25µm sintered bronze filter.

There shall be a fail- safe system in the event of power failure so that solenoid valves open and there is full continuity of supply pressure and flow.

Upon power restoration the unit shall revert back to the original bank of cylinders being used. To avoid inadvertent resetting of the change cylinder alarm the solenoid valves shall be latched so that once changeover has occurred and the cylinders have been replaced, a reset button must be operated to cancel the alarm condition.

There shall be manual changeover buttons so that servicing either side of the system can be simply achieved. The PCB's shall be linked with plug and socket connectors for easy removal.

### 2.3.3 Materials

All polymers and elastomers in the gas flow that can be subjected to working pressure greater than 3000 kPa shall be halogen-free.

The use of PTFE, PCTFE, Viton and other halogenated polymers in these applications is strictly prohibited. Non-return valves fitted to header manifolds shall have a metallic seat with ceramic ball.

Soft seat non-return valves utilizing polymers or elastomers are not acceptable

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### 2.3.4 Modular Header Manifolds

Modular header manifolds shall provide connection points for flexible cupronickel tailpipes. The header manifold shall have either single or double cylinder connection points.

The headers shall connect directly to the manifold control system.

Non-return valves shall be fitted to each tailpipe connection point to protect the system in the event of a tailpipe fracture.

### 2.3.5 CE Marking



The manifold control systems shall be 'CE' marked under the Medical Devices Directive 93/42/EEC with approval from a notified body.

The manifold control system shall be as Beacon Medaes MCS2 or approved equivalent.

#### 2.4 J-Size Oxygen Cylinders

The Secondary and Third supplies of oxygen shall have 2 x 10J-Size cylinders each.

##### Cylinder data

Content = 6,800 litres,

Valve outlet pressure = 137 bar

Valve outlet connection = pin-index (side spindle) Water capacity = 47.2 litres

Approximate dimensions including valve = 1520 mm long x 229 mm diameter. Approximate cylinder wt (empty) = 68.9 kg.

### 3. Nitrous oxide Systems

#### 3.1 Primary Supply System

The primary supply shall be provided by two banks of equal numbers of gas cylinders which are connected to the pipeline via a control panel.

The changeover from the "duty" to the "stand-by" bank of cylinders shall be automatic. All manifolds shall be capable of passing the full pipeline flow.

Each bank of the manifold shall have sufficient cylinders for two days. Additional cylinders for one complete bank change shall be held in the manifold room.

No. of stand-by bank G- Size N<sub>2</sub>O Cylinders = 2

No. of stand-by bank G- Size N<sub>2</sub>O Cylinders = 2

Total No. of G- Size N<sub>2</sub>O Cylinders = 4

The manifold headers shall incorporate a renewable non-return valve to prevent the discharge of a complete bank of cylinders in the event of "tailpipe" rupture.

No non-metallic flexible connectors shall be used. The connector for nitrous oxide shall be a side outlet valve connector in accordance with BS 341-3:2002.

The automatic manifold system shall be similar to the one described for oxygen system in section 1.2.

#### 3.2 Secondary Supply System

This shall be provided from manual manifold supplying via non-interchangeable screw

thread (NIST) connectors. No. of cylinders: 2 x 3 G- Size cylinders of gas content 9,000

litres at 44 bar g.

##### 3.2.1 Manual Changeover Manifold

The gas manifold shall be designed to supply constant pressure and flow via control panel from two equal banks of cylinders.

The changeover from 'duty' to 'standby' bank shall take place manually without disruption of pressure/flow and indicate audio visual signals.

The tail pipes of specific gas shall be connected with check valves (non-return valves) and bull-nose connectors. The manifold and control panel shall be designed for 150 bar cylinders and housed in epoxy powder coated steel enclosure having visible status indicator and gauges.

### 3.3 Third Supply

This shall be provided from manual manifold supplying via non-interchangeable screw thread (NIST) connectors.

No. of cylinders: 2 x 2 G- Size cylinders of gas content 9,000 litres at 44 bar g.

### 3.4 G-Size Nitrous oxide Gas Cylinders

#### Cylinder data

Content = 9,000 litres,

Valve outlet pressure = 44 bar g,

Valve outlet connection = hand wheel 11/16" x 20 tpi (m)

Water capacity = 23.6 litres

Approximate dimensions including valve = 1320 mm long x 178 mm diameter.

Approximate wt (empty) = 34.5 kg.

## 4. Compressed air Systems

### 5.1 Primary /Secondary Supplies

The primary and secondary supplies shall be from a single combined medical air and surgical air system.

### 5.2 Combined Air

The Combined Air System shall conform to NHS Health Technical Memorandum HTM 02. Medical quality to the European Pharmacopoeia monograph shall be delivered at a pressure of 700 kPa (7 bar) gauge for supply of the hospital surgical and medical (via separate regulators) air systems.

The entire system shall be 'duplexed' such that any single functional component failure will not affect the integrity of the medical compressed air supply.

The secondary supply will be made up of two compressors of the quadruplex compressor configuration.

Each compressor shall be capable of supplying half flow (1250 litres). The plant shall be suitable for 415 V, 50 Hz, 3 Phase power supply.

### 5.3 Compressors

Compressors shall be oil injected rotary screw compressors suitable for both continuous and frequent start/stop operation at a nominal outlet pressure of 950 kPa gauge (9.5 bar).

Compressors shall be supplied with a block and fin style after cooler with a dedicated quiet running fan to maximize cooling and efficiency.

A multi-stage oil separator capable of achieving 2ppm oil carry over shall be fitted to minimise contamination and maintenance.

EFF1 (CEMEP) rated TEFC, IP55 class F electric motors shall be used and incorporate maintenance -free greased for life bearings. Motors with lower efficiency ratings are not acceptable. Each screw compressor shall be supplied with an intelligent user interface to digitally display service and warning indications, working pressure, operating temperatures, number of motor starts, on load running hours and total running hours.

Compressors are to be individually hard-piped to the receiver manifold as standard.

### 5.4 Dryer/Filter/Regulator System

The duplexed filter and dryer module shall incorporate high efficiency water separators, oil filters, heatless regenerative desiccant dryer, dust/activated carbon filters, hopcolite filters and bacterial filters with autoclavable element.

Contaminants in the delivered air downstream of the bacterial filters shall be maintained at levels below those shown in the following table:

Contaminant	Threshold
H <sub>2</sub> O	67 ppm v/v
Dry particulates	Free from visible particulates in a 75 litre
Oil (droplet or mist)	0.1 mg/m <sup>3</sup>
CO	5 ppm v/v

CO <sub>2</sub>	500 ppm v/v
SO <sub>2</sub>	1 ppm v/v
NO	2 ppm v/v
NO <sub>2</sub>	2 ppm v/v

The dryer control system shall incorporate an Energy Management system that shuts off purge air when no compressors are running.

### 5.5 Control System

The central control panel shall operate at extra low voltage and include BMS connections for plant fault, plant emergency, reserve fault and pressure fault.

A mechanical back-up facility shall ensure continued operation in the event of malfunction.

The control system shall normally employ automatic rotation of lead compressor to maximise compressor life and ensure even wear.

### 5.6 Receiver Assembly

Air receivers shall comply with BS EN 286-1, supplied with relevant test certificates. Each air receiver shall be hot dip galvanised inside and out and fitted with a zero loss electronic drain valve.

Float type drain valves are not acceptable.

The receiver assembly shall be fitted with a pressure safety valve capable of passing the maximum flow output of the compressor at 10% receiver overpressure.

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The receiver shall be further protected by a fusible plug and include a pressure gauge. The total receiver capacity shall be 850 litres.

### 5.7 Dew Point Monitoring

The dryer shall incorporate a ceramic dew point hygrometer with an accuracy of  $\pm 1^{\circ}\text{C}$  in the range -

20 to  $-80^{\circ}\text{C}$  atmospheric dew point and 4-20mA analogue output.

Aluminium oxide or palladium wire sensors are not acceptable. An alarm condition shall trigger on the dryer control panel if the dew point exceeds a  $-46^{\circ}\text{C}$  atmospheric set point.

The plant control unit shall incorporate a multifunction LCD displaying, amongst other things, the dew point of the delivered air to enable monitoring of the air quality by the hospitals estates department.

Volt free contacts shall be included to enable the dew point alarm signal to be connected to a central medical gas alarm system and/or building management system (BMS).

To enable periodic calibration of the dew point sensor element, the hygrometer shall be remotely connected downstream of the dryer via a micro-bore tube. It is not acceptable to install the sensor directly into the medical air supply pipeline.

The plant shall be as "Precision UK MA-2250-D" with 1 No. receivers of capacity 1200 litres each.

### 5.8 Third Supplies

The third supplies for medical and surgical compressed air shall be from two separate automatic manifold systems to support the whole site.

The automatic manifold system shall be similar to the one described for oxygen system in section 1.2.

The manifold control system shall provide an uninterrupted supply of medical air (MA-4) or surgical air (SA-7) from equally sized high pressure cylinder banks via a suitable arrangement of pressure regulators, providing a constant downstream nominal pipeline gauge pressure of 400 kPa or 700 kPa.

The manifold control system shall be capable of supplying a flow of 1250 l/min to a 400 kPa distribution system and a flow of 1000 l/min to a 700 kPa distribution system.

The cylinders in the four manifold systems shall be as follows. Medical air: 2 x 10 J-Size cylinders,

Surgical air: 2 x 6 J-Size cylinders

Total number of cylinders required for third supply of both MA-4 and SA-7 shall be 32.

#### 5.8.1 J-Size Medical air Cylinders

#### Cylinder data

Content = 6,400 litres,

Valve outlet pressure = 137 bar g, Valve outlet connection = pin index Water capacity = 47.2 litres Approximate dimensions including valve = 1520 mm long x 229 mm diameter.

Approximate wt (empty) = 68.9 kg.

### 6.0 Central Medical Vacuum System

#### 6.1 Primary/Secondary Supplies

The Medical Vacuum System shall conform to EN ISO 7396-1 and NHS Health Technical Memorandum No. 02-01 (HTM 02-01).

The Medical Vacuum System shall ensure the minimum pipeline vacuum level of 450mmHg is maintained at the plant service connection point at the rated volumetric 'free air' flow rate with two pumps in standby .

The bacteria filtration system shall be 'duplexed' such that each filter can be isolated for replacement of the filter cartridge.

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#### 6.1.1 Vacuum Pumps

Vacuum pumps shall be air-cooled, oil lubricated rotary vane type suitable for both continuous and frequent start/stop operation at nominal inlet vacuum levels of between 578mmHg and 728mmHg.

Composite carbon fibre rotor blades shall be fitted to minimise the cost of maintenance. Rotors shall be driven by directly coupled TEFV electric motors. Pump inlets shall include

a wire mesh filter and integral non-return valve to prevent oil suck back and pressure increases in the vacuum system.

Each vacuum pump shall have an integral separator filter to ensure a virtually oil-free exhaust. Each pump shall be fitted with anti-vibration pads between the pump foot and mounting frame.

#### 6.1.2 Bacteria Filters

The duplex bacteria filter system shall incorporate high efficiency filter elements. A differential vacuum indicator shall be installed across the filter to indicate blockage.

Additional pressure sensors shall be installed at the inlet and outlet of the filter to measure the pressure drop across the filters.

Each filter shall be designed and sized to carry the full plant design flow capacity with a pressure drop not exceeding 33mbar (25mmHg).

Bacteria Filter elements shall have penetration levels not exceeding 0.005% when tested by the sodium flame method in accordance with BS 3928:1969 and utilising particles in the 0.02 to 2 micron size range.

Drain flasks shall be connected to each filter. Drain flasks shall be manufactured from transparent Pyrex® with a polymer coating on the inner and outer surfaces in order to maintain a seal in the event of inadvertent breakage of the Pyrex® flask.

All drain flasks shall be suitable for sterilisation and be connected via a manual isolating valve.

#### 6.1.3 Control System

The central control system shall provide an intelligent human machine interface incorporating on board flash memory and real-time clock for recording operational parameters in the in built event log. The central control system shall operate at low voltage and include BMS connection for common fault.

Visualisation of plant inputs, outputs and status through a web browser, using a simple Ethernet connection shall be available.

The central control unit shall incorporate a user friendly 5.7” high-definition colour display with clear pictograms and LED indicators, providing easy access to system operational information. Cascading of vacuum pumps shall be achieved by measuring the vacuum level at the plant inlet with a pressure transducer.

A mechanical back-up facility shall ensure continued operation in the event of a control system malfunction.

The control system shall normally employ automatic rotation of the lead pump to maximise pump life and ensure even wear.

#### 6.1.4 Power Supply

The plant shall be suitable for 415 V, 50 Hz, 3 Phase power supply.

#### 6.1.5 Flow

The plant shall be capable of 5400 l/min flow.

#### 6.1.6 Receivers

The plant shall have three receivers with total volume of 1800 litres.

The vacuum receivers shall be supplied with relevant test certificates and have a total volume of at least 100% of the plant output in 1 minute in terms of free air aspired at normal working pressure.

Each vacuum receiver shall be hot dip galvanised inside and out.

### 6.1.7 Supplies

Primary supply is provided by two pumps of the quadruplex system.

Secondary supply is provided by the other two pumps of the quadruplex system.

The medical vacuum plant shall be as Precision UK MV-2700-Tor approved equivalent.

### 6.2 Third Supply

Third supply shall be provided by mobile high vacuum suction units (MHVSUs) with gauge, disposable bacteria filter, safety overflow valve and four autoclavable jars 1800 ml capacity. The equipment shall be capable of 650 mm/Hg vacuum, flow of 40 l/min and suitable for 110- 240V - 50 Hz power supply. The mobile high vacuum suction units (MHVSUs) shall be provided in the hospital areas where vacuum terminal units are installed as shown in the Contract Drawings.

### 7.0 Anaesthetic Gas Scavenging System (AGSS)

This shall consist of a central disposal plant (located in the plant room), copper piping, receiving systems and terminal units as shown in the contract drawings.

#### 7.1 Anaesthetic Gas Scavenging System

The Anaesthetic Gas Scavenging (AGS) System shall comply with HTM 02-01 and either EN ISO 7396-2 or BS 6834. The AGS system shall be a dedicated, specifically designed active extraction and disposal system for waste anaesthetic gas.

It shall provide a maximum flow rate of 1050/min (EN ISO 7396-2) or 130 l/min (BS 6834) with a 1 kPa resistance to flow, and a minimum of 50 l/min (EN ISO 7396-2) or 80 l/min (BS 6834) with a 2 kPa (EN ISO 7396-2) or 4 kPa (BS6834) resistance to flow at each terminal unit, irrespective of the number of terminal units in use.

The AGS system shall use dedicated radial blowers in a duplex configuration. The AGS pump assemblies shall be skid mounted and included on the skid shall be the duplex pumps, motor control units with starter/isolator, moisture drain flask and flexible connectors to connect the plant to the pipeline. Each pump shall include an electric motor and directly coupled impeller assembly. Impeller bearings in the pumps shall not require lubrication.

The pumps shall be air cooled and rated for continuous operation.

#### 7.2 Vacuum/Flow Regulating Valve

A vacuum/flow regulating valve shall be provided and positioned at the pump, comprised of a spring-loaded plate valve and inlet silencer. The valve should be changeable with the pipeline inlet in order to provide flexibility on site.

The plate shall control air ingress into the pipeline system, thereby controlling the vacuum level within.

An optional air inlet filter shall be available should the air quality be poor/dusty offering further protection against dirt ingress into the pump.

The vacuum/flow regulating valve shall ensure a maximum vacuum of 200mb below atmospheric pressure is not exceeded and shall be factory preset at 150mb.

#### 7.3 Control System

Each motor control panel shall incorporate an emergency panel isolation switch facility, which controls all electrical power to the exhaustor unit, remote start switch panels and system indication lights.

All control and status indication circuitry shall be limited to 24V a.c. A green 'POWER ON' indicator shall be fitted to the starter/isolator panel, and shall illuminate whenever power is available to the 24V control and indication circuit.

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A 'HAND/OFF/AUTO' switch shall be provided to control operation of the pump, running the pump continuously when selected to 'HAND'.

When selected to 'AUTO', control of the pump shall be passed to the remote start switch panels. Operation of any of the remote start switches shall activate the pump. The pump shall continue to run until all remote switches are selected 'OFF'.

The starter/isolator panel shall incorporate a thermal protection overload device. The thermal protection overload device shall also monitor the electrical power supply and phase input. In the event of a fault, the overload device shall break the circuit to the pump, preventing operation until the system is manually re-set.

Operation of the overload device shall also break the circuit to the remote start switch panels, extinguishing the green running indicator.

The duplex unit shall incorporate line pressure switch. This line pressure switch shall monitor vacuum levels and provide an additional control of the remote start switch and starter/isolator panel green 'RUNNING' indicators.

The pressure switch shall also include a digital display providing an accurate readout of the vacuum level in the pipeline in order to assist with installation/commissioning and annual re-commissioning. The duplex installation shall use remote start switches that include an amber 'PLANT FAULT' indicator. This shall illuminate, if either pump is set to 'HAND', or if one of the overloads trip. A red 'PLANT EMERGENCY' indicator shall also be provided and shall illuminate on all remote start switch panels if the vacuum level falls below the pressure switch set point level when the pump has been called.

The on/off rocker switch shall include a green illuminated surround to indicate 'mains on'. Each pump shall be controlled by a separate motor control panel to enable servicing of either pump or control gear whilst maintaining system operation.

#### 7.4 Terminal Units

Terminal unit shall be provided with an adjustable orifice to allow balancing of the terminal unit flows during commissioning. Venturi style terminal units are not acceptable. Terminal units shall not be connected to the medical vacuum system.

#### 7.5 Disposal Plant Capacity

The disposal system shall be capable of 1500 l/min flow and suitable for 415 V, 3 Phase, 50 Hz power supply. The active disposal system shall be as Precision UK AGSS-D-1500 or approved equivalent.

#### 8.0 Heliox (79%He/21%O<sub>2</sub>) System

##### 8.1 Primary Supply



This shall be provided from automatic manifold system. No. of cylinders: 2 x 4 HX - Size cylinders of gas content 1,780 litres at 4 bar g.

### 8.2 Secondary Supply

This shall be provided from manual emergency reserve manifold system.

No. of cylinders: 2 x 1 HX- Size cylinders of gas content 1,780 litres at 4 bar g.

### 8.3 Third Supply

This shall be provided from automatic manifold supplying via non-interchangeable screw thread

(NIST) connectors. No. of cylinders: 2 x 1 HX- Size cylinders of gas content 1,780 litres at 4 bar.

## 9.0 Emergency Reserve Manifolds

The HTM 02-01 style Emergency Reserve Manifold shall be used to support the main manifold and connected downstream of the manifold control panel.

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### 9.1 Modular Manifolds

The modular manifold shall conform to HTM 02-01 and C11 and suitable for 4 Bar, 7 Bar and 11 bar g pressures. The regulators shall comply with BS EN ISO 10524-2, test reports shall be availed on request.

A test point (terminal unit) shall be included as per code requirements. Extensions headers shall be provided which can be added to gain extra capacity.

It shall be complete with integral non-return valves, rack and chain to hold cylinder(s) and corner connections made to custom length.

### 9.2 Tailpipes

The tail pipes shall be pin- indexed and made of cupro-nickel material to help prevent work hardening. The tail pipes shall conform to CGA and BSP.

### 9.3 Duplex Pressure Reducing Sets

The pressure reducing set shall be installed to regulate the higher pressure plant output to 4 bar suitable for medical use.

It shall be complete with isolating valves, relief valves and gauges.

### 9.4 Simplex Pressure Reducing Sets

The simplex pressure reducing set shall be capable of reducing pressure from 7 bar to 4 bar g. It shall be complete with gauge, isolating valves and relief valve. It shall be capable of 1000 l/min, 2000 l/min or 3000 l/min flow rates.

### 9.5 Simplex Adjustable Pressure Reducing Sets

Simplex adjustable pressure reducing regulator shall be installed for high pressure surgical air systems, to provide nominal 7 bar at the point of use.

It shall be complete with 0-10 bar gauge

## 10.0 Terminal Units

The medical gas terminal units shall conform to BS EN ISO 91701:2008 and accept probes

to BS5682: 1998. Terminal units shall be capable of single-handed insertion and removal of the medical gas probe.

The anaesthetic gas scavenging (AGS) terminal unit shall conform to BS6834: 1987.

The wall mounted first fix assembly shall consist of brass pipeline termination block with copper stub pipe secured between a back plate and a gas specific plate to allow limited radial movement of the copper stub to align with the pipeline.

The gas specific plate shall be fixed to the backplate by means of a tamperproof clip-fit mechanism.

The first fix shall incorporate a maintenance valve (except for vacuum) and a test plug. The test plug shall provide an effective blank to enable carcass pressure testing.

The second fix plastic components shall be manufactured with the pin index permanently moulded into the gas specific socket.

The socket assembly shall retain a capsule assembly, containing the check valve and probe 'O' ring seals. The replaceable capsule assembly shall enable all working parts subject to wear through usage to be replaced as a factory tested assembly, thereby reducing maintenance time. Each termination block assembly shall be pressure tested by the pressure decay method.

#### 10.1 Gas Specificity

Terminal units shall be gas specific and only accept the correct medical gas probe.

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Gas specific components shall be pin-indexed to ensure that a correct gas specific assembly is achieved so that in normal course of dismantling for repair or maintenance, parts from other gases cannot inadvertently be used.

Wall mounted terminal units shall incorporate an anti-rotation pin to engage with connected downstream medical equipment ensuring correct orientation.

#### 10.2 Materials

All screws, probe roller pins, locking springs and the anti-rotation pin shall be manufactured from stainless steel. The second fix assembly shall incorporate three injection moulded parts in fire-retardant nylon 66.

All wetted parts (except seals) shall be brass or copper. Copper stubs pipes shall be manufactured from phosphorous de-oxidised non-arsenical copper to BS EN 1412:1996 grade CW024A, manufactured to metric outside diameters in accordance with BS EN 13348:2001 R250 (half hard). All elastomeric seals shall be manufactured from Viton with a Shore hardness of 75.

#### 10.3 Antimicrobial Additive

All user accessible parts, 2nd fix, gas ID ring, plaster box, fascia cover and inks shall include a silver antimicrobial additive for inherent antimicrobial protection.

<u>Sample</u>	<u>Species</u>	<u>Gas ID</u>	<u>Reduction</u>
E coli			≥ 99.50%

Gas ID Ring	MRSA	≥ 99.52%
Plaster Box	E coli	≥ 99.94%
Plaster Box	MRS	≥ 99.35%

#### 10.4 Pipeline Connections

Terminal units installed in walls, bedhead trunking, headwalls or fixed pendants shall be connected to the pipeline with a copper stub pipe.

Pressure gases and vacuum shall incorporate a 12mm copper stub pipe with a swaged end for direct connection to a 12mm O/D copper tube without the need for an extra fitting, thereby requiring only a single brazed joint to be made. Terminal units for anaesthetic gas scavenging shall incorporate a 15mm O/D copper stub pipe.

Terminal units installed in booms or moveable pendants shall be attached to their respective flexible gas hose by a gas specific non-interchangeable screw thread (NIST) fitting to BS EN 739:1998.

Terminal units shall be fitted with a male NIST and nut for connection to hoses with a female NIST connection.

#### 10.5 Performance

Pressure drops across the terminal unit shall comply with clause 4.4.11 of BS EN ISO 9170-1:2008. The terminal units shall be as BeaconMedæ's Gem 10® Medical Gas Terminal Units or approved equivalent.

### 11. Pendants

#### 11.1 Rigid & Retractable Pendants

The pendant shall be designed for installation into operating theatres and anaesthetic rooms, providing medical gases, electrical power, data and extra low voltage services in a convenient prefabricated assembly.

The pendant shall be supplied pre-piped, pre-wired and fully tested.

The pendant shall be manufactured and installed to provide a 2000mm clearance above finished floor level (in retracted position for retractable pendants).

The pendant shall fully comply with HTM 2022, HTM02-01 NHS Model Engineering Specification C11, BS EN ISO 11197:2004 and the IEE Wiring Regulations.

The pendant shall be capable of surface or concealed mounting, with a shroud extension being provided for surface installations.

A separate shroud shall be supplied to enclose the 1<sup>st</sup> fix mounting arrangement, electrical terminations and gas service connections.

The shroud shall be adjustable to compensate for variation in the finished ceiling thickness. The body of the pendant shall be manufactured from 1.6mm thick Zintec steel. The pendant body shall be supplied with an 'easy clean' high quality RAL9002 polyester powder coated finish. The gas fascia plate shall be manufactured in 2mm thick grade 304 stainless steel and shall have a non-reflective satin brushed grain finish. All pendants shall have a soft bumper strip around the bottom edge.

The pendants shall be octagonal in section, capable of mounting up to 8 medical gas/vacuum terminal units plus an anaesthetic gas scavenging terminal unit, along with 8 double gang and 8 single gang electric sockets/devices.

Medical gas/vacuum services shall incorporate BeaconMedæ's Gem 10 terminal units and the anaesthetic gas scavenging disposal system shall incorporate a BeaconMedæ's terminal unit to BS 6834:1987.

Medical gas/vacuum services shall be arranged in accordance with HTM 02-01 recommendations. Electrical installations shall conform to the IEE wiring regulations and BS EN ISO 11197:2004, routed through flexible conduit and terminate in a junction box.

### 11.2 Rigid Pendant

The Rigid Pendant shall be rigidly piped in accordance with the requirements of BS EN ISO 11197:2004. Flexible hose assemblies shall not be used.

The compartment for housing medical gas pipes shall be capable of running up to 9 gas pipes generously spaced to facilitate simple on-site brazing to the piped distribution system.

Copper pipes shall be manufactured from phosphorous de-oxidised non-arsenical copper to BS EN

1412:1996 grade

CW024A and be manufactured to metric outside diameters in accordance with BS EN 13348:2001R250 (half hard).

Degreasing of pipe shall be such that there is less than 20mg/m<sup>2</sup> (0.002mg/cm<sup>2</sup>) of hydrocarbons on the degreased surface when tested by the method specified in ASTM B280 clause 12.

### 11.3 Retractable Pendant

The retractable Pendant shall be supplied with colour coded flexible hoses to BS EN 739:1998 with the appropriate NIST fittings permanently attached.

Pressure gas systems shall incorporate a self-closing check valve in the 1<sup>st</sup> fix termination to enable hose replacement without disruption of the system. Hoses shall have a minimum internal bore of 6.35mm (1/4") for all pressure gases except surgical air, which shall have a minimum internal bore of 8.02mm in order to provide a higher flow/lower pressure drop for surgical tools.

Vacuum hoses shall also have a minimum internal bore of 8.02mm.

The retractable pendant shall extend and retract through a vertical range of 300 mm at an approximate rate of 20 mm/s and shall be powered by a single-phase linear actuator.

The linear actuator shall operate from a 230V, 50 Hz electrical power supply (110V, 60 Hz also available) fused at 5A. An extra-low voltage (12V) remote hand controller shall operate the pendant and internal micro-switches shall break the control circuit at the limits of travel.

Thermal overload protection with automatic reset shall be incorporated within the linear actuator control circuits. The pendant shall be as Beacon Medaes Series 9A Rigid and Retractable Pendants or approved equivalent.

#### 11.4. Flexible Pendant

The flexible pendant shall be thinly secured to the ceiling by a fabricated first fix plate which holds the first fix NIST connectors complete with blank nuts to allow for testing of the fixed pipework prior to the fixing of the colour coded hoses and spun ceiling shroud.

The shroud shall conceal the fixing plates and NIST connectors and shall be suitable for either flush or surface mounting.

The flexible pendant shall accommodate any combination of Medical gases/Vacuum services up to a total of six with or without AGS.

AGS shall be mounted centrally if required and shall secure the shroud.

The flexible hose shall be manufactured from colour-coded, reinforced anti-static plastic hose with the appropriate

NIST connection at one end and the corresponding BS 5682 outlet point on the other.

The first fix NIST connector shall incorporate a self-closing check valve to automatically close when a hose is removed for maintenance.

The terminal units shall be contained in an 'easy clean white plastic cover designed to minimise the collection of dust or moisture.

#### 11.5 Multi movement Pendant

The Multi - Movement Pendant shall be specially designed to channel all medical gases and electrical services into one dedicated multi- function service head.

The pendant can be installed at either the anaesthetist or surgeon positions to ensure that all services are easily accessible.

The Multi-Movement Pendant shall consist of two separate assemblies, the first fix support assembly and the pendant main body.

#### Pendant

##### Characteristics

1. Vertical lift of 600mm controlled from a hand held remote pneumatic handset.
2. Rotates 310° about the main ceiling bearing.
3. The head will also rotate 240° about the support column.
4. Accepts up to 9 gas outlets plus 4 duplex power sockets.
5. Two sections of medical wall are installed on the side faces of the pendant body.
6. Will accept BS, DIN and American services.

#### 12.0 Distribution System

##### 12.1 Medical Gas Pipes

The piped distribution system shall use copper pipes manufactured from phosphorous de-oxidised non-arsenical copper to BS EN 1412:1996 grade CW024A (Cu-DHP),

manufactured to metric outside diameters and having mechanical properties in accordance with BS EN

13348:2001- R250 (half hard) for sizes up to 54mm or BS EN

13348:2001 - R290 for larger sizes.

Pipes shall be degreased suitable for oxygen use and cleanliness is to be maintained by filling each pipe with dry, clean, oil and oxygen free nitrogen, fitting suitable end caps and protectively wrapping.

All pipework materials shall be manufactured by BS EN ISO 9001:2001 registered companies.

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### 12.2 Marking

For sizes up to 54mm, copper pipes shall be permanently and durably marked at regular intervals along its length with the following information:

- a) The harmonised standard number EN 13348;
- b) BSI kite mark/statement/equivalent approval; c) Nominal dimensions, diameter x wall thickness; d) Temper designation to EN 1173; e) Manufacturer's identification;
- f) Date of production: year and month (1 to 12)
- g) Confirmation of degreasing for oxygen;

Example: BS EN 13348 22x0.9 R250 WIELAND LAWTON KITEMARKED DEG/MEDICAL

05 01 Following installation, pipelines shall be clearly identified with 150 mm wide adhesive labels. Labels shall be fitted near walls, risers, valves and junctions. Colour coding and labelling shall be in accordance with BS 1710:1984.

Arrows to identify the direction of gas flow shall be fitted adjacent to each identification label.

### 12.3 Medical Gas Pipeline Fittings

Fittings shall be end feed type, manufactured from the same grade of copper as the pipes and be in accordance with the requirements of BS EN 1254-1:1998 Part 1. Fittings shall be degreased suitable for oxygen use and be supplied individually sealed in protective polythene bags.

### 12.4 Component Cleanliness

Degreasing of pipe shall be such that there is less than 20mg/m<sup>2</sup> (0.002 mg/cm<sup>2</sup>) of hydrocarbons on the degreased surface when tested by the method specified in EN 723.

The degreasing of fittings shall be such that there is less than 100mg/m<sup>2</sup> (0.01mg/cm<sup>2</sup>) of hydrocarbons on the degreased surface when tested by the aforementioned method. All pipeline components shall also be free of any visible liquid detergent washing or solvent degreasing. Other methods may be used if they are proven and can be guaranteed to achieve acceptable results without degradation of the component or the environment.

### 12.5 Brazed Pipeline Joints

Copper to copper joints shall be made on site using a silver-copper-phosphorous brazing alloy type CP1 or CP4 to BS

1845 using a dry, clean, oil and oxygen free nitrogen inert gas shield with no flux. Copper to brass or gunmetal joints shall not be made on-site.

Copper to brass or gunmetal joints made off-site shall utilise silver brazing material type AG13 to AG18 to BS 1845 with a flux. Such shall joints be subsequently cleaned and degreased prior to use. Where pipes are cut on site they shall be cut clean and square with the pipe axis, using wheel cutters where possible and deburred, re-rounded and cleaned off.

Expanded joints shall only be used for straight pipe joints and shall not be used for pipe sizes greater than 28mm outside diameter. Expansion joints shall only be made using apparatus specifically designed for the purpose.

### 12.6 Pipeline Supports

Pipelines shall be supported at the intervals specified in HTM 02-01 using a suitable metallic, non-ferrous material or a ferrous material suitably treated to prevent corrosion and electrolytic action.

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Plastic supports shall only be used for support of drops to terminal units. Maximum intervals between pipe supports as specified in HTM 02-01:

Pipe outside diameter (mm)	HTM02-01	
	Horizontal and Vertical Runs (m)	
12	1.5	
15		
1.5		
22	2.0	
28	2.0	
35	2.5	
42	2.5	
54	2.5	
76	3.0	

### 12.7 Installation

Where pipeline pass through walls they shall be provided with copper sleeves and filled with suitable intumescent fire stopping compound.

Pipeline joints shall not be located inside copper sleeves.

The pipes shall be as Beacon Medaes Medical Gas Pipes or approved equivalent.

### 13. Line Ball Valves c/w NISTS

Medical gas line ball valves complete with lockable NIST connections and blanking spade shall be provided as a means of isolation on medical gas pipelines at positions specified in the medical gas pipeline system contract drawings. Line ball valves assemblies shall comply with NHS Health Technical Memorandum 02 -01 (HTM02-01).

Valves shall operate from the fully open to the fully closed position by manual operation of a lever through 90°. Valve nominal bores shall be equal to the nominal pipework size.

All line ball valves shall be cleaned for oxygen service.

Smaller type V assemblies (15 to 54mm inclusive) shall have flat-face connectors with 'O' ring seals.

The larger VF type (76 to 108mm inclusive) shall be flanged and installed with stainless steel bolts, nuts and spring washers with 3mm Viton<sup>®</sup> sealing gaskets. PTFE tape or any other thread sealing media is not acceptable.

Each Medical gas line ball valve assembly shall terminate in copper stub pipes to enable brazing direct into the distribution system using the fluxless brazing technique.

Valve assemblies shall incorporate a sliding lock mechanism on the handle, which can be locked in either the open or closed position using a standard padlock with a 6mm (1/4") diameter shackle. NIST blanking nuts shall be capable of being padlocked onto the NIST bodies.

### 13.1 Materials

Medical gas line ball valve assemblies shall be constructed in a two-piece full-bore design with brass body, Teflon<sup>®</sup> ball seals, stem packing seal, stem 'O' ring seal and a hard-chrome plated brass ball. The valves shall be designed to have a tight shut-off and blow out proof stem for protection against pressure surges. Copper stub pipes shall be manufactured from medical grade copper pipe to BS EN 13348:2001.

Copper stub pipes shall be of sufficient length to enable brazing directly into the distribution system without the need for disassembly on site.

### 13.2 Test Certificates

All ball valve assemblies shall be pressure tested for valve tightness and leakage prior to packing and test certificates shall be available to the Project Engineer.

The valves shall be as Beacon Medaes Line ball valves or approved equivalent.

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## 14. Zone Service Unit (Area Valve Service Unit)

The Area Valve Service Unit (AVSU) shall conform to BS EN 739:1998, HTM 02-01 and BS EN ISO 7396-1:2007. The AVSU shall provide a zone isolation facility, for use either in an emergency or for maintenance purposes.

It shall also provide a physical breakpoint to allow work to be safely carried out on the pipeline. A red coloured physical barrier (spade) shall be capable of insertion when required on either side of the valve, without the need to totally dismantle the line valve.

During normal service, full-flow gaskets with an 'O' ring groove on one side shall be coloured white and provide sealing between the flat face connector and ball valve.

The line valve shall be brass 22mm or 28mm ball valve with PTFE seals/seats, operated by a quarter turn handle with over-travel prevention in both directions.

The ball valve shall connect by 22mm or 28mm copper stub pipes to the distribution system. The assembly shall be housed in a valve box, which shall be capable of both surface and concealed installation. The box shall be made from extruded aluminum with die-cast aluminum end caps to prevent corrosion, offer high strength, and resist high temperatures from brazing in close proximity. The box shall be finished in RAL 9010 polyester powder coat finish. A hinged door shall lock in the closed position and AVSUs installed adjacent to each other shall be operated by different key/lock combinations.



The AVSU door shall open through a minimum of 160° to provide maximum access, and provide for natural ventilation to prevent build up of gas within the valve box.

A blank zone identification label shall be provided with each AVSU's 2nd fix assembly. Each AVSU assembly shall be factory tested for gas tightness.

#### 14.1 Emergency Access

The 2nd fix shall include a transparent plastic window incorporating the words 'Pull in Emergency and Close Valve'. In order to gain access in an emergency, a ring pull shall be fitted to the removable portion of the window. The emergency access mechanism shall be safely operable by a 5th percentile woman without the use of a tool.

Glass windows shall not be used. It shall not be possible to refit or reset the means of emergency access.

#### 14.2 Door Tamper Alarm

A door tamper alarm facility shall be available, with a reed switch initiating a system alarm indication on the local alarm panel when the emergency access window is removed.

Normally only oxygen and medical air AVSUs controlling high acuity care areas, resuscitation bays and accident and emergency wards shall be fitted with the door tamper facility.

#### 14.3 Materials

The second fix assembly shall be manufactured from fire retardant V0 rated ABS. All wetted parts (except seals and gaskets) shall be brass or copper.

Copper stub pipes shall be manufactured from phosphorous de-oxidised non-arsenical copper to EN 1412:1996 grade

CW024A, manufactured to metric outside diameters in accordance with BS EN 13348:2008 R250 (half hard). Rubber pipe grommets shall be provided to ensure any leaking gas does not escape from the box into a wall cavity.

All elastomeric gas seals shall be manufactured from Viton with a Shore hardness of 75. Mild steel components shall not be used.

Sacrificial protection (e.g. galvanising), passivation or painting shall not be used to provide corrosion protection. Materials shall be inherently resistant to corrosion.

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#### 14.4 Gas Specific Connections

The AVSU shall be fully gas specific and labelled to identify the medical gas service.

The gas specific shrouds shall clearly show the gas service and use colour coding to BS EN 739:1998. Shrouds shall be pin indexed such that the only the correct shroud can be fitted to each 1st fix.

Gas specific NIST connections to BS EN 739:1998 shall be incorporated on each side of the line valve and include a permanently fitted gas identification label.

Pressure gas service (not vacuum) NIST connections shall incorporate 100% self sealing valves which, held closed by gas pressure until insertion of the appropriate gas specific male NIST fitting. Additional sealing of NIST fittings shall be achieved using blank NIST nuts,

with a knurled outer diameter. The blank NIST nuts shall include an internal 'O' ring groove and 'O' ring to seal on the smooth outer diameter of the female NIST. Blank NIST nuts shall be hand tightened only. Each NIST connection shall be capable of providing a free air flow rate of 300 l/min with a pressure drop of 0.4 bar from a 4 bar nominal inlet pressure.

#### 14.5 Local Alarm Pressure Switches

The AVSU shall incorporate minimum leak pressure switch connection ports on the left and right-hand sides to enable installation of a line pressure switch inside the box. The AVSU shall be as BeaconMedæ's ZSU2 or approved equivalent.

#### 15.0 Area Service Module

The Area Service Module shall contain a local area medical gas alarm and eight area valve service units. The Area Service Module shall be pre-piped, wired and tested ready for installation into a finished building. Medical gas/vacuum services shall be fixed copper, piped to and from their respective area valve service units, and shall normally terminate in 22mm copper stub pipes for pressure gas installations and 22 or 28mm stub pipes for oxygen and vacuum installations.

Pipes shall normally be connected at ceiling level.

The AVSUs shall be BeaconMedæ's ZSU2 type and shall conform to BS EN 739:1998, HTM 02-01 and BS EN 737-3:1998.

The AVSU shall provide a zone isolation facility, for use either in an emergency or for maintenance purposes.

#### 15.1 Emergency

##### Access

The 2nd fix shall include a transparent plastic window incorporating the words 'Pull in Emergency and Close Valve'. In order to gain access in an emergency, a ring pull shall be fitted to the removable portion of the window.

The emergency access mechanism shall be safely operable by a 5th percentile woman without the use of a tool. Glass windows shall not be used. It shall not be possible to refit or reset the means of emergency access.

#### 15.2 Door Tamper

##### Alarm

A door tamper alarm facility shall be available, with a reed switch initiating a system alarm indication on the local alarm panel when the emergency access window is removed.

Normally only oxygen and medical air AVSUs controlling high acuity care areas, resuscitation bays and accident and emergency wards shall be fitted with the door tamper facility.

#### 15.3 Materials

The second fix assembly shall be manufactured from fire retardant V0 rated ABS moulded corner pieces connecting an extruded aluminium frame in which a high pressure compact laminate fascia plate is positively retained. The fascia plate shall have a colour to match the chosen hospital décor. All wetted parts (except seals and gaskets) shall be brass or copper.

Copper pipe shall be manufactured from phosphorous de-oxidised non-arsenical copper to EN 1412:1996 grade CW024A, manufactured to metric outside diameters in accordance with EN 13348:2001R250 (half hard).

Copper to copper joints shall be made using a silver-copper-phosphorous brazing alloy type CP1 or CP4 to BS 1845 using a dry, clean, oil and oxygen free nitrogen inert gas shield with no flux. Each Area Service Module assembly shall be factory tested for gas tightness. Rubber

pipe grommets shall be provided to ensure any leaking gas does not escape from the Area Service Module into a wall cavity. All elastomeric gas seals shall be manufactured from Viton with a Shore hardness of 75.

All visible aluminium surfaces shall be powder coated RAL9010 60% gloss by a DuPont/Akzo Nobel approved powder coating specialist, offering a minimum guaranteed service life of 25 years.

#### 15.4 Gas Specific Connections

The area valve service unit shall be fully gas specific and labelled to identify the medical gas service. The gas specific shrouds shall clearly show the gas service and use colour coding to BS EN 739. Shrouds shall be pin indexed such that the only the correct shroud can be fitted to each 1st fix.

Gas specific NIST connections to BS EN 739:1998 shall be incorporated on each side of the line valve and include a permanently fitted gas identification label.

Pressure gas service (not vacuum) NIST connections shall incorporate 100% self sealing valves which, held closed by gas pressure until insertion of the appropriate gas specific male NIST fitting. Additional sealing of NIST fittings shall be achieved using blank NIST nuts, with a knurled outer diameter.

The blank NIST nuts shall include an internal 'O' ring groove and 'O' ring to seal on the smooth outer diameter of the female NIST. Blank NIST nuts shall be hand tightened only.

Each NIST connection shall be capable of providing a free air flow rate of 300 l/min with a pressure drop of 0.4 bar from a 4 bar nominal inlet pressure.

#### 15.5 Local Alarm Pressure Switches

The area valve service unit shall normally accommodate local alarm pressure switches.

Pressure switch connections shall incorporate minimum leak pressure switch connection ports. Wetted parts of pressure switches shall be manufactured from inherently corrosion proof materials. Plating or sacrificial protection on mild steel is not acceptable.

The area service module shall be as [BeaconMedæ's Medizone Area Service Modules](#) or approved equivalent.

### 16.0 Monitoring Equipment

#### 15.1. Medical Gas Central Alarm System

The Central Alarm System shall be capable of carrying at least gas services.

The medical gas central alarm shall fully comply with the requirements of HTM 02-01, C11, BS EN 60601-1 and BS EN 60601-1-2 and BS EN ISO 7396-1.

The cover, back box and bezel (if required) shall be polyester powder coated in a RAL9010 30% gloss finish. A single tamperproof fastener shall be used to gain access to the hinged door. The hinge shall operate through a minimum of 120° to provide adequate access.

##### 16.1.1 System Operation

Configuration of the Central Alarm System shall be done via switches on the panel, allowing easy and flexible configuration.

Each panel shall display and / or input up to five gas services or up to twenty point alarms.

Each gas service shall consist of a bank of five dual-circuit LED indicators, one green (for a "Normal" indication) and three yellow and one red (for four input conditions) as standard, although panels shall be customisable for individual requirements.

The gas service inputs shall be connected to a five way connector block.

The alarm shall monitor the cable connection from the source equipment, and provide a fault alarm in the event of a short circuit or open circuit fault. This shall be distinguishable from a source equipment fault. There shall be a test facility to check the integrity of all the LED indicators on the panel, and the audible alarm. The test facility shall also provide diagnostic information to aid in fault finding.

An adjustable volume audible alarm shall be fitted to the panel to allow installation in all environments, and there shall be a facility to connect the alarm to a remote sounding unit to repeat the audible alarm at other locations, for example a nurse base at the other end of a ward. There shall be a mute facility which silences the audible alarm for a period of fifteen minutes, or until another alarm condition occurs.

There shall be a selectable option to indicate to other repeater panels around the system that an alarm condition has been acknowledged and appropriate action is being taken.

A volt free contact shall be provided to output normal/fault status for the panel.

#### 16.1.2 Panel Operation

Each panel shall be wired on to a dedicated data transmission cable and shall be permanently connected to the “Essential Supply” within the hospital via a 3A fused spur.

Each gas service will display a green “Normal” indication when all four conditions are not in a fault condition. When an input condition faults, the respective LED shall indicate the type of failure.

Any data communication errors shall cause a “System Fault” alarm.

A rechargeable battery shall provide a “System Fault” alarm in the event of a power failure.

Source equipment shall connect directly to the input alarm panel. It is not acceptable to install a separate connection box to convert switch signals to a data signal.

The Central Alarm System shall be as BeaconMedæa Medipoint 125 Medical Gas Central Alarms or approved equivalent.

#### 16.2. Medical Gas Area Alarm

Each medical gas area alarm panel shall be capable of monitoring 6 medical gas services by means of pressure sensors, which detect deviations from the normal operating limits of either pressure or medical vacuum.

The medical gas area alarm shall fully comply with the requirements of HTM 02-01, C11, BS EN 60601-1 and BS EN 60601-1-2 and BS EN ISO 7396-1.

The cover, backbox and bezel (if required) shall be polyester powder coated in a RAL9010 30% gloss finish. A single tamperproof fastener shall be used to gain access to the hinged door. The hinge shall operate through a minimum of 120° to provide adequate access.

##### 16.2.1 System Operation

Each gas service shall be displayed by coloured LED's to show ‘Normal’ (green), ‘Low’ and ‘High Pressure’ (red) conditions.

Medical vacuum systems shall be displayed in the ‘Normal’ (green) and ‘Low Vacuum’ (red) conditions only. Failure indicators shall be displayed by flashing lights and normal indications shall be steady.

Each LED block indicator shall be a plug-in component with individual long life LED's connected in parallel in two banks to provide duplex circuits.

An audible warning shall sound simultaneously with any failure indication and a mute facility shall be provided.

Following a mute selection the audible will resound after approximately 15 minutes, or shall operate simultaneously should a further alarm condition occur.

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A “Mute” switch shall be provided inside the panel; for use during any maintenance resulting in prolonged pipeline or plant shutdown. This facility shall automatically reset when the gas service returns to normal. The alarm panel shall have a ‘Test’ facility to prove the integrity of the internal circuits, LED’s and audible warning.

The alarm panel shall incorporate a volt free normally closed relay to allow for interconnection to either a medical gas central alarm system or an event recording circuit of a building management system. Each alarm shall provide a green LED to indicate that electrical power is available at the panel and a red LED to indicate ‘System alarm’.

In the event of an electrical power supply failure the ‘System alarm’ LED shall illuminate (flashing) and the audible warning shall be delayed for 20 seconds to enable standby generator tests. Line contact monitoring circuits shall be provided to constantly monitor the integrity of the input sensors and interconnecting wiring. In the event of any fault the line contact monitoring circuits shall initiate the specific gas service failure indication, a ‘System Alarm’ indication and an audible warning.

Further aids to fault diagnosis shall be provided by means of varying flashing rates whilst operating the ‘Test’ switch.

#### 16.2.2 Pressure and Vacuum

##### Switches

Pressure and vacuum switches shall be manufactured with brass wetted parts and house a PCB with line contact monitoring resistors.

Electrical connectors shall be designed for frequent disassembly. Spade connectors are not acceptable. Pressure switches shall include both high and low pressure settings in the same switch, using only a single ¼” BSPP threaded pipeline connection to minimise the number of sealed joints.

The body and housing of the pressure switch shall be manufactured from impact resistance, rigid and inherently corrosion proof materials. Elastomers and plated or coated mild steel are not acceptable materials.

Pressure switches shall connect directly to the area alarm panel. It is not acceptable to install a separate connection box to convert switch signals to a data signal.

The area alarm shall be as BeaconMedæa Medipoint 26 Medical Gas Area Alarms or approved equivalent.

#### 17.0. Vertical Headwall Trunking System

The Vertical headwall shall be constructed from custom designed extruded aluminium sections with powder coated 60% gloss finish fascia panels.

Fascia panels shall be cut prior to painting to ensure all surfaces are coated, providing a tight seal between panels to prevent dust traps. Cover strips on the front fascia panels shall not be allowed. All visible extruded aluminium sections shall be powder coated RAL9010 60% gloss by a DuPont/Akzo Nobel approved powder coating specialist, offering a minimum guaranteed service life of 25 years. End caps shall be manufactured from 2.5mm thick UV stabilised and fire retardant high-impact Fabex 578.

A removable UV stabilised polymer extrusion shall cover the fascia fixing screws, providing a tight seal to prevent dust traps. A UV stabilised elastomeric wall seal shall run the full length of the bedhead unit, providing a dust tight seal between the bedhead unit and the wall and shall cater for a 10mm tolerance in the flatness of the mounting surface. A segregated service compartment (Vertical) shall run the length of the unit to carry medical gas pipes, low-voltage electrical cables and

ELV/data, with segregation of services being maintained throughout.

Each bedhead unit shall be supplied pre-piped, wired and certified.

The design and configuration of the bedhead units shall fully comply with all relevant applicable standards, including

HTM 2007, HTM 2011, HTM 2015, HTM 2020, HTM 2022, HTM02-01, HTM08-03, BS EN ISO 11197, BS EN

60601-1, BS EN 60598-1 and BS EN 60598-2-25, BS 6496, BS 7671, BS EN 60439, IEC 60364-7-710, CIE, CIBSE LG2, CIBSE LG3.

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### 17.1. Medical Gases

The vertical headwall system compartment for housing medical gas services shall be capable of running pipes of 15mm diameter generously spaced to facilitate simple on-site brazing to the piped distribution system.

The headwall shall be capable of housing at least three terminal units in a horizontal array.

Copper pipes shall be manufactured from phosphorous de-oxidised non-arsenical copper to BS EN 1412:1996 grade CW024A and be manufactured to metric outside diameters in accordance with BS EN 13348:2001R250 (half hard).

Degreasing of pipe shall be such that there is less than 20mg/m<sup>2</sup> (0.002mg/cm<sup>2</sup>) of hydrocarbons on the degreased surface when tested by the method specified in ASTM B280 clause 12.

The type of terminal unit installed shall be in accordance with contract drawings. Hoses shall not be used to connect the medical gas terminal units to the distribution system.

### 17.2. Lighting

Diffusers shall be manufactured from extruded fire-retardant Lexan® ML3290 polycarbonate resin, incorporating prismatic inner surfaces to maximise efficiency of light distribution from the chosen source. Efficiency shall be further enhanced by the use of mirror finish reflectors manufactured from Alanod Miro4 or Miro27 aluminium, achieving a minimum clarity and total reflection to TR-2 or DIN 5036-3 of 95%.

Luminaires shall be provided with electronic ballast's suitable for use with TL5 high efficiency fluorescent tubes, with a power factor rating of at least  $\cos\phi=0.93$ .

Lighting controls shall include options for local and/or remote control, control via the nurse call handset or control via a Digital Addressable Lighting Interface (DALI) or equivalent system.

### 17.3. Electrical Sockets

Electrical sockets shall normally be fitted in the side panels of the vertical headwall system, with additional sockets being fitted to the front fascia panel as required.

Electrical sockets shall be wired in ring or radial mains to circuits as specified by the customer.

### 17.4. Communications

Provision for or fitting of the nurse call system shall be co-ordinated by the bedhead unit supplier. Data sockets, including, but not limited to RJ45 and telephone sockets shall be installed in the bedhead unit at the time of manufacture.

The headwall system shall be as Beacon Medaes Vertical V-Sys headwall system or approved equivalent.

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#### 18.0 Medical Gas Cylinder Trolleys

The trolley shall consist of a flexible retaining strap to secure the cylinders safely, big anti-static wheels to ensure safe movement, .

#### 18.1 Material Specification

Frame: Steel Finish: Powder coated Handle: Glass filled nylon Retaining strap: Neoprene

Bumpers: Polyethylene

Wheels: Anti-static 200 mm solid rubber

#### 18.2 Trolley sizes

- i) Trolley capable of carrying 2 x 10 litre HX- Size BOC cylinders, ii) Trolley capable of carrying 2 x 33 litre G- Size BOC cylinders, iii) Trolley capable of carrying 2 x 40-50 litre J- Size BOC cylinders.

### 19. Particular Specifications for Portable Fire Extinguishers

#### 19.1 Water/CO<sub>2</sub> Extinguishers

These shall be 9-litre water filled CO<sub>2</sub> cartridge operated portable fire extinguishers and shall comply with B.S. 1382: 1948 and to the requirements of B.S.4523: 1977. Unless manufactured with stainless steel, bodies shall have all internal surfaces completely coated with either a lead tin, lead alloy or zinc applied by hot dipping.

There shall be no visibly uncoated areas .

The extinguishers shall be clearly marked with the following:

- a) Method of operation.
- b) The words 'WATER TYPE' (GAS PRESSURE) in prominent letters.
- c) Name and address of the manufacturer or responsible vendor.
- d) The nominal charge of the liquid in imperial gallons and litres.
- e) The liquid level to which the extinguisher is to be charged.
- f) The year of manufacture.
- g) A declaration to the effect that the extinguisher has been tested to a pressure of 24.1 bar (350 psi.).
- h) The number of British Standard 'B.S' 1382 or B.S. 5423: 1977.

#### 19.2 Portable Carbon dioxide Fire Extinguishers

These shall be portable carbon dioxide fire extinguishers and shall comply with B.S. 3326: 1960 and B.S. 5423: 1977.

The body of extinguisher shall be a seamless steel cylinder manufactured to one of the following British Standards; B.S. 401 or B.S. 1288.

The filling ratio shall comply with B.S. 5355 with valves fittings for compressed gas cylinders to

B.S.341. Where a hose is fitted it shall be flexible and have a minimum working pressure of 206.85 bar (3000 p.s.i.). The hose is not to be under internal pressure until the extinguisher is operated.

The nozzle shall be manufactured of brass gunmetal, aluminium or stainless steel and may be fitted with a suitable valve for temporarily stopping the discharge if such means are not incorporated in the operating head.

The discharge horn shall be designed and constructed so as to direct the discharge and limit the entrainment of air. It shall be constructed of electrically non-conductive material. 6-22

The following markings shall be applied to the extinguishers:-

- a) The words "Carbon Dioxide Fire Extinguisher" and to include the appropriate nominal gas content.
- b) Method of operation.



- c) The words “Re-charge immediately after use”.
- d) Instructions for periodic checking.
- e) The number of the British Standard B.S. 3326: 1960 or B.S. 5423.
- f) The manufacturers name or identification markings

### 19.3 Dry Chemical Powder Portable Fire Extinguisher

The portable dry powder fire extinguishers shall comply with BS3465: 1962 and BS 5423. The body shall be constructed to steel not less than the requirements of BS 1449 or aluminium to BS 1470: 1972 and shall be suitably protected against corrosion.

The dry powder charge shall be not-toxic and retain its free flowing properties under normal storage conditions. Any pressurizing agent used as an expellant shall be in dry state; in particular compressed air.

The discharge tube and gas tube if either is fitted shall be made of steel, brass, copper or other not less suitable material. Where a hose is provided it shall not exceed 1,060mm and shall be acid and alkali resistant. Provision shall be made for securing the nozzle when not in use. The extinguisher shall be clearly marked with the following information

- a) The word “Dry Powder Fire Extinguisher”
- b) Method of operation in prominent letters.
- c) The working pressure and the weight of the powder charge in Kilogramme.
- d) Manufacturers name or identification mark
- e) The words “RECHARGE AFTER USE” if rechargeable type.
- f) Instructions to regularly check the weight of the pressure container (gas Cartridge) or inspect the pressure indicator on stored pressure types when fitted, and remedy any loss indicated by either.
- g) The year of manufacture.
- h) The Pressure to which the extinguisher was tested.
- i) The number of this British Standard BS 3465 or BS 5423: 1977.
- j) When appropriate complete instructions for charging the extinguisher shall be clearly marked on the extinguisher or otherwise be supplied with the refill.

### 19.4 Air Foam Fire Extinguisher

These shall be of 9 litres capacity complete with refills cartridges and wall fixing brackets and complying with B.S. 5423

with the following specifications:- Cylinder: to B.S. 1449

Necking: to be 76mm outside diameter steel EN 3A 2<sup>3</sup>/<sub>4</sub>X 8TPI female thread.

Head cap: to be plastic moulding acetyl resin.

CO<sub>2</sub> Cylinder: to be 75gm P.V.C coated.

Internal Finish: to be polythene lining on phosphate coating.

External finish: to be phosphated - One coat primer paint and one coat stove enamel B.S. 381 C

## 20. Testing and Commissioning

The objective of testing and commissioning is to ensure that all the necessary safety and performance requirements of the MGPS will be met.

Testing and commissioning of MGPS shall be carried out in accordance with the requirements of

HTM 02-01-Part A. The contractor shall provide instrumentation for the functional tests. The

Quality Control Pharmacist shall provide instrumentation for the quality tests.

Calibration certificates shall be available for all instrumentation.

### 20.1 Summary of Tests

#### 20.1.1 Tests and Checks on the Pipeline Carcass

The following tests shall be carried out after installation of the pipeline carcass but before concealment:

- a. visual check of pipeline labelling, marking, sleeving and support;
- b. leakage test;
- c. tests for cross-connection;
- d. valve tests for closure, zoning and leakage.

(These tests will be repeated as part of the pipeline system tests and the contractor may wish to defer closure and leakage, but may choose to carry out a zoning check.)

#### 20.1.2. Tests on the Pipeline System

The following tests and checks shall be carried out after complete installation of the pipeline system:

- a. tests for leakage on each MGPS;

- b. tests of AVSUs for closure, correct service and control of the terminal units in the zone: checks for correct labelling of AVSUs for zone reference and identity of terminal units controlled and flow direction indication;

- c. tests of LVAs for closure and identification;

- d. tests for cross-connection, flow, pressure drop, mechanical function and correct identity of the terminal units: checks for correct labelling and association with AVSUs (this is only required when, within a specific area, there are separate circuits for the same service, for example dual/split circuits);

- e. tests for mechanical function and identity of NIST connectors;

- f. performance tests of the pipeline system;

- g. functional tests of all supply systems;

- h. checks of safety valve certification;

- j. tests of warning systems;

k. tests for particulate contamination/odour/taste: these may be carried out immediately after installation, using medical air, or after purging and filling with the specified gases.

Note

Nitrous oxide and nitrous oxide/oxygen mixture are not tested for odour.

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20.1.3 Tests before use

The following tests shall be carried out after purging and filling with the working gas: a. tests for particulate contamination

b. tests for gas identity;

c. tests for gas quality.

20.2 General Requirements for Testing

Testing for leakage shall be carried out in two stages: the first to the pipeline carcass, the second to the completed distribution system, which will include terminal units and medical supply units as appropriate.

Purging and testing shall be carried out with clean, oil-free, dry air or nitrogen, except for those tests where medical air or the specific working gas is prescribed.

All test gases shall meet the particulate contamination requirements set out in HTM 02-01- Part A.

Cylinders of medical air shall be used as the source of test gas for oxygen, nitrous oxide, entonox heliox systems in order to prevent the possibility of contamination with oil.

In the case of oxygen system the use of cylinders will be impracticable for the total system performance test.

The total system performance test shall be carried out by using the medical air compressor system, provided that the quality tests have been satisfactorily carried out to demonstrate that the criteria set out in HTM 02-01- Part A, Table 30 have been met and that the air supply plant is continuously monitored for moisture during the test.

Once tests have been completed, the system shall be maintained under pressure by means of air supplied from medical gas cylinders until filled with the working gas, when full QC checks will be carried out.

The results of all tests shall form part of the permanent records of the hospital and should show details of the services and areas tested.

For total system pressure tests on oxygen, nitrous oxide and entonox, the system under test shall be physically isolated from the source of supply (for example by the use of spades).

In the case of compressed air and vacuum systems, the pressure at the plant shall be respectively below and above pipeline distribution pressure.

All errors found during testing shall be rectified, and the relevant systems retested as appropriate before the records are signed.

The contractor (MGPS) shall provide all engineering forms, labour, materials, instruments and equipment required to carry out the tests described in this specification.

In the case of engineering tests, this must include all cylinders of test gas together with "open" bore NIST connector probes, pressure-measuring equipment and gas specificity/flow pressure testing device(s), metered leaks and AGS disposal system test equipment.

The Quality Controller (MGPS) shall be responsible for supplying all QC forms, unless otherwise requested by the hospital management, calibrated test equipment, connections etc.

#### Note

If there is to be a delay between completion of the MGPS and when it is taken into use, it shall be necessary to carry out the particulate and odour test prior to purging and filling with specific gases. In such cases the contractor shall also provide labour, materials and equipment to carry out these tests.

The Quality Controller (MGPS) shall provide the test equipment specified in HTM 02-01- Part A, Appendices D, E and F. The Quality Controller (MGPS) shall provide all equipment for gas quality and identity testing.

Flow meters, anaesthetic trolleys etc shall not be moved into rooms until commissioning tests have been satisfactorily completed.

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### 20.3 Requirements for Pipeline Carcass Tests

For sectional testing to be performed, it is essential that as-fitted drawings are available so that the extent of the system(s) under test can be identified.

For the purpose of the leakage test, all pressure gas systems may be interlinked, provided that the test can be performed at the highest pressure required. (This also has the advantage that the pipeline carcass could be assigned to a different service.)

#### Notes

In the event of a leak, it will be necessary to test each system separately.

It is advantageous to perform the tests with nitrogen, since – in the event of a leak or cross-connection – remedial action can be taken immediately.

When connecting systems together, vacuum systems shall not be included, as particulates from an unpurged vacuum system may be drawn into any part of any pressure gas system by venturi effects.

#### 20.3.1 Labelling and Marking

A visual check shall be made on each pipeline system to ensure that the pipelines are labelled in accordance with the contract specification, and that the terminal unit base blocks are marked in accordance with BS EN 737-1:1998.

The results of the checks shall be recorded on Form E1 .

#### 20.3.2 Sleeving and Supports

A visual check shall be made on each pipeline system to ensure that the pipelines are sleeved, where required, and supported in accordance with HTM 02-01 Part A, Table 25. The results of the checks shall be recorded on Form E1

#### 20.3.3 Leakage

The aim of this test is to establish that there is no leakage from the piped medical gas systems. This shall be demonstrated by the use of electronic pressure measuring equipment with a minimum resolution of 0.2 kPa in 1000 kPa and 0.5 kPa in 2000 kPa.

#### Note

With suitable equipment it is possible to carry out this test during a relatively short period to minimise the effect of temperature change.

During a test period of two hours, the maximum pressure loss shall be less than 0.2 kPa for 400 kPa systems and vacuum, and 0.5 kPa for 700 kPa systems. No allowance shall be normally made for variation of pressure with temperature; if, however, the accuracy of the available pressure - measuring equipment is in doubt and recourse is made to a 24-hour test, HTM 02-01 Part A, Appendix B contains information on the method of calculation.

Systems shall be tested at a working pressure of 18.0 bar for medical compressed air systems for surgical use, 10.0 bar for all other compressed medical gas systems and 5.0 bar for vacuum systems constructed in copper (1 bar for systems constructed in plastic).

This test shall be carried out with AVSUs, LVAs and other service valves open; any safety valves and pressure -sensing devices installed may be removed and the connections blanked off. The results of the test may be recorded on Form E1.

#### 20.3.4 Cross-connection

Before performing these tests, any links between systems shall be removed and all pipelines be at atmospheric pressure with all AVSUs etc open.

A single pressure source shall be applied to the inlet of the system to be tested and at least one terminal unit base block on all other systems be fully open.

Each terminal unit base block on the pipeline under test shall be opened in turn, checked for flow and then re-blanked. (To permit refitting of blanking caps, it is necessary to partially open at least one base unit – but it is still necessary to achieve a detectable flow.) When the test on one pipeline has been completed, the pressure source shall be removed and the pipeline left open to atmospheric pressure by removing at least one base block blanking plate. The test shall be repeated for other systems, one at a time. The results shall be recorded on Form E2.

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#### 20.4 Requirements for Pipeline System Tests

There shall be no links between the pipeline systems. Engineering (pressure) tests shall be carried out with electronic pressure-measuring equipment with a minimum resolution of 0.2 kPa in 1000 kPa, and 0.5 kPa in 2000 kPa.

The scope of the system and scale of provision of terminal units, AVSUs, LVAs and warning and alarm system panel indicators shall be checked for compliance with HTM 02-01, Part A, Table 11 and any deficiencies noted.

##### 20.4.1 Leakage from Total Compressed Medical Gas Systems

This test shall be carried out on the completed system with all terminal units, AVSUs, pressure safety valves and

pressure transducers fitted. Once the test pressure has been applied, the system shall be isolated from the plant. For the purpose of this test, the supply system shall extend from the last valve(s) nearest to the plant detailed on the appropriate schematic drawing. This point shall be identified on the contract drawings. The test shall be performed at pipeline distribution pressure. During a test period of two hours, the maximum pressure loss shall be less than 0.2 kPa for 400 kPa systems and vacuum, and 0.5 kPa for 700 kPa systems. The test results shall be recorded on Form E3.

#### 20.4.2 Leakage into Total Vacuum Systems

Prior to testing, the vacuum plant shall be operated to allow any moisture in the system to evaporate. With the system at pipeline distribution pressure and with the source isolated, the pressure increase in the pipeline must not exceed 1 kPa after one hour. There is no additional allowance for temperature correction in this test. The test results shall be recorded on Form E4.

#### 20.4.3 Closure of Area Valve Service Units (AVSUs) and Line Valve Assemblies (LVAs)

For pressurised systems, the system upstream of the closed AVSU under test shall be maintained at pipeline distribution pressure and the downstream line pressure reduced to about 100 kPa. The downstream pressure shall be recorded, and no change in pressure over a period of 15 minutes. For vacuum systems, the systems on the supply plant side of the closed valve shall be maintained at pipeline distribution pressure and the terminal unit side should be at about 15 kPa. The upstream (terminal unit side) pressure shall be recorded, and there shall be no change in vacuum over a period of 15 minutes.

For LVAs, a similar test procedure shall be adopted. There shall be no change in the time for vacuum. The test results shall be recorded on Form E5.

#### 20.4.4 Zoning of AVSUs and Terminal Unit Identification

This test shall be performed to ensure that each AVSU in the pipeline controls only those terminal units intended by the design. Each terminal unit shall be checked to ensure that it is for the correct service and that it is in accordance with BS EN 737-1:1998; unambiguous cross-referenced labelling of AVSUs and terminal units controlled by them is essential.

#### Notes

The contractor may wish to carry out this test as part of the carcass tests before any section of the pipeline is “enclosed”. Terminal-unit first-fix back blocks inadvertently fitted upside-down will result in inverted second-fix components, unless gas-specific components are deliberately removed. Therefore, a selection of terminal unit second-fixes, for example one per ward area, should be removed and examined to ensure that no gas-specific components have been removed.

The test shall be performed by turning off an individual AVSU and venting the zone to atmospheric pressure. A check shall then be made to establish that only those terminal units controlled by the AVSU are at atmospheric pressure. All other terminal units, including those for other gas services, shall be at the operating pressure. Once a zone has been vented, it shall not be necessary to re-pressurise. The other AVSUs shall then be tested successively.

#### Notes

These tests can be performed at the same time as the cross-connection/terminal unit pressure drop tests.

Where pneumatically activated pendant fittings are installed, a check shall be made to ensure that the source of air has been taken from the correct AVSU zone.

The test results shall be recorded on Form E5.

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#### 20.4.5 Cross-connection

All systems shall be checked to ensure that there is no cross-connection between pipelines for different gases and vacuum.

The tests shall not commence until all installations are complete and plant operational. (The tests can be performed using “test” gas or “working” gas.) Note

Oxygen and vacuum can be tested simultaneously, followed by medical air and surgical air simultaneously, followed by the other gases, that is, nitrous oxide, entonox and heliox.

The sequence of the test shall be, first, to open all valves on all systems (for example AVSUs, LVAs and any other valves). For oxygen and vacuum systems, the main plant isolation valves shall be opened (the main plant isolation valves on other systems remain closed).

A check shall be made to ensure that there is a flow at every oxygen terminal unit and suction at every vacuum terminal unit, and that the systems are at the correct operating pressure; there shall be no flow at any other terminal unit for the other gases.

For the next stage, the main isolation valves for medical air and surgical air shall be opened. (It is not necessary to return the oxygen and vacuum systems to atmospheric pressure.)

A check shall be made to ensure that there is a flow at every medical air terminal unit and every surgical air terminal unit and that the operating pressure is correct; there shall be no flow from the nitrous oxide and/or entonox terminal units and heliox.

The process shall then be repeated for nitrous oxide – again there is no necessity to return any of the previously tested systems to atmospheric pressure.

A check shall be made to ensure that there is flow at every nitrous oxide terminal unit and that the operating pressure is correct; there shall be no flow from the entonox and heliox terminal units.

The process shall then be repeated for entonox and finally heliox.

#### Note

The tests can be carried out on a total system basis, departmental basis or sub-departmental basis, having previously checked for cross-connection up to the appropriate AVSUs. When carrying out the tests on a sectional basis, it is essential that as-fitted drawings are available such that the extent of the system(s) can be established.

The test results shall be recorded on Form E6.

#### 20.4.6 Flow and Pressure Drop at Individual Terminal Units, Mechanical Function and Correct Installation

These tests can be carried out as part of the cross-connection tests above using appropriate test devices as described in HTM 02-01 Part A, Appendix C with the correct probes inserted for the pipeline(s) under test. The pressure must achieve the values given in HTM 02-01, Part A, Table 28 at the specified

flows.

#### Note

When performing these tests as part of the cross-connection tests, there is the possibility that the 400 kPa and vacuum test devices could be connected to the incorrect service, particularly a vacuum and oxygen reversal. The instruments used, therefore, should include appropriate directional check valves. (There is a possibility of damaging the gauges. Alternatively an open probe can be used to determine pressure or

vacuum.) It shall be demonstrated for each terminal unit that the appropriate gas-specific probe can be inserted, captured and released, and it shall be visually confirmed that an anti-swivel pin is present, or absent, in terminal units with a horizontal or vertical axis, respectively.

#### Notes

Terminal units to BS EN 737-1:1998 need not be challenged with the full complement of BS 5682:1998 test probes. The terminal unit should be fitted complete with bezel plates etc. The clearance hole should be reasonably concentric with the terminal unit rim – it must not be in contact.

The results of the tests shall be recorded on Form E7

All NIST connectors shall be checked to ensure that gas flow is achieved when the correct NIST probe is inserted and mechanical connection made.

The correct identification of gas flow direction shall be confirmed for AVSUs (that is, which h are the upstream and downstream NIST connectors). NIST connectors can be checked when performing other tests on AVSUs and LVAs.

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#### Note

Whereas it should not be necessary to carry out these tests on AVSUs bearing a CE Mark, in certain circumstances factory-assembled units are dismantled for installation purposes and can be subsequently incorrectly re-assembled. In the case of LVAs (whether or not CE marked), disassembly and subsequent incorrect re-assembly or, indeed, insertion into an incorrect line, is also possible. The primary purpose of the test is to ensure that whenever it is necessary to make a connection, the appropriate connectors will be to hand; the test is a further safety aid, although it is assumed that personnel making connections to NIST fittings are appropriately qualified and authorised to do so.

It shall be demonstrated (except for vacuum) for each NIST connector that the self-sealing device substantially reduces the flow of gas when the connector is removed without hazard to personnel or reduction in pipeline pressure.

The results shall be recorded on Form E8.

#### 20.5 Performance Tests on the Pipeline System

The performance of individual pipeline systems shall be measured by introducing a sufficient number of calibrated metered leaks (with orifice sizes providing different flows that replicate the range of medical devices for which the pipeline is designed; see Table 12) to represent the total “diversified” system design flow, less the flow generated by the test device.

Thereafter, a representative number of terminal units (see note below) shall be tested for pressure and flow: the diversified flows shall be derived from the data in HTM 02-01 Part A, Tables 13, 15, 16, 18, 20 and 21.

#### Notes

In a 28-bed ward module a representative number would be in the order of two terminal units furthest from the AVSU, two near the entrance, and the treatment room, if applicable for each gas and vacuum. In an operating department, a representative number would be one terminal unit in each operating suite and 20% of terminal units in recovery for each gas and vacuum. For oxygen, one metered leak should be 100 L/min to represent oxygen “flush”. It is not necessary to insert metered leaks into the actual number of terminal units used to calculate the “diversified” design flow, provided the numbers used are evenly distributed and orifice sizes are selected to achieve this flow.

The metered leaks shall be stamped or similarly be identified to show the flow (air equivalent) at, for example, 10, 20, 100, and 275 L/min for 400 kPa systems, and 350 L/min for 700 kPa systems; the results of the tests shall be recorded on Form E9.

#### Note

In principle it is permissible, although unlikely to be practicable for large installations, to test all systems simultaneously, particularly oxygen and vacuum, where terminal units are installed in pairs and where they require different metered leaks (this includes vacuum when testing oxygen will not significantly increase the time needed).



## 20.6 Functional Tests of Supply Systems

All supply systems shall be tested for normal and emergency operation, according to the manufacturers' manuals and contract specifications. For the purpose of the tests, the systems shall be connected to both the normal and stand-by power supplies. The results of these tests shall be recorded on Form E10.

## 20.7 Pressure Safety Valves

Pressure safety valves are not tested. They shall be examined to ensure that they are correctly rated for the pipeline system and are in accordance with the contract specification. Each shall be provided with a test certificate confirming the certificated discharge pressure. Records of safety valve details shall be noted on Form E11.

Check that the specified pressure safety valves, line valves and non-return valves have been fitted. Verify that the pressure safety valves are certified to operate in accordance with the contract specification and conform to BS EN ISO 4126-1: 2004.

## 20.8 Warning and Alarm Systems

The operation of warning and alarm systems shall be tested in all normal operating and emergency modes. Particular attention shall be paid to the following:

- a. that all systems operate within the specified tolerance limits at all operating parameters and fault conditions, and can be seen and heard as specified in HTM 02-01 Part A, Tables 23 and 24;
- b. that systems react correctly following return to normal status;
- c. that all indicator panels and switches are correctly marked
- d. that all functions on all indicator panels operate correctly;

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- e. that the system will operate from the essential supply stand-by power source;
- f. that all indicator panels are labelled to show the areas they serve, or as detailed in the contract specifications. The following tests shall also be carried out:
  - a. for central indicator panels, check that the operation of the mute switch cancels the audible alarm and converts the flashing signals to steady, for all systems and conditions;
  - b. for repeater indicator panels, check that the mute switch cancels the audible alarm and that the flashing signals are converted to steady only on the central alarm panel, for all systems and conditions;
  - c. for area indicator panels, check that the operation of the mute switch cancels the audible only, for all systems and conditions;
  - d. check power failure operates red "system fault" indicator and the audible alarm;
  - e. check that a contact line fault operates the "system fault" indicator, the main alarm displays and the audible alarm;
  - f. check audible reinstatement for each alarm panel;
  - g. check that the audible signal can be continuously muted via operation of the internal push-button for gas service alarm conditions only;
  - h. check for correct identification of each gas service on alarm panels and "departmental" or plant specifying labels;

j. check that each alarm panel emits the correct (two-tone) audible alarm. (Some manufacturers supply panels set for a single tone – in use, staff may confuse this sound with that emitted by some models of patient monitoring equipment.)

The results of the tests are recorded on Form E12.

#### 20.9 Verification of As-Installed Drawings

The As-Installed drawings shall be checked to ensure that all variations from the contract drawings have been recorded and the results recorded on Form E13.

#### 20.20 Filling with Medical Air

All MGPS shall be left filled with medical air at pipeline distribution pressure until they are filled with the specific working gas shortly before use. The medical vacuum pipeline need not be maintained under vacuum.

When the construction contract has finished, the contractor shall record the removal of all special connectors and cylinders from site.

#### 20.21 Purging and Filling with Specific Gases

Each pipeline system shall be purged with the specific working gas shortly before use. The following conditions shall apply:

- a. all sources of test gas must be disconnected;
- b. all special connectors must be removed from site;
- c. each pipeline system must be at atmospheric pressure with all AVSUs open;
- d. each system must be filled to pipeline distribution pressure with the specific gas from the supply system;
- e. with the supply system on, each terminal unit must be purged at a known flow with a volume of gas at least equal to the volume of the pipeline section being tested;
- f. all oxygen, nitrous oxide, entonox and heliox discharged during the process must be released to a safe place. The results of the purging process shall be recorded on Form E14.

Purging is not necessary for vacuum systems.

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#### 20.22 Quality of Medical Gas Systems

##### 20.22.1 Particulate Matter

MGPS shall be free from particulate contamination, as they have been constructed using chemically cleaned, capped components and joined in a controlled process using a filtered shield gas.

However, on-site contamination can occur from ingress of building materials, dust etc. The presence of such particles can adversely affect the quality of the delivered gases. Therefore, tests to indicate their absence are important.

New systems shall be purged until the particulate filter is completely clear of visible particles when viewed in a good light.

The test for particulate matter shall be carried out at every terminal unit on a new system. It can be carried out either after completion of the construction phase using medical air or after the system has been filled with the specified gas.

Once the system is filled with working gas, it shall not be necessary to repeat the test at every terminal unit. The actual number of terminal units sampled shall be at the discretion of the Quality Controller (MGP S).

#### 20.22.2 Oil

This test shall be carried out at the plant test point of all newly installed medical/surgical compressed air plant.

Oil may be present as liquid, aerosol or vapour, and an appropriate test device is described in HTM 02 -01 Part A, Appendix E.

The total oil content shall be in accordance with HTM 02-01 Part A, Table 28. Care shall be taken in siting the test point to ensure a representative sample.

#### 20.22.3 Water

This test is intended to identify contamination of the pipeline system by moisture.

##### Notes

When testing terminal units supplied via low pressure, flexible connecting assemblies, it is often found that – on initial testing – moisture levels exceed the 0.05 mg/L limit; this is the result of desorption of minute quantities of moisture into the gas stream. This is particularly noticeable where the test flow is low, and should not cause undue concern. The Quality Controller (MGPS) should establish, however, that the elevated readings at such terminal units result from this effect and not water contamination of the pipeline. (For example, the results should be compared with the readings achieved at nearby terminal units supplied by copper pipework.) New developments in hose materials may lead to hoses with reduced water vapour permeability characteristics. The effects of flow rate through dryer units and sampling times on detection equipment indications should also be taken into account when measuring water content.

The plant test point and a representative sample of terminal units distributed throughout the pipeline systems shall be tested for total water content.

The water content shall not exceed 67 vpm (equivalent to an atmospheric pressure dew-point of approximately  $-46^{\circ}\text{C}$ ). The typical water content of medical gas cylinders is normally below 5 vpm. Water vapour content may be measured using the appropriate test device described in HTM 02-01

Part A, Appendix E.

#### 20.22.4 Carbon monoxide

The most distant terminal units on each branch of a medical/surgical air pipeline system supplied from a compressor plant and PSA systems shall be tested for carbon monoxide, although it would not normally be necessary to test more than five terminal units.

The concentration of carbon monoxide shall not exceed 5 ppm v/v. This may be measured at up to five terminal units in each system using the appropriate test devices described in HTM 02-01 Part A, Appendix E.

#### 20.22.5 Carbon dioxide

The most distant terminal unit on each branch of a medical/surgical air pipeline system supplied from a compressor or an oxygen concentrator plant must be tested for carbon dioxide.

The concentration of carbon dioxide shall not exceed 500 ppm v/v in medical air or 300 ppm v/v in oxygen from an oxygen concentrator plant.

Notes

Increasing or fluctuating carbon dioxide readings in air or PSA-generated oxygen can be an early indication of dryer failure or poor compressor maintenance.

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20.22.6 Sulphur dioxide

The most distant terminal units in medical/surgical air pipeline systems supplied from a compressor plant, and oxygen terminal units supplied from a PSA plant, shall be tested for sulphur dioxide. (It will not normally be necessary to test more than five terminal units in a single system.)

The concentration shall not exceed 1 ppm v/v.

20.22.7 Oxides of nitrogen (NO and NO<sub>2</sub>)

The most distant terminal units in medical/surgical air pipeline systems supplied from a compressor plant, and oxygen terminal units supplied from a PSA plant, must be tested for oxides of nitrogen. (It will not normally be necessary to test more than five terminal units in a single system.) The concentration should not exceed 2 ppm v/v.

20.22.8 Nitrogen

Oxygen-free nitrogen is used as the inert gas shield, and all terminal units of all gas systems shall be tested to ensure that the systems have been adequately purged.

For oxygen systems and entonox, an oxygen analyser shall be used to ensure that the oxygen concentration is not less than that given in HTM 02-01 Part A, Table 30.

For nitrous oxide systems, an instrument based on thermal conductivity, or an infrared meter, shall be used to check that the system has been adequately purged at every terminal unit.

If a thermal conductivity meter is used, it shall be necessary to prove absence of carbon dioxide (which could have been used inadvertently as a shield gas) by the use of a chemical reagent tube.

20.22.9 Pipeline Odour/Taste

An odour test shall be performed because it incorporates, qualitatively, many impurity checks, as several contaminants are detectable by odour.

This test shall be carried out as the final test with the working gases, except for nitrous oxide, and entonox which should not be inhaled.

The odour threshold of particulate matter is approximately 0.3 mg/m<sup>3</sup>.

20.22.10 Gas Identification

The identity of the gas shall be tested at terminal units on medical gas pipeline systems. This shall include all new terminal units

All systems must have been filled with the specific gas in accordance with HTM 02-01, Part A, paragraph 15.100. The composition of all compressed gases shall be positively identified. This can be accomplished using an oxygen analyser for oxygen, nitrous oxide/oxygen and air, and a thermal conductivity or infrared meter for nitrous oxide.

When checking the identity of nitrous oxide and entonox, the gas shall be discharged in a manner that minimises pollution and personnel exposure.

When testing pipelines for heliox, an initial test shall be carried out with nitrogen connected after completing the particulate test.

An oxygen analyser shall be used and all terminal units tested. After a zero reading is achieved, product cylinders shall be connected and the system purged.

A second test shall be performed with an oxygen analyser; the oxygen content shall be as in Table 31.

#### 20.22.11 Test Results

The test results for quality and gas identity shall be recorded on Form E16.

### 20.23 AGS Disposal Systems

#### 20.23.1 Performance Tests

All equipment shall be tested to ensure that it performs satisfactorily during continuous operation under full load for one hour.

All electrically powered equipment shall be tested as follows:

- check for correct rotation;
- check the current through the powered device at full load.

The disposal system shall be tested to ensure that it meets the requirements set out in the table below, with the number of terminal units for which it has been designed in use.

	Disposal system standard			
	Pressure drop		Flow rate	
	BS 6834:1987	ISO DIS 7396-2:2005	BS 6834:1987	ISO DIS 7396-2:2005

Maximum	1 kPa	1 kPa	130 L/min	80 L/min
Minimum	4 kPa	2 kPa	80 L/min	50 L/min
Maximum static pressure	20 kPa (–)	15 kPa (–)	This check is made before performing the flow tests	

The test shall be carried out as described in Appendix K of BS 6834:1987. The test device shall be inserted into each terminal unit in turn and checked for pressure at flows of 80 L/min and 130 L/min for BS systems, and 50 L/min and 80 L/min for ISO systems. Adjustment shall then be made if necessary.

The test device and a number of metered leaks shall then be inserted into the system to replicate the design flow. The measurements above are shall be repeated. If the test results are satisfactory, the test device shall be removed and substituted by a metered leak.

AGSS terminal units shall be checked for correct mechanical operation and that the check valve operates satisfactorily.

#### 20.24 Requirements Before a Medical Gas Pipeline System is Taken into Use

##### 20.24.1 General

Before a system is used, the appropriate persons shall certify in writing that the tests and procedures required in this specification have been completed, and that all systems comply with the requirements.

This shall include certification that all drawings and manuals required by the contract have been supplied and as -fitted drawings are correct (see Form E17).

All certificates shall be dated and signed by the appropriate witnesses, by the Project Engineer and by the representative of the contractor.

##### 20.24.2 Removal of Construction Labels

When all tests have been completed satisfactorily, the “Danger – do not use” labels affixed to terminal units shall be removed on the authority of, Hospital Management.

Commissioning Forms

1. MGPS Carcas Test                      FORM E1 Leakage Test, Labelling and Marking, Sleeving and Supports

This is to certify that a Leakage test in accordance with HTM 02-01, Part A, paragraphs 15.49– 15.51 was carried out on the piped system on this scheme and that during the test, a pressure, as shown in column 2 below, was held as follows.

A certified gauge number ----- was used.

Section tested	Test pressure (kPa)	Hours on test	Pressure drop (kPa)	Pressure loss (kPa/h)	Pass/Fail <0.2/2h (400 kPa systems) <0.5/2h (700 kPa systems)

For the purpose of carrying out this test, the following links have been made:  
 .....  
 .....  
 .....

This is to certify that the above tests have been carried out and that the following links have been removed:  
 .....  
 .....  
 .....

Contractor's Representative

Designation.....Sign .....Date

..... Name

.....

Project Engineer

Designation .....Sign.....Date .....

. Name

.....







.....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....

No cross-connections between these systems

were found. Contractor's Representative

Designation .....Sign .....Date  
 .....

Name  
 .....  
 .....

2. MGPS Total System Tests

FORM E3

Leakage Test from Total Compressed Gas System

This is to certify that a Leakage test in accordance with HTM 02-01, Part A, paragraphs 15.59–15.60 was carried out on the piped system on this scheme and that during the test, a pressure of .....kPa was held for ..... hours with a pressure drop of.....kPa.

Section tested	Test pressure (kPa)	Hours on test	Pressure drop (kPa)	Pressure loss (kPa/h)	Pass/Fail <0.2/2h (400 kPa systems) <0.5/2h (700 kPa systems)


Contractor's Representative

Status .....Sign .....Date  
.....

Name

.....  
.

..... Project Engineer

Designation .....Sign .....Date .....

Name

.....  
.....

Witnessed on behalf of

.....  
..... By .....

Designation

.....  
.....

..... Sign .....Date .....

This is to certify that a Leakage test in accordance with HTM 02-01, Part A, paragraph 15.61 was carried out on the piped vacuum system at a system pressure of.....,kPa.

The pressure increase after 1 hour was .....kPa (max 10 kPa).

Contractor's Representative

Designation ..... Sign .....Date

.....  
Name

.....  
Project Engineer

Designation .....

Sign..... Date

.....  
Name

.....  
Witnessed on behalf of

.....  
..... By



--	--	--	--	--

Contractor's Representative

Designation .....

Sign.....

Date .....

Name

.....

..... Project Engineer

Designation .....

Signed

.....

Date .....

Name

.....

.....

Witnessed on behalf of

.....

..... By

.....

.....

Designation ..... Sign..... Date

.....

Cross-Connection Test

This is to certify that a Cross-Connection test in accordance with HTM 02-01, Part A, paragraphs

15.70–15.74 was carried out on the following medical gas pipeline systems:

.....

.....








Contractor's Representative  
 Designation.....Sign.....Date  
 .....

Name  
 .....

..... Project Engineer  
 Designation ..... Sign.....Date  
 .....

Name  
 .....Witnesse  
 d on behalf of  
 .....

By  
 .....  
 ....  
 Designation.....Sign.....Date  
 .....

Functional Tests NIST Connectors

(in accordance with the contract specification and HTM 02-01, Part A, paragraphs 15.80–15.81)

System .....

Gas Identification No. specificity ADEQUATE/INADEQUATE n P S F I A

Contractor's Representative

Designation..... Sign.....Date

.....

Name.....

Project Engineer

Designation..... Sign.....Date

.....

Name

.....

.....

Witnessed on behalf of

.....  
 ..... By

.....  
 .....

Designation.....Sign..... Date  
 .....

6-41

Design Flow Performance

(in accordance with HTM 02-01, Part A, paragraphs

15.83–15.84) System gas

.....

System design flow ..... (L/min)

Total number of terminal units in system at test flows						
40 l/min	80 l/min	100 l/min	275 l/min	350 l/min	Total flow	Single point test flows

Contractor's Representative

Designation..... Sign.....Date

.....  
 Name  
 .....  
 .....  
 .....

Project Engineer  
 Designation..... Sign.....Date  
 .....

Name  
 .....  
 ...

Witnessed on behalf of  
 .....  
 ..... By  
 .....  
 .....

Designation..... Sign..... Date  
 .....

Functional Tests of Supply Systems

This is to certify that the following sources of supply have been tested in accordance with HTM 02-01, Part A, paragraph 15.85 and the attached sheets and found to comply with the specification.

Source of Supply	Contractor's Representative Name/ Sign	Project Engineer Name/ Sign
Manifold		
Manifold		

Manifold		
Liquid Oxygen Plant		
Air Compressor		
Vacuum Plant		
Oxygen Concentrator		

Witnessed on behalf of

.....  
 ..... By

.....  
 .....

Designation.....Sign.....

Date

.....



.....  
..... By

.....  
.....

Designation..... Sign..... Date  
.....



Warning Systems

This is to certify that Warning Systems on the following medical gas pipeline systems have been tested in accordance with HTM 02-01, Part A, paragraphs 15.89–15.91 as follows:

System	O <sub>2</sub>	N <sub>2</sub> O	N <sub>2</sub> O/O <sub>2</sub>	MA-4	SA-7	MVAC
Specified warning pressure						
Observed warning pressure						
Warning given						
Return to normal						
Marking						
All functions on all stations						
Stand-by power						

Contractor's Representative

Name

.....

Designation..... Sign.....Date .....

Project Engineer

Name.....

Designation..... Sign.....Date .....

Witnessed \_\_\_\_\_ on \_\_\_\_\_ behalf \_\_\_\_\_ of \_\_\_\_\_  
 .....

By.....

Designation.....Sign..... Date .....

6-45

FORM E13

Verification of Drawings

This is to certify that in accordance with HTM 02-01, Part A, paragraph 15.92, the as-fitted drawings of the following systems record all variations from the contract drawings:

System	Drawing No.	Contractor's representative	Project Engineer	Date
O <sub>2</sub>		N m / e i g a i n	a e D s g a i n	
N <sub>2</sub> O				
N <sub>2</sub> O/O <sub>2</sub>				
MA-4				
SA-7				
MVAC				
AGS				
He/O <sub>2</sub>				



Purging all terminal units									
Venting									
Tick if particulate tests have been performed and specifications met.									
Tick if odour tests have been performed and specifications met									

Contractor's Representative

Name.....

Designation..... Sign.....Date .....

Project Engineer

Name.....

Designation..... Sign.....Date .....

Witnessed on behalf of

.....

By .....

Designation.....Sign.....Date.....

.....

6-47

FORME1

5

### Quality Specifications for Medical Gas Pipeline Tests (Working Gases)

This is to certify that medical gas systems have been tested in accordance with HTM 02-01, Part A, paragraphs 15.109–15.162 as follows:

Gas and source	Particulates	Oil	Water	CO	CO <sub>2</sub>	NO and NO <sub>2</sub>	SO <sub>2</sub>	Poly- test tube (optional)	Odour	Tick when parameters are met
----------------	--------------	-----	-------	----	-----------------	------------------------	-----------------	----------------------------	-------	------------------------------

Oxygen from PSA plant	Free from visible particles in a 75 l sample	≤0.1 mg/m <sup>3</sup>	≤67 vpm (≤0.05 mg/l, atmospheric dew point of -46°C)	≤5 mg/m <sup>3</sup> ≤5 ppm v/v	≤300 ppm v/v	≤2 ppm v/v	≤1 ppm v/v	No discoloration	None	
N <sub>2</sub> O	Free from visible particles in a 75 l sample	-	≤67 vpm (≤0.05 mg/l, atmospheric dew point of -46°C)	-	-	-	-	No discoloration	SAFETY Not performed	
N <sub>2</sub> O/O <sub>2</sub>	Free from visible particles in a 75 l sample	-	≤67 vpm (≤0.05 mg/l, atmospheric dew point of -46°C)	-	-	-	-	No discoloration	SAFETY Not performed	
MA-4/SA-7	Free from visible particles in a 75 l sample (for MA-4) and 175 l sample (for SA-7)	≤0.1 mg/m <sup>3</sup>	≤67 vpm (≤0.05 mg/l, atmospheric dew point of -46°C)	≤5 mg/m <sup>3</sup> ≤5 ppm v/v	≤900 ppm v/v ≤500 ppm v/v	≤2 ppm v/v	≤1 ppm v/v	No discoloration	None	
Dental compressed air	Free from visible particles in a 75 l sample	≤0.1 mg/m <sup>3</sup>	≤1020 vpm (≤0.78 mg/l, atmospheric dew point of -20°C)	≤5 mg/m <sup>3</sup> ≤5 ppm v/v	≤900 ppm v/v ≤500 ppm v/v	≤2 ppm v/v	≤1 ppm v/v	No discoloration	None	
Synthetic air	Free from visible particles in a 75 l sample	-	≤67 vpm (≤0.05 mg/l, atmospheric dew point of -46°C)	-	-	-	-	No discoloration	None	
Oxygen from bulk liquid or cylinders	Free from visible particles in a 75 l sample	-	≤67 vpm (≤0.05 mg/l, atmospheric dew point of -46°C)	-	-	-	-	No discoloration	None	
He/ O <sub>2</sub> O <sub>2</sub> < 30%	Free from visible particles in a 75 l sample	-	≤67 vpm (≤0.05 mg/l, atmospheric dew point of -46°C)	-	-	-	-	No discoloration	None	

**Contractor's Representative**

Name ..... ..Designation.....

Sign.....Date .....

**Project Engineer**

Name .....Designation..... Sign.....Date

Witnessed on behalf of By

.....

Designation.....Sign.....  
.....

Date

6-48

FORM E16

**3.14. Identification of Medical Gas Pipeline Working Gases**

This is to certify that medical gas systems have been tested in accordance with HTM 02 -01, Part A, paragraphs 15.163–15.167 and the results are as follows (insert values for gases – tick for vacuum):

Gas and source	Paramagnetic oxygen analyser reading	Thermal conductivity/ infra-red instrument reading	Carbon dioxide detector tube indication If TC meter used	Vacuum probe
O <sub>2</sub> from liquid or cylinders				
O <sub>2</sub> from concentrator				
N <sub>2</sub> O				
N <sub>2</sub> O/O <sub>2</sub>				
MA-4 /SA-7				
Synthetic air				
MVAC				
Nitrogen shield gas				
He/O <sub>2</sub>				
Test 1				

Test 2

Contractor's Representative  
Name

.....  
....

Designation..... Sign.....Date

..... Project Engineer  
Name.....

Designation..... Sign.....Date

Witnessed on behalf of. By

.....  
.....

Designation.....Sign.....  
.....

Date

6-49

FORM E

Certificate of Completion

Hospital: .....

Medical Gas Installations – Location

.....  
.....

This is to confirm that the following tests have been performed:

1. Mechanical functions tests
  
2. Quality and gas identity tests
  
3. in accordance with Health Technical Memorandum 02-01 Part A, Chapter 15, and that the results are satisfactory.
  
- 4.
  
- 5.
  
6. Sign ..... Quality Controller (MGPS)
  
- 7.



8. Sign ..... Contractor's Representative  
(MGPS)

9.

10. Signed ..... Client Representative

11.

12. Witnessed ..... Designation:

..... Date.....

13. We, MGPS Main Contractor accept responsibility for the systems above and undertake to carry out any future work in accordance with the recommendations of Health Technical Memorandum 02-01 and the permit-to-work procedures.

Sign.....Date.....

SECTION 7:

BILLS OF QUANTITIES

AND

SCHEDULE OF UNIT RATES

BILLS OF QUANTITIES AND SCHEDULE OF UNIT RATES

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CLAUSE No.  
PAGE

1.	GENERAL NOTES TO TENDERERS.....	7-1
2.	STATEMENT OF COMPLIANCE.....	7-2
3.	BILL OF QUANTITIES.....	
	4. SUMMARY	
	PAGE.....	
5.	SCHEDULE OF UNIT RATES.....	

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i  
)

MECH BQ 1 to  
39

MECH BQ 40

MECH BQ 41

## SPECIAL NOTES

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.
2. The prices quoted shall be deemed to include for all obligations under the subcontract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (including 16% VAT).

In accordance with Government policy, 3% Withholding Tax and 6% Withholding VAT shall be deducted from all payments made to the Tenderer, and the same shall be forwarded to the Kenya Revenue Authority (KRA).

- 3 All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part thereof.
4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere. Otherwise alternative brands of equal and approved quality will be accepted.

Should the sub-contractor install any material not specified here in before receiving written approval from the Project Manager, the sub-contractor shall remove the material in question and, at his own cost, install the proper material.

5. The grand total of prices in the price summary page must be carried forward to the Form of Tender for the tender to be deemed valid.
6. Tenderers must enclose, together with their submitted tenders, detailed manufacturer's Brochures detailing Technical Literature and specifications on all the equipment they intend to offer.

1. Statement of Compliance

- a) I confirm compliance of all clauses of the General Conditions, General Specifications and Particular Specifications in this tender.
- b) I confirm I have not made and will not make any payment to any person, which can be perceived as an inducement to win this tender.

Signed: .....for and on behalf of the Tenderer

Date: .....

Official Rubber Stamp: .....

a)           BILLS No. 1

A) PRICING OF PRELIMINARIES ITEMS.

Prices will be inserted against item of preliminaries in the sub-contractor's Bills of Quantities and specification. These Bills are designated as Bill 1 in this Section. Where the sub-contractor fails to insert his price in any item he shall be deemed to have made adequate provision for this on various items in the Bills of Quantities. The preliminaries form part of this contract and together with other Bills of Quantities covers for the costs involved in complying with all the requirements for the proper execution of the whole of the works in the contract.

The Bills of Quantities are divided generally into three sections:-

a. Preliminaries – Bill 1

Sub-contractors preliminaries are as per those described in section C – sub-contractor preliminaries and conditions of contractor. The sub-contractor shall study the conditions and make provision to cover their cost in this Bill. The number of preliminary items to be priced by the Tenderer has been limited to tangible items such as site office, temporary works and others. However the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.

b. Installation Items – Other Bills

i. The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the contract Drawings, conditions of contract and specifications. ii. The unit of measurements and observations are as per those described in clause 3.05 of the section

c. Summary

The summary contains tabulation of the separate parts of the Bills of Quantities carried forward with provisional sum, contingencies and any prime cost sums included. The sub-contract shall insert his totals and enter his grand total tender sum in the space provided below the summary. This grand total tender sum shall be entered in the Form of Tender provided elsewhere in this document





KEGONGA HOSPITAL MECHANICAL WORKS					
BILL NO.1 - SANITARY FITTINGS					
Item	Description	Unit	Qty	Rate (Kshs)	Amount
<u>GROUND FLOOR</u>					
Supply, deliver, install and fix the following sanitary fittings including all materials and jointing to supply, waste/soil and overflow pipes. Brand names for products are specified only as an indication of quality. Equal and approved appliances may be supplied. Where trade names are mentioned, the Ref. No. is intended only as a guide to the type and quality of fittings					
A	Asian Water Closet Squatting water closet suite in vitreous china comprising of water closet bowl with top plate and integral foot threads, S-trap connector, associated pipeworks for inlet connection to the water closet pan All to be as "Twyfords Oriental" or approved equivalent. Water Closet (WC)	No	4		
B	Water closet suite including Pan & Seatcover soft close in white complete with horizontal outlet and associated pipeworks for inlet connection to the water closet pan and S-trap outlet..All to be as Duravit :WC Pan Back to Wall D-Code #21150900002 Seat cover # 067390000 or approved equivalent. Chrome plated flush valve	No.	3		
C	32mm water closet low pressure flush valve for water closets complete with, back entry with integral vacuum breaker, non-hold-open features and non-return valve, inlet control stop and wall plate comprising flush valve, bent chrome plated flush pipe and rubber pipe connector. The flush valve to be as "Plumber" push button type. Close coupled Water Closet Suite	No.	7		
D	Water closet suite including Pan ,Cistern & Seatcover soft close in white complete with horizontal outlet and associated pipeworks for inlet connection to the water closet pan and S-trap outlet..All to be as Ideal ceramics :To be as Ideal ceramics #G060101 or approved equivalent. Urinals bowls	No	4		
E	Urinal bowl in white vitreous china comprising with concealed inlet,rimless,for 1/2" connection,including jet nozzle,inlet set,waste ,bottle trap 32mm and fixings. To come complete with urinal flush valve polished chrome To be as Duravit 305 x290mm #0829300000 or approved equivalent. Urinal Bowl Divisions	No	6		
F	Ceramic urinal bowl divisions separating the above described urinal bowls fixed firmly on the wall. The fittings shall be as Twyfords or equal and approved.	No	6		

G	Toilet roll holder Lockable Jumbo Toilet roll holder as "Kimberly Clarke" in chrome finish or equivalent approved	No	7		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page Toilet Roll Holder				
A	Chrome Plated toilet roll holder in, Matt Black as DALI Item Code: ETRLHLD375, Brand Reference: MH70B or equal and approved	No	4		
	Robe Hook				
B	Chrome plated robe hook mounted with concealed screws. To be as Docol: Robe Hook (Double)-Hotel: C.P. #00218306 TACC or equal and approved.	No	11		
C	Wall mounted toilet brush holder and brush of approved colour as Ideal Standard or approved equivalent.	No	11		
D	Pedestal wash hand basin size 575 x 500mm with single tap hole, 32mm diameter chrome plated chain waste, chain stay hole, chrome plated nonconculsive time delay press action pillar tap as Cobra model and heavy duty chrome plated bottle trap (32mm 'P' trap) with 75mm seal. To be of Duravit D-Code CAT No. 0337540000 countertops washhand basin or equal and approved.	No	7		
E	Countertop wash hand basin size 545 x 425mm with one tap hole, 32mm diameter chrome plated chain waste, chain stay hole, chrome plated non-conculsive time delay press action pillar tap as Cobra model and heavy duty chrome plated bottle trap (32mm 'P' trap) with 75mm seal. To be of Duravit D-Code CAT No. 0337540000 countertops washhand basin or equal and approved.	No	11		
F	Medical Wash Hand Basin	No	12		
	Counter top Twyford's "SOLA L.B.G/L" wash hand basin with no tap holes and chain stay hole cat. No. WB 1520WH, wall brackets cat no. SR 1315 xx complete with "lever action mixer fitting, 1/2 with swivel nozzle and divided flow" wall mounted elbow operated tap mixer cat. no. SF 1099 CP, chrome grid waste 1 1/4" cat no. WF 4341 CP and white plastic bottle trap 1 1/4" P-trap cat. no. WF 8482 xx or approved equivalent.				
	Plaster Sink				
	S1268 (PS H) Clyde plaster sink, right hand with stainless steel cantilever brackets and strainer waste, S8270 (TB H1) Markwik 1/2" lever action bib taps, B1686 Nimbus 21 concealed bib tap wall mount with self centralising installation (pair)				
G	B1684 Nimbus 21 1/2" x 100mm bib tap extensions (pair) Should come on stand as S9281 Leg 900mm stainless steel to floor (2 required)	No	1		

H	SCRUB-UP SINK Scrub-up Trough 1800mm long with Left hand outlet Cat No. SS9122SS Complete with 3No. wall mounted Lever action mixer taps Cat No. SF1099CP 1 1/2 Chrome plated Waste fitting and a s trap	Twyford	No	1		
	Total c/f to next page					

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				
A	Sluice Unit "Grafton B.P.S." hopper cat.no. FC4076WH loose-trap FC44612WH complete with Vitreous china high level cistern 7.5 Litre capacity with valveless fittings and reversible chain pull CX7610WH, cistern supporting brackets SR1300XX stainless steel flushpipe with spreader and clips SS6020SS Combine bedpan and urinal bottle jet with 1/2" lever handle taps, SF6504CP legs and bearers for hopper SR3053XX sinks 760mm x 455mm FC1350WH chain and waste 1 1/2" chrome plated WF4338CP waste pipe for the hopper WF9685WH legs and bearers for sink SR3043XX drain with anti-drip stip FC9684WH legs and bearers for drain SR3052XX chrome plated extended bib tap 1/2" SF5204CP Chrome plated Lever action mixer tap flexible hose and handspray SF7053CP.	Twyfords	No	1	
B	15mm diameter x 600mm long flexible connectors complete with integral chrome plated angle valve as Cobra or equal and approved.		No	30	
C	Cleaners Sink Heavy duty sink size 455 x 380 x 230mm deep in fireclay complete with hardwood pad on the front edge and fitted bucket aluminium alloy grating and 20mm chrome plated wall mounted inclined bricon tap, chrome plate chain and rubber stopper and heavy gauge 1 1/2" bottle trap and stainless steel legs. All as "Armitage Shanks Birch" or approved equivalent.		No	2	
D	Mirrors 6mm thick polished plate glass, silver backed mirror with beveled edges, size 810x610mm plugged and screwed to wall with 4No. Chrome plated chrome capped screws and 5mm thick foam back nest.		No	7	
E	Ditto but of size 1200x610mm		No	2	
F	Ditto but of size 1800x610mm		No	3	
G	Laboratory Sinks "Vulcathene" black injection moulded polypropylene sink with selfdraining base and an outlet to accept the waste described below as Method Lab Sink MS 808 size 560mm x 355mm x 226mm complete with:- - "Vultex Labline" bench mounted 3 Way Water Lab Tap with PP Nozzle having swivel nozzle and spout as Method PN106 - - "Vulcathene" Anti-Siphon Bottle Trap Cat No. W561. as Method MV 88 All as Method		No.	5	

Total c/f to next page				
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Item	Description	Unit	Qty	Rate (Kshs)	Amount
A	Total b/d from previous page Counter Top Mounted Swivel / Fixed Eyewash  All chrome-plated metal eye wash fountain which instantly provides a gentle stream of water to wash the eyes in the event of an accident. The unit shall be as "METHOD MODEL EX 313" or equal and approved.	No	5		
B	Kitchen Sink Double Bowl, Single Drainer stainless steel kitchen sink. Size 1000 x 500mm as manufactured by ASL, bowl size 430 x 420 x 200mm deep complete with chrome plated 40mm waste fittings, plugs, chain stays, overflow, 1No. chrome plated sink mixer tap with over-arm swivel spout as Cobra model 166/04 with carina handle, and 40mm diameter chrome plated bottle trap with 75mm deep seal and chain waste fitting.	No	1		
C	Disabled Persons Water Closet and Wash Hand Basin Facility  Wheel chair accessible W.C facility Comprising of the following:- i) Close coupled W.C with 7.5 litre cistern with bottom inlet and overflow. The bowl shall be of size 375x560x420mm high. The bowl and cistern shall be manufactured from vitreous china complying with B.S 3402 .The unit shall be complete with valveless cistern fittings including syphon, 1 /2" side inlet ballvalve, 3 /4" side overflow, plastics flushbend, inlet connector and reversible metallic chrome plated cistern lever. There shall also be a heavy duty seat(25mmhigh) and cover with chrome plated metal hinges, toilet roll holder, 610 x 610 x 6mm thick mirror, arabic spray c/w flexible pipe and angle valve and robe hook.  ii) Semi pedestal wall mounted W.H.B of size 600x500x545mm high with flexible connectors to waste and taps. The basin shall be manufactured from vitreous china complying with B.S 3402. It shall have one L/H tap hole with 1/2" chrome plated lever action pillar tap, chrome plated waste with height adjustable trap, pedestal and wall fixing bolts.  iii) Hinged support rail with toilet roll holder 770mm long manufactured in nylon coated aluminium and mounted on a wall fixing plate plate size 230x100 mm, 4No 600mm grab rails with covered wall plates. The set shall be as Twyford's DOC.M wheelchair accessible W.C. facility or approved equivalent.	Set	2		
Total for Sanitary Fittings Ground floor carried to Collection Page MECH BQ-21					

Item	Description	Unit	Qty	Rate (Kshs)	Amount
------	-------------	------	-----	-------------	--------

FIRST FLOOR					
Supply, deliver, install and fix the following sanitary fittings including all materials and jointing to supply, waste/soil and overflow pipes. Brand names for products are specified only as an indication of quality. Equal and approved appliances may be supplied. Where trade names are mentioned, the Ref. No. is intended only as a guide to the type and quality of fittings					
A	Asian Water Closet Squatting water closet suite in vitreous china comprising of water closet bowl with top plate and integral foot threads, S-trap connector, associated pipeworks for inlet connection to the water closet pa All to be as "Twyfords Oriental" or approved equivalent. Water Closet (WC)	No	4		
B	Water closet suite including Pan & Seatcover soft close in white complete with horizontal outlet and associated pipeworks for inlet connection to the water closet pan and S-trap outlet..All to be as Duravit :WC Pan Back to Wall D-Code #21150900002 Seat cover # 067390000 or approved equivalent. Chrome plated flush valve	No.	5		
C	32mm water closet low pressure flush valve for water closets complete with, back entry with integral vacuum breaker, non-hold-open features and non-return valve, inlet control stop and wall plate comprising flush valve, bent chrome plated flush pipe and rubber pipe connector. The flush valve to be as "Plumber" push button type. Close coupled Water Closet Suite	No.	9		
D	Water closet suite including Pan ,Cistern & Seatcover soft close in white complete with horizontal outlet and associated pipeworks for inlet connection to the water closet pan and S-trap outlet..All to be as Ideal ceramics :To be as Ideal ceramics #G060101 or approved equivalent. Urinals bowls	No	7		
E	Urinal bowl in white vitreous china comprising with concealed inlet,rimless,for 1/2" connection,including jet nozzle,inlet set,waste ,bottle trap 32mm and fixings. To come complete with urinal flush valve polished chrome To be as Duravit 305 x290mm #0829300000 or approved equivalent. Urinal Bowl Divisions	No	3		
F	Ceramic urinal bowl divisions separating the above described urinal bowls fixed firmly on the wall. The fittings shall be as Twyfords or equal and approved.	No	3		
Total c/f to next page					

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				

A	Toilet roll holder Lockable Jumbo Toilet roll holder as "Kimberly Clarke" in chrome finish or equivalent approved Toilet Roll Holder	No	9		
B	Chrome Plated toilet roll holder in, Matt Black as DALI Item Code: ETRLHLD375, Brand Reference: MH70B or equal and approved Robe Hook	No	7		
C	Chrome plated robe hook mounted with concealed screws. To be as Docol: Robe Hook (Double)-Hotel: C.P. #00218306 TACC or equal and approved.	No	16		
D	Wall mounted toilet brush holder and brush of approved colour as Ideal Standard or approved equivalent.	No	16		
E	Pedestal wash hand basin size 575 x 500mm with single tap hole, 32mm diameter chrome plated chain waste, chain stay hole, chrome plated nonconculsive time delay press action pillar tap as Cobra model and heavy duty chrome plated bottle trap (32mm 'P' trap) with 75mm seal. To be of Duravit D-Code CAT No. 0337540000 countertops washhand basin or equal and approved.	No	9		
F	Countertop wash hand basin size 545 x 425mm with one tap hole, 32mm diameter chrome plated chain waste, chain stay hole, chrome plated non-conculsive time delay press action pillar tap as Cobra model and heavy duty chrome plated bottle trap (32mm 'P' trap) with 75mm seal. To be of Duravit D-Code CAT No. 0337540000 countertops washhand basin or equal and approved.	No	11		
G	Medical Wash Hand Basin Counter top Twyfords "SOLA L.B.G/L" wash hand basin with no tap holes and chain stay hole cat. No. WB 1520WH, wall brackets cat no. SR 1315 xx complete with "lever action mixer fitting, 1/2 with swivel nozzle and divided flow" wall mounted elbow operated tap mixer cat. no. SF 1099 CP, chrome grid waste 1 1/4" cat no. WF 4341 CP and white plastic bottle trap 1 1/4" P-trap cat. no. WF 8482 xx or approved equivalent.	No	10		
B	Sluice Unit Twyfords "Grafton B.P.S." hopper cat.no. FC4076WH loose-trap FC44612WH complete with Vitreous china high level cistern 7.5 Litre capacity with valveless fittings and reversible chain pull CX7610WH, cistern supporting brackets SR1300XX stainless steel flushpipe with spreader and clips SS6020SS Combine bedpan and urinal bottle jet with 1/2" lever handle taps, SF6504CP legs and bearers for hopper SR3053XX sinks 760mm x 455mm FC1350WH chain and waste 1 1/2" chrome plated WF4338CP waste pipe for the hopper WF9685WH legs and bearers for sink SR3043XX drain with anti-drip stip FC9684WH legs and bearers for drain SR3052XX chrome plated extended bib tap 1/2" SF5204CP Chrome plated Lever action mixer tap flexible hose and handspray SF7053CP.	No	2		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				
A	SCRUB-UP SINK Scrub-up Trough 1800mm long with Left hand outlet Cat No. SS9122SS Complete with 3No. wall mounted Lever action mixer taps Cat No. SF1099CP 11/2Chrome plated Waste fitting and a s trap	No	2		
B	15mm diameter x 600mm long flexible connectors complete with integral chrome plated angle valve as Cobra or equal and approved.	No	43		
C	Cleaners Sink Heavy duty sink size 455 x 380 x 230mm deep in fireclay complete with hardwood pad on the front edge and fitted bucket aluminium alloy grating and 20mm chrome plated wall mounted inclined bricon tap, chrome plate chain and rubber stopper and heavy gauge 11/2" bottle trap and stainless steel legs. All as "Armitage Shanks Birch" or approved equivalent.	No	2		
D	Mirrors 6mm thick polished plate glass, silver backed mirror with beveled edges, size 810x610mm plugged and screwed to wall with 4No. Chrome plated chrome capped screws and 5mm thick foam back nest.	No	8		
E	Ditto but of size 1200x610mm	No	2		
F	Ditto but of size 1800x610mm	No	3		
G	Kitchen Sink Double Bowl, Single Drainer stainless steel kitchen sink. Size 1000 x 500mm as manufactured by ASL, bowl size 430 x 420 x 200mm deep complete with chrome plated 40mm waste fittings, plugs, chain stays, overflow, 1No. chrome plated sink mixer tap with over-arm swivel spout as Cobra model 166/04 with carina handle, and 40mm diameter chrome plated bottle trap with 75mm deep seal and chain waste fitting.	No	2		
H	Shower Fittings Concealed shower fitting consisting of 15mm chrome plated riser pipe to connect the concealed Four way diverter single lever shower mixer as of Tapis Erath: 4 Way Concealed Shower or approved equivalent for hot and cold water to a 100mm diameter swivel/ adjustable shower rose as Item Code: CCNSHMXTAER01 or approved equivalent, shower arm ,bathroom tap and other necessary fittings and accessories. All to be as Cobra or equal and approved.	No	9		
D	Soap Dish Semi recessed built in soap tray in vitreous china of size: 150 x 150mm in approved colour as Ideal Standard Model Cassara Cat No. 109.000.09 or equal and approved.	No	9		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				
A	<p>Disabled Persons Water Closet and Wash Hand Basin Facility</p> <p>Wheel chair accessible W.C facility Comprising of the following:-</p> <p>i) Close coupled W.C with 7.5 litre cistern with bottom inlet and overflow. The bowl shall be of size 375x560x420mm high. The bowl and cistern shall be manufactured from vitreous china complying with B.S 3402 .The unit shall be complete with valveless cistern fittings including syphon, 1 /2" side inlet ballvalve, 3 /4" side overflow, plastics flushbend, inlet connector and reversible metallic chrome plated cistern lever. There shall also be a heavy duty seat(25mmhigh) and cover with chrome plated metal hinges, toilet roll holder, 610 x 610 x 6mm thick mirror, arabic spray c/w flexible pipe and angle valve and robe hook.</p> <p>ii) Semi pedestal wall mounted W.H.B of size 600x500x545mm high with flexible connectors to waste and taps. The basin shall be manufactured from vitreous china complying with B.S 3402. It shall have one L/H tap hole with 1/2" chrome plated lever action pillar tap, chrome plated waste with height adjustable trap, pedestal and wall fixing bolts.</p> <p>iii) Hinged support rail with toilet roll holder 770mm long manufactured in nylon coated aluminium and mounted on a wall fixing plate plate size 230x100 mm, 4No 600mm grab rails with covered wall plates. The set shall be as Twyfords DOC.M wheelchair accessible W.C. facility or approved equivalent.</p>	Set	4		
B	<p>Assisted bath versatile design and floor mounted bathtub of dimensions 1700mmx 900mm made of sanitary grade acrylic with fiberbglass reinforcement complete with 2 tap hole, chrome plated bath filler tap with single lever mixer as Twyford's envy. The item to have all the required fittings and fixtures including extended pop up waste, 1 1/2" tubular P trap with all sels. Supplied with wooden frame and with steel cradle and adjustable feet clips for securing to wall</p>	No	2		
	Total for Sanitary Fittings First floor carried to Collection Page MECH BQ-9				

COLLECTION PAGE FOR SANITARY FITTINGS		
Item	Description	Amount (Kshs)
1	Total for Ground floor sanitary fittings brought forward from page MECH BQ-4	
2	Total for First floor sanitary fittings brought forward from page MECH BQ-8	



	Total for Sanitary fittings carried forward to Mechanical Summary page MECH BQ -40	
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BILL NO.2: INTERNAL PLUMBING AND DRAINAGE PIPEWORK					
Item	Description	Qty	Unit	Rate (Kshs)	Amount(Kshs)
	<b>INTERNAL PLUMBING COLD WATER</b>				
	<b>PPR Pipes</b>				
	Supply, deliver and install Polypropylene Random (PP-R) 20 pipework to DIN 8077 with joints, couplings, reducers, tees, adaptors, pipe fixing clips etc all to DIN 16962 and DIN 16928 .Pipe jointing shall be by polyfusion or use of electric coupling. Where pipework is not chased proper anchoring using approved fixtures shall be done. No pipework shall be left exposed to the sun. Rates must allow for all Metal/plastic threaded adaptors where required for the connection of sanitary fixtures, valves, sockets, sliding and fixed joints, support raceways, isolating sheaths, elastic materials, expansion arms and bends, crossovers, couplings, clippings, connectors, joints etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system.				
A	25mm diameter pipework	700	Lm		
B	32mm diameter pipework	420	Lm		
C	40mm diameter pipework	500	LM		
D	50mm diameter pipework	400	Lm		
E	65mm diameter pipework	280	Lm		
F	75mm diameter pipework	100	Lm		
G	100mm diameter pipework	35	Lm		
	<b>Bends</b>				
H	25mm diameter bend	450	No.		
I	32mm diameter bend	350	No.		
J	40mm diameter bend	300	No.		
K	50mm diameter bend	350	No.		
L	65mm diameter bend	200	No.		
M	75mm diameter bend	75	No.		
N	100mm diameter bend	30	No.		
	<b>Tees</b>				
O	25mm diameter tee	200	No.		
P	32mm diameter tee	180	No.		
Q	40mm equal tee	190	No.		
R	50mm equal tee	150	No.		
S	65mm equal tee	145	No.		
T	75mm equal tee	60	No.		
U	100mm equal tee	28	No.		
	<b>Reducers</b>				
V	32 x 25mm diameter reducer	100	No.		
W	40 x 32mm diameter reducer	89	No.		
X	50 x 32mm diameter reducer	55	No.		
Y	50 x 40mm diameter reducer	65	No.		
Z	65 x 50mm diameter reducer	34	No.		

AA	75 x 65mm diameter reducer	32	No.		
BB	100 x 75mm diameter reducer	25	No.		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				
	Male/Female Adapters (Brass threaded)				
A	25mm brass threaded adapter	176	No.		
B	32mm brass threaded bend	264	No.		
C	40mm brass threaded bend	198	No.		
D	50mm brass threaded bend	209	No.		
E	65mm brass threaded bend	176	No.		
F	75mm brass threaded bend	154	No.		
G	100mm brass threaded bend	198	No.		
	Threaded Brass Coupling				
H	25mm threaded brass coupling	65	No.		
I	32mm threaded brass coupling	85	No.		
J	40mm threaded brass coupling	45	No.		
K	50mm threaded brass coupling	35	No.		
L	65mm threaded brass coupling	12	No.		
M	75mm threaded brass coupling	13	No.		
N	100mm threaded brass coupling	14	No.		
	Valves				
O	25mm gate valve	40	No.		
P	32mm gate valve	32	No.		
Q	40mm gate valve	15	No.		
R	50mm gate valve	30	No.		
S	65mm gate valve	25	No.		
T	75mm gate valve	15	No.		
U	100mm gate valve	4	No.		
	Unions				
V	25mm diameter pipe union	40	No.		
W	32mm diameter pipe union	25	No.		
X	40mm diameter pipe union	15	No.		
Y	50mm diameter pipe union	10	No.		
Z	65mm diameter pipe union	5	No.		
AA	75mm diameter pipe union	6	No.		
BB	100mm diameter pipe union	7	No.		
	Pipe Sleeves				
CC	40-100mm diameter heavy duty PVC pipe sleeves for crossing over columns and beams Sterilization	50	Lm		
DD	Allow for flushing out and sterilizing the whole system with chlorine to the satisfaction of the engineer	1	Sum		
EE	Water balancing Allow for water balancing at all balancing valves to ensure design flow is achieved using water flow meter	1	Item		
	Water Storage Roof Tanks				

FF	Vertical close end plastic moulded tank of capacity 5000litres and diameter 182x210 cm high. The tank to be assembled complete with cover and having screwed connections for inlet, outlet, overflow, medium pressure ball valve, drain pipes and any other necessary item for its proper functioning. The tank shall be mounted on a plinth to Structural Detail and shall be as Kentank Model or approved equivalent.	10	No.		
	Testing and Commissioning				
GG	Allow for testing and commissioning of the plumbing and drainage installations to the satisfaction of the Engineer.	1	Item		
Total for Internal Plumbing Cold Water Carried Forward to Collection Page MECH BQ-16					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>INTERNAL PLUMBING HOT WATER</b> PPR Pipes				
	Supply, deliver and install Polypropylene Random (PP-R) 20 pipework to DIN 8077 with joints, couplings, reducers, tees, adaptors, pipe fixing clips etc all to DIN 16962 and DIN 16928 .Pipe jointing shall be by polyfusion or use of electric coupling. Where pipework is not chased proper anchoring using approved fixtures shall be done. No pipework shall be left exposed to the sun. Rates must allow for all Metal/plastic threaded adaptors where required for the connection of sanitary fixtures, valves, sockets, sliding and fixed joints, support raceways, isolating sheaths, elastic materials, expansion arms and bends, crossovers, couplings, clippings, connectors, joints etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system. The rates should allow for insulation of pipes not chased in walls and all those in ducts				
	<b>PPR PN 20 PIPEWORK</b>				
A	25mm diameter pipework	300	Lm		
B	32mm diameter pipework	200	Lm		
C	40mm diameter pipework	150	LM		
D	50mm diameter pipework	300	Lm		
E	65mm diameter pipework	50	Lm		
	<b>Bends</b>				
F	25mm diameter bend	200	No.		
G	32mm diameter bend	150	No.		
H	40mm diameter bend	50	No.		
I	50mm diameter bend	30	No.		
J	65mm diameter bend	31	No.		
	<b>Tees</b>				
K	25mm diameter tee	250	No.		

L	32mm diameter tee	180	No.		
M	40mm equal tee	84	No.		
N	50mm equal tee	50	No.		
O	65mm equal tee	20	No.		
	Reducers				
P	25 x 20mm diameter reducer	250	No.		
Q	32 x 25mm diameter reducer	200	No.		
R	40 x 32mm diameter reducer	150	No.		
S	50 x 40mm diameter reducer	120	No.		
T	65 x 50mm diameter reducer	50	No.		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				
	Male/Female Adapters (Brass threaded)				
A	20mm brass threaded adapter	350	No.		
B	25mm brass threaded adapter	150	No.		
C	32mm brass threaded bend	150	No.		
D	40mm brass threaded bend	150	No.		
E	50mm brass threaded bend	152	No.		
	Threaded Brass Coupling				
F	20mm diameter pipe coupling	350	No.		
G	25mm threaded brass coupling	200	No.		
H	40mm threaded brass coupling	200	No.		
I	50mm threaded brass coupling	100	No.		
	Valves				
H	25mm gate valve	50	No.		
I	32mm gate valve	28	No.		
J	40mm gate valve	20	No.		
K	50mm gate valve	18	No.		
L	63mm gate valve	10	No.		
	Unions				
M	25mm diameter pipe union	200	No.		
N	32mm diameter pipe union	150	No.		
O	40mm diameter pipe union	20	No.		
P	50mm diameter pipe union	18	No.		
	Total for Internal Plumbing Hot Water Carried Forward to Collection Page MECH BQ-16				

Item	Description	Qty	Unit	Rate (Kshs)	Amount
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	<b>INTERNAL FOUL WATER INTERNAL DRAINAGE</b>				
	Supply ,deliver and install the following UPVC, MUPVC, soil and waste systems respectively to B.S 5255 with fittings fixed to Manufactures Printed instructions and manufactured by reputable manufacturers. Tenderers must allow in their pipework prices for all the couplings, clippings, connectors, joints etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system.				
	MuPVC and uPVC Waste and Soil pipework				
A	150mm diameter heavy gauge golden brown UPVC	50	Lm		
B	100mm diameter heavy gauge golden brown UPVC	300	Lm		
C	100mm diameter heavy gauge grey UPVC	400	Lm		
D	75mm diameter heavy gauge grey UPVC	50	Lm		
E	50mm diameter waste pipe	350	Lm		
F	40mm diameter waste pipe	500	Lm		
	Bends				
H	100mm diameter inspection bend	100	No.		
I	100mm diameter sweep bend	90	No.		
J	50mm diameter sweep bend	120	No.		
K	40mm diameter sweep bend	60	No.		
	Tees				
M	100mm diameter Y tee	100	No.		
N	100mm diameter sweep tee	50	No.		
O	50mm diameter sweep tee	120	No.		
P	40mm diameter sweep tee	150	No.		
	Access Caps				
Q	100mm diameter access cap	65	No.		
R	50mm diameter access cap	100	No.		
S	40mm diameter access cap	100	No.		
	Boss Connectors				
T	100 x 50mm diameter boss connector	130	No.		
U	100 x 75mm diameter boss commector	25	No.		
V	100 X 40mm diameter boss connector	60	No.		
	Single Branches				
W	100mm diameter Single branch	32	No.		
	Double branch				
X	100mm diameter double branch	30	No.		
	WC Connectors				
Y	100mm diameter WC connector	81	No.		
	Traps				
Z	100 x 50mm diameter floor trap and grating	100	No.		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				
	Inspection Chamber				

A	Construct inspection chamber size 600 x 450mm and averaging 750mm deep constructed in 100mm thick concrete base (1:3:6), approved 150mm block sides rendered all around in cement and sand (1:4). It shall have an approved Fiber reinforced cover and frame as manufactured by E.A Foundry works. Include all necessary excavations, disposal and form work. To be as manhole type 'A'.	30	No.		
	Gully traps				
B	Standard 300 x 300 x 450mm gully trap chamber complete with concrete cover and plastic trap with 100mm seal. Weathering Slates and Vent Cowl	35	No.		
C	100mm diameter weathering slate and apron.	25	No.		
D	100mm diameter vent cowl	25	No.		
	<b>VULCATHENE PIPEWORK</b> Supply, deliver and fix the vulcathene pipes by "VULCATHENEDURAPIPE-S&LP" as described. All UPVC and vulcathene branches, Tees, reducing Tees, reducers etc. are to be formed in accordance to the manufacturer's printed instruction. The installations to have the various sizes of connectors, adaptors, sockets, reducers holdbats, clips etc. as required for satisfactory functions.				
	Vulcathene pipework				
A	38mm dia pipe	No	15		
B	51mm ditto	No	10		
	Bends				
C	38mm dia sweep bend	No	4		
D	51mm ditto	No	4		
	Tees				
E	51x38x38mm Tee	No	4		
	Reducing sockets				
F	51 x 38 mm reducing sockets	No	4		
	Access Caps				
G	38mm dia access caps	No	6		
H	1 1/4" diameter waste complete with integral grating, removable chained plug and backnut as Vulcathene Ref. No. 504.	No	5		
I	4.5 litres anti-siphonic dilution recovery trap complete with other necessary fittings as CAT No.W682	No	3		
J	Testing and commissioning the internal drainage installations	Item	1		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
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	Total b/d from previous page				
	<p><b>ROOF DRAINAGE</b></p> <p>Supply and fix uPVC pipes to BS 4660 and BS 4515 and MuPVC pipes to BS 5255 with screwed and socketed joints to BS 21. Solvent welded joints shall be as per the system's manufacturer's written instructions. Tenderers must allow in their pipework prices for all the couplings, clippings, connectors, joints etc. as required in the running lengths of pipework &amp; also where necessary, for pipe fixing clips, holder bats plugged &amp; screwed for the proper &amp; satisfactory functioning of the system.</p> <p>Pipes</p>				
E	100mm diameter heavy gauge grey mUPVC down pipes	200	Lm		
	Bends				
F	100mm diameter 45 degrees bend	30	No.		
G	100mm diameter sweep bend	15	No.		
	Fulbora				
H	100mm diameter PVC fullbora	10	No.		
I	Allow for testing & commissioning of drainage installations	1	Item		
Total Carried Forward to Collection Page MECH BQ-16					

COLLECTION PAGE FOR INTERNAL PLUMBING AND DRAINAGE		
Item	Description	Amount (Kshs)
1	Total for Internal Plumbing Cold Water carried forward from MECH BQ-10	
2	Total for Internal Plumbing Hot Water carried forward from MECH BQ-12	
3	Total for Internal & External Drainage carried forward MECH BQ-15	
Total for Internal Plumbing & Drainage Installation Works Carried Forward to Mechanical Summary page MECH BQ -40		

BILL NO. 4: FIRE FIGHTING HOSEREEL SYSTEM AND PORTABLES					
Item	Description	Qty	Unit	Rate (Kshs)	Amount
	Fire Fighting Installations				
	Supply, deliver and install the following fire fighting equipment in positions indicated on the contract drawings or as shall be instructed by the Engineer				
	Hose Reel System				
	Hose Reel				
A	Swinging type hosereel fitted with 30 metres long, 20 mm diameter reinforced non-kink rubber hose with 5/6 mm lever operated shut-off nozzle, mild steel feed pipe, isolation valve, guide and all other accessories as 'Angus Fire Armour' or equal and approved GMS Pipes	10	No.		
B	25mm diameter GMS pipework	45	Lm		
C	50mm diameter GMS pipework Extra Over Pipework	80	Lm		
	Bends				
D	25mm diameter bend	25	No.		
E	50mm diameter bend	20	No.		
	Tees				
F	50mm diameter equal tee	20	No.		
	Reducers				
G	50 x 25 mm diameter reducer	30	No.		
	Valves				
H	25mm diameter approved medium pressure screw down full way non-rising stem wedge gate valve to BS 1952, with wheel and head joints to steel tubing. The gate valve to be as PEGLER or approved equivalent.	10	No.		
I	50mm diameter ditto	10	No.		
J	25mm air relief valve screwed as CRANE. Unions	2	No.		
K	25mm diameter pipe unions	8	No.		
L	50mm diameter pipe unions	2	No.		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				
	Hosereel Pumpset				

A	<p>Hosereel Twin pumpset, one duty, the other standby mounted on a frame with a mild steel base plate As Dayliff DFS2. Each pump shall have a duty 8m<sup>3</sup>/hr. against 25m head as Grundfos model CM 5 - 6A or approved equivalent. The system shall come with Electronic Drytek, Smart controllers that include pump protection functions. The pumps will be connected in parallel. There shall be a 2X24 litres diaphragm pressure vessel (as Varem or approved equivalent), pressure switches, a switch to protect dry run, 50mm foot valve and strainer, tank connections, gate valves and non-return valves, Control shall be effected via a pressure switch through a pre-wired control panel which shall give automatic change-over from duty to standby pump within 5 seconds should the duty pump fail to deliver for any reason. The pumpset shall include all non-returns valves, timer, isolating valves and pipe connections.</p> <p>Control Panel</p>	1	No.		
B	<p>Control panel for the above pumps with contactors, over voltage and under voltage protection relays, MCBs, start/stop push buttons and indicators lights. All this shall be housed in a lockable cabinet (with integral isolator) made from SWG 18 stainless steel sheet that is oven powder coated. The controls shall also include a float switch or flow switch for prevention against dry running complete with its cable Painting</p>	1	Item		
C	<p>Allow for painting of the hose reel pipework as per Engineers specifications.</p> <p>Portable Fire Extinguishers Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.</p> <p>Water Fire Extinguisher</p>	1	Item		
D	<p>9 litres water portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.</p> <p>Carbon Dioxide Gas Fire Extinguisher</p>	10	No		
E	<p>5 Kg carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.</p>	10	No		
	Total c/f to next page				

Item	Description	Unit	Qty	Rate (Kshs)	Amount
	Total b/d from previous page				
A	Dry Chemical Powder Fire Extinguisher 6kg dry chemical powder portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets. Manual Alarm Bell	10	No		
B	9" (225mm) manual operated alarm bell (Gong) Fire Notices	10	No		
C	Allow for fire signage for the hose reel system, fire exits and fire instructions in all 4 No. floors as directed by the Project Engineer.	1	Item		
D	Fire Hose Cabinet Surface mounted fire hose reel cabinet	10	Item		
Total Amount for Firefighting Installations carried forward to Mechanical Summary page MECH BQ -40					

BILL NO.5: AIR CONDITIONING & MECHANICAL VENTILATION					
Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
<b>GROUND FLOOR</b>					
	Supply , Installation, testing and commissioning, upon approval of working drawings, of the following items.				
	<b>MINI THEATRE</b>				
A	HEAT PUMP SPLIT AIR CONDITIONING SYSTEM The indoor units shall be high wall type air-cooling unit of capacity 5.1KW (18,000 Btu/hr).The air conditioning units shall be supplied complete with room thermometer, room thermostat controls and wireless remote control device. It shall charged with R410A refrigerant or any other non ozone depleting refrigerant .The outdoor unit shall have matching capacity with the indoor unit. The unit shall be able to cool or heat and as “LG 18K BTU High wall AC” Model or equal and approved.	1	No.		
	Refrigeration Pipework				
B	Refrigeration liquid line pipework of size 6.35mm including Amaflex insulation.	30	LM		
C	Refrigeration gas line pipework of size 12.7mm including Amaflex insulation. Surge Protector	30	LM		
	Power surge protector as Solatek to suite or equal and approved.				
D	PVC Drain Pipework	1	No.		
	25mm diameter grey uPVC pipework				
E	Electrical Works	10	LM		
	Allow for associated electrical works including but not limited to wiring from local isolators provided by others within one meter to all indoor units, outdoor units and control system. Allow for labelling all the circuits and equipment.				
F	Cleaning and Flushing the Installation	1	Item		
	Allow for cleaning and flushing the whole installation with appropriate medium before charging the system with refrigerant.				
G	Refrigerant	1	Item		
	Allow R410A refrigerant for charging air conditioning system.				
H	Trunking	1	Item		
	75x50mm approved PVC trunking for concealing the refrigerant pipework.				
I		10	LM		
Total Carried Forward to Next Page					

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
Total Brought Forward from Previous Page					
A	<p>THEATRE</p> <p>Packaged Air Handling Units (AHU and Condensing Unit)</p> <p>The unit to come complete with the following:</p> <p>i) Integrated control system with both stand-alone control or network control (can support BACnet Protocol), Variable air flow control (standard with inverter), CO2 demand control, Supply air temperature control, dehumidifier complete with On/Off control, Fire alarm and Fan and outside air damper interlocking</p> <p>ii) Double HDP painted skin panel construction to ensure good rust preventive performance</p> <p>iii) Unit base to enhance the strength of the whole unit and to reduce vibration</p> <p>iv) 2 No. filters (filter class F5 and F7) to be cleanable/washable</p> <p>v) Electric/motorized Corrugated damper with an electric controller.</p> <p>vi) Variable speed supply fan with Backward impeller. The Supply fan to be of capacity 1500m<sup>3</sup>/h against a pressure drop of 600Pa and extract capacity of 1200m<sup>3</sup>/h and power supply of 415V, 3 Phase, 50Hz.</p> <p>vii) The unit to have a cooling coil of capacity 15kw</p> <p>viii) The unit to have a heating coil of capacity 16kw</p> <p>ix) Auxiliary board BAC view control panel</p> <p>x) Temperature and humidity sensors</p> <p>xi) Motor/VSD to specification</p> <p>xii) Provide conditioned fresh air supply ensuring that a level from 20-28 °C and a relative humidity of 60% +/- 5%</p> <p>xiii) Silencers</p> <p>xiv) Anti-vibration mounting</p> <p>The AHUs to be Trane, Carrier, Daikin, SKM, Clivet, Systemair or equal and approved models and HTM-03 Compliant Hospital Air Handling Unit (AHU).</p> <p>AHU. Flow rate of supply of 1500 m<sup>3</sup>/h @ 600Pa, and 1200m<sup>3</sup>/h extract with cooling coil of capacity 14kw as TRANE MTZH060DD00300A or equal and equivalent</p>	1	No.		

B	Extract fan of capacity 1200m <sup>3</sup> /h against a pressure drop of 350Pa at near maximum efficiency. Fan to be as "SYSTEMAIR" rectangular duct axial flow fans, model RSI 80-50 M3, No. 5, complete with supports, flexible connections and anti-vibration mountings. Maximum sound level of 53dB. The air extract fan to have VSDs to adjust fan speed as filters load up.	1	No.		
Total Carried Forward to Next Page					

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
Total Brought Forward from Previous Page					



<p>A</p> <p>B</p> <p>C</p>	<p><b>AHU CONTROL PANEL</b></p> <p>Supply, deliver and install the AHU control panel with necessary control and Power Cabling within the AHU Room, MCB with starter including Auto manual selector switches ,over load, spp, phase indicating lights, ON/OFF push buttons with ON/OFF, indications, push buttons with ON/OFF indications, 4 nos. non, polarized NO-NC contacts for tripping on signal from Fire. Dampers / Fire Alarm Panel &amp; BMS. The Control Panel should be able to control all the VAV From the different VAV Boxes connected to the diffusers and send signal to the AHU to run based on the demand and be BMS Compatible</p> <p>Thermostat to connect with both motorized damper and AHU</p> <p><u>Laminar Flow Ceiling Diffuser c/w Filter System for Operating Room</u></p> <p>Laminar flow ceiling will be installed in all the operating theatres and it is mainly composed by:</p> <p>1. Laminar airflow ceiling system with load-bearing torsion-stiffened outflow, clean-room-side structure as filter- frame section from extruded anodized aluminium profile, large surface laminar fabric with minimal ridging, stable flow-optimised extruded anodized aluminium profile frame, fastened with a screw less fitting to the filter frame section, narrow ridges to minimize induction, perfect hygienic lights lead through the disperser with minimized blind surfaces, double-seal system filter assembly, pre-filtered air side structure.</p> <p>2. Integrated air recycling ceiling units for each operating theatre with a total of 6 integrated fan units with fluff guard of robust woven polyester fabric, easy to disassemble, screw less fitting, with integrated Hepafilter, and soundproofed anodised aluminium housing, connected via anodised aluminium lateral input channels set at a distance to the closed fan units and are completely pre-wired at a central interconnecting station where the incoming power supply link and the control /signalling line is then connected; 2 intake suction channels with range of possible positions. Laminar airflow ceiling with surrounding ceiling bearing angled brackets of powder- coated RAL 9010 aluminium to connect to the existing ceiling. ADMECO or equivalent.</p> <p>Laminar Flow Ceiling Diffuser Size 2000x2000x500mm</p>	<p>1</p> <p>2</p> <p>1</p>	<p>No.</p> <p>No.</p> <p>No.</p>		
<p>Total Carried Forward to Next Page</p>					

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
	Total Brought Forward from Previous Page				

	<u>Air Ducts</u>  Supply and installation of Rigid foam type ducts in preinsulated aluminium, they will be constructed using Piral HD Hydrotec panel or equivalent with antibacterial treatment, 200 µm (external side) embossed al/pur/200 µm (internal side) smooth antibacterial aluminium or equivalent sandwich panels with the following characteristics; environmentally friendly sandwich panel made of a rigid polyurethane insulating foam minimum thickness 30 mm, including access door (for inspection and cleaning according EN standard), accessories and all expenses and charges to perform the works. Material must be autoextinguishing certified class O-1 .  Supply ducts Extract ducts <u>Flexible Ducts</u>				
A		20	SM		
B	Supply and Installation of flexible duct including supply and fixing of the duct in the works, fittings, connection, brackets flexible joints, and all expenses and charges, to perform the works.  Supply of pre-insulated with fibre glass Flexible Duct with vapour barrier and reinforcing metal helix. 150mm dia.	25	SM		
C	<u>Motorized Fire Damper</u> Supply and Installation of Fire damper 120 min fire resistance including electric motor, fittings, thermal disconnect switch with fuse pre-set at 72°C for fire detection, single limit switch to indicate damper position including electrical connections, connection to the ducts, insulations, and all expenses and charges, to perform the works as Trox or equal and approved. 300x450mm 300x400mm	10	LM		
D	<u>Manually Operated Volume Control Dampers</u> Volume control damper for duct mounting with facility for adjustment from outside duct . These to be of the opposed blade (OBD) type by Trox or equal and approved. 300x450mm 300x400mm	1	No.		
E		1	No.		
F	<u>HEPA filter</u> Supply, installation, testing and commissioning HEPA filter size 600x1524x150mm thick EU13 99.99% efficiency, rated face velocity: 1.5 m/sec, 1750 cfm initial resistance:250Pa complete with mounting brackets and all necessary installation accessories duly sealed with Epoxy and DOP tested.	1	No.		
G		1	No.		
D		1	No.		
Total Carried Forward to Next Page					

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
Total Brought Forward from Previous Page					
A	<p><u>Low Level Return Grilles</u></p> <p>Supply and installation of stainless steel return Grilles for operating thetre SAGI COFIM type DEC-S or similar. The grilles mod. "DEC", which are specific for controlled contamination environments. Structure: AISI 304 Stainless steel, Panel: AISI 304 stainless steel; including AISI 304 stainless steel plenum , filter G4 efficiency , flow adjustment damper, accessories and all expenses and charges to perform the works. Size 400x300mm</p> <p><u>Air Differential pressure switches</u></p> <p>Supply,install,test and commission Air Differential pressure switches complete with sensor probe , etc. integrated with Light and visual alarm signal, as per general details and specifications and approved make.To be installed across HEPA filter bank sections and Operating room.The necessary control and power wiring shall be in the scope of the contractor.</p> <p><u>Temperature and RH sensor and adjuster package</u></p> <p>Supply,install-(grout),test and commission microprocessor based Room temperature , humidity sensor and remote adjuster package within a MS housing -wall ,suitable for mounting, and having a stainless steel cover plate.This package shall have a temperature and humidity display - red 2" high LED character for operation rooms , and other critical areas.Sensor, adjuster (Snap acting humidistat/Proportional thermostatMicroprocessor based) and displayer package, as described above.</p>	2	No.		
B	<p>Supply,install,test and commission Air Differential pressure switches complete with sensor probe , etc. integrated with Light and visual alarm signal, as per general details and specifications and approved make.To be installed across HEPA filter bank sections and Operating room.The necessary control and power wiring shall be in the scope of the contractor.</p> <p><u>Temperature and RH sensor and adjuster package</u></p> <p>Supply,install-(grout),test and commission microprocessor based Room temperature , humidity sensor and remote adjuster package within a MS housing -wall ,suitable for mounting, and having a stainless steel cover plate.This package shall have a temperature and humidity display - red 2" high LED character for operation rooms , and other critical areas.Sensor, adjuster (Snap acting humidistat/Proportional thermostatMicroprocessor based) and displayer package, as described above.</p>	1	No.		
C	<p>Supply,install-(grout),test and commission microprocessor based Room temperature , humidity sensor and remote adjuster package within a MS housing -wall ,suitable for mounting, and having a stainless steel cover plate.This package shall have a temperature and humidity display - red 2" high LED character for operation rooms , and other critical areas.Sensor, adjuster (Snap acting humidistat/Proportional thermostatMicroprocessor based) and displayer package, as described above.</p>	1	No.		
D	<p>Allow provisional sum of Two Hundred thousand shillings for Mechanical Engineers Approvals inspections, for the above installation, training and various tests during the contract duration.</p> <p>Electrical Wiring for entire HVAC installations</p> <p>The electrical sub-contractor shall provide power to a point within a radius of 1000mm from the AHU, fans and curtain. The wiring from the HVAC equipment to the starter and the switch board shall be under this contract. The wiring from the contractor to the remote start-stop switchboard including remote unit in the switch room shall be by this contract.</p>	1	Item	200,000	200,000
E	<p>Electrical Wiring for entire HVAC installations</p> <p>The electrical sub-contractor shall provide power to a point within a radius of 1000mm from the AHU, fans and curtain. The wiring from the HVAC equipment to the starter and the switch board shall be under this contract. The wiring from the contractor to the remote start-stop switchboard including remote unit in the switch room shall be by this contract.</p>	Sum	1		
Total Carried Forward to Next Page					

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
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	Total Brought Forward from Previous Page				
A	<p>INTENSIVE CARE OBSERVATION WARD</p> <p>Energy recovery ventilator (ERV) for providing cool &amp; warm fresh air supply and exhaust air capacity 1000CMH . The ERV shall have supply and exhaust air fans with different speed controls,Wired Remote Controller, F7 MERV 14 filters or HEPA filters on the exhaust , rotary type energy recovery wheel, pre filters for both supply and exhaust air stream,wired remote controller and any other accessories to ensure proper functioning and control of the desired room parameters. The casing shall be single skin with nitrile insulation. The unit shall be suitable for the single phase power supply and outdoor installation application. Make: LG Series LZH100GXN4 or approved equivalent</p>	No	1		
B	<p>Air Supply Grille</p> <p>450mm x 450mm air supply grille/diffuser with volume control damper</p> <p>Air Return Grille</p> <p>450mm x 450mm air return grille/register with volume control damper Ductwork</p>	No.	6		
C	<p>PalDuct ductwork 20.0mm thickness with bends, hangers, supports, sleeves, flexible connectors, branch duct take-offs, flanges, access doors, test reducers, splitters, turning vanes, bioseal dampers and accessories..</p>	No.	6		
D	<p>as Kingspan PalDuct PIR Panels</p> <p><u>Flexible Ductwork</u></p> <p>150mm diameter glass fibre fabric on a PVC coated duct work. Duct to have close pitch steel wire helix reinforcement</p>	SM	30		
E	<p>External Weather Louvres</p> <p>External Weather Louvres size 300x300mm high.Shall be mounted at the air inlet and outlet external surfaces. This shall consist of a perimeter angle frame closing louvre blades set at 45° and overlapped on 40mm pitch centre. A bird mesh screen shall be mounted on the rear of the louvre, made from extruded aluminium sections of 19 S.W.G. As "TECNALCO" EWLM series or equal and approved.</p>	Lm	15		
H		No.	2		
	Total Carried Forward to Next Page				

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
	Total Brought Forward from Previous Page				
	INTENSIVE CARE OBSERVATION WARD AC				

A	HEAT PUMP SPLIT AIR CONDITIONING SYSTEM The indoor units shall be high wall type air-cooling unit of capacity 5.1KW (18,000 Btu/hr).The air conditioning units shall be supplied complete with room thermometer, room thermostat controls and wireless remote control device. It shall charged with R410A refrigerant or any other non ozone depleting refrigerant .The outdoor unit shall have matching capacity with the indoor unit. The unit shall be able to cool or heat and as “LG 18K BTU High wall AC” Model or equal and approved. Refrigeration Pipework	2	No.		
B	Refrigeration liquid line pipework of size 6.35mm including Amaflex insulation.	20	LM		
C	Refrigeration gas line pipework of size 12.7mm including Amaflex insulation. Surge Protector	20	LM		
D	Power surge protector as Solatek to suite or equal and approved. PVC Drain Pipework	1	No.		
E	25mm diameter grey uPVC pipework Electrical Works	10	LM		
F	Allow for associated electrical works including but not limited to wiring from local isolators provided by others within one meter to all indoor units, outdoor units and control system. Allow for labelling all the circuits and equipment. Cleaning and Flushing the Installation	1	Item		
G	Allow for cleaning and flushing the whole installation with appropriate medium before charging the system with refrigerant. Refrigerant	1	Item		
H	Allow R410A refrigerant for charging air conditioning system. Trunking	1	Item		
I	75x50mm approved PVC trunking for concealing the refrigerant pipework.	10	LM		
Total for Ground Floor Air Conditioning Carried Forward to Collection Page MECH BQ-32					

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
	FIRST FLOOR				
	THEATRE				

A	<p>Packaged Air Handling Units (AHU and Condensing Unit)</p> <p>The unit to come complete with the following:</p> <ul style="list-style-type: none"> <li>i) Integrated control system with both stand-alone control or network control (can support BACnet Protocol), Variable air flow control (standard with inverter), CO2 demand control, Supply air temperature control, dehumidifier complete with On/Off control, Fire alarm and Fan and outside air damper interlocking</li> <li>ii) Double HDP painted skin panel construction to ensure good rust preventive performance</li> <li>iii) Unit base to enhance the strength of the whole unit and to reduce vibration</li> <li>iv) 2 No. filters (filter class F5 and F7) to be cleanable/washable</li> <li>v) Electric/motorized Corrugated damper with an electric controller.</li> <li>vi) Variable speed supply fan with Backward impeller. The Supply fan to be of capacity 1500m<sup>3</sup>/h against a pressure drop of 600Pa and extract capacity of 1200m<sup>3</sup>/h and power supply of 415V, 3 Phase, 50Hz.</li> <li>vii) The unit to have a cooling coil of capacity 15kw</li> <li>viii) The unit to have a heating coil of capacity 16kw</li> <li>ix) Auxiliary board BAC view control panel</li> <li>x) Temperature and humidity sensors</li> <li>xi) Motor/VSD to specification</li> <li>xii) Provide conditioned fresh air supply ensuring that a level from 20-28 °C and a relative humidity of 60% +/- 5%</li> <li>xiii) Silencers</li> <li>xiv) Anti-vibration mounting</li> </ul> <p>The AHUs to be Trane, Carrier, Daikin, SKM, Clivet, Systemair or equal and approved models and HTM-03 Compliant Hospital Air Handling Unit (AHU).</p> <p>AHU. Flow rate of supply of 2268 m<sup>3</sup>/h @ 750Pa, and 1815m<sup>3</sup>/h extract with cooling coil of capacity 24kw as TRANE MTZH090DD00300A or equal and equivalent</p> <p>Extract fan of capacity 1815m<sup>3</sup>/h against a pressure drop of 550Pa at near maximum efficiency. Fan to be as "SYSTEMAIR" rectangular duct axial flow fans, model RSI</p>	1	No.		
B	<p>80-50 M3, No. 5, complete with supports, flexible connections and anti-vibration mountings. Maximum sound level of 53dB. The air extract fan to have VSDs to adjust fan speed as filters load up.</p>	1	No.		
Total Carried Forward to Next Page					

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
	Total Brought Forward from Previous Page				
A	AHU CONTROL PANEL				
B	Supply, deliver and install the AHU control panel with necessary control and Power Cabling within the AHU Room, MCB with starter including Auto manual selector switches ,over load, spp, phase indicating lights, ON/OFF push buttons with ON/OFF, indications, push buttons with ON/OFF indications, 4 nos. non, polarized NO-NC contacts for tripping on signal from Fire. Dampers / Fire Alarm Panel & BMS. The Control Panel should be able to control all the VAV From the different VAV Boxes connected to the diffusers and send signal to the AHU to run based on the demand and be BMS Compatible	1	No.		
C	Thermostat to connect with both motorized damper and AHU <u>Laminar Flow Ceiling Diffuser c/w Filter System for Operating Room</u> Laminar flow ceiling will be installed in all the operating theatres and it is mainly composed by: 1. Laminar airflow ceiling system with load-bearing torsion-stiffened outflow, clean-room-side structure as filter- frame section from extruded anodized aluminium profile, large surface laminar fabric with minimal ridging, stable flow-optimised extruded anodized aluminium profile frame, fastened with a screw less fitting to the filter frame section, narrow ridges to minimize induction, perfect hygienic lights lead through the disperser with minimized blind surfaces, double-seal system filter assembly, pre-filtered air side structure.  2. Integrated air recycling ceiling units for each operating theatre with a total of 6 integrated fan units with fluff guard of robust woven polyester fabric, easy to disassemble, screw less fitting, with integrated Hepafilter, and soundproofed anodised aluminium housing, connected via anodised aluminium lateral input channels set at a distance to the closed fan units and are completely pre-wired at a central interconnecting station where the incoming power supply link and the control /signalling line is then connected; 2 intake suction channels with range of possible positions. Laminar airflow ceiling with surrounding ceiling bearing angled brackets of powder- coated RAL 9010 aluminium to connect to the existing ceiling. ADMECO or equivalent.	2	No.		
	Laminar Flow Ceiling Diffuser Size 2000x2000x500mm	1	No.		



	Total Carried Forward to Next Page	
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Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
	Total Brought Forward from Previous Page				

	<u>Air Ducts</u>  Supply and installation of Rigid foam type ducts in preinsulated aluminium, they will be constructed using Piral HD Hydrotec panel or equivalent with antibacterial treatment, 200 µm (external side) embossed al/pur/200 µm (internal side) smooth antibacterial aluminium or equivalent sandwich panels with the following characteristics; environmentally friendly sandwich panel made of a rigid polyurethane insulating foam minimum thickness 30 mm, including access door (for inspection and cleaning according EN standard), accessories and all expenses and charges to perform the works. Material must be autoextinguishing certified class O-1 .  Supply ducts Extract ducts <u>Flexible Ducts</u>				
A		20	SM		
B	Supply and Installation of flexible duct including supply and fixing of the duct in the works, fittings, connection, brackets flexible joints, and all expenses and charges, to perform the works.  Supply of pre-insulated with fibre glass Flexible Duct with vapour barrier and reinforcing metal helix. 150mm dia.	25	SM		
C	<u>Motorized Fire Damper</u> Supply and Installation of Fire damper 120 min fire resistance including electric motor, fittings, thermal disconnect switch with fuse pre-set at 72°C for fire detection, single limit switch to indicate damper position including electrical connections, connection to the ducts, insulations, and all expenses and charges, to perform the works as Trox or equal and approved. 300x450mm 300x400mm	10	LM		
D	<u>Manually Operated Volume Control Dampers</u> Volume control damper for duct mounting with facility for adjustment from outside duct . These to be of the opposed blade (OBD) type by Trox or equal and approved. 300x450mm 300x400mm	1	No.		
E		1	No.		
F	<u>HEPA filter</u> Supply, installation, testing and commissioning HEPA filter size 600x1524x150mm thick EU13 99.99% efficiency, rated face velocity: 1.5 m/sec, 1750 cfm initial resistance:250Pa complete with mounting brackets and all necessary installation accessories duly sealed with Epoxy and DOP tested.	1	No.		
G		1	No.		
D		1	No.		
Total Carried Forward to Next Page					

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
	Total Brought Forward from Previous Page				
A	<u>Low Level Return Grilles</u> Supply and installation of stainless steel return Grilles for operating the SAGI COFIM type DEC-5 or similar. The grilles mod. "DEC", which are specific for controlled contamination environments. Structure: AISI 304 Stainless steel, Panel: AISI 304 stainless steel; including AISI 304 stainless steel plenum, filter G4 efficiency, flow adjustment damper, accessories and all expenses and charges to perform the works. Size 400x300mm	2	No.		
B	<u>Air Differential pressure switches</u> Supply, install, test and commission Air Differential pressure switches complete with sensor probe, etc. integrated with Light and visual alarm signal, as per general details and specifications and approved make. To be installed across HEPA filter bank sections and Operating room. The necessary control and power wiring shall be in the scope of the contractor.	1	No.		
C	<u>Temperature and RH sensor and adjuster package</u> Supply, install-(grout), test and commission microprocessor based Room temperature, humidity sensor and remote adjuster package within a MS housing -wall, suitable for mounting, and having a stainless steel cover plate. This package shall have a temperature and humidity display - red 2" high LED character for operation rooms, and other critical areas. Sensor, adjuster (Snap acting humidistat/Proportional thermostat Microprocessor based) and displayer package, as described above.	1	No.		
D	Allow provisional sum of Two Hundred thousand shillings for Mechanical Engineers Approvals inspections, for the above installation, training and various tests during the contract duration.				
E	<u>Electrical Wiring for entire HVAC installations</u> The electrical sub-contractor shall provide power to a point within a radius of 1000mm from the AHU, fans and curtain. The wiring from the HVAC equipment to the starter and the switch board shall be under this contract. The wiring from the contractor to the remote start-stop switchboard including remote unit in the switch room shall be by this contract.	1	Item		
		Sum	1	200,000	200,000
	Total Carried Forward to Next Page				

Item	Description	Qty	Unit	Rate (Kshs.)	Amount (Kshs.)
	Total Brought Forward from Previous Page				

<p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p> <p>H</p> <p>I</p>	<p>DELIVERY ROOM</p> <p>HEAT PUMP SPLIT AIR CONDITIONING SYSTEM The indoor units shall be high wall type air-cooling unit of capacity 5.1KW (18,000 Btu/hr).The air conditioning units shall be supplied complete with room thermometer, room thermostat controls and wireless remote control device. It shall charged with R410A refrigerant or any other non ozone depleting refrigerant .The outdoor unit shall have matching capacity with the indoor unit. The unit shall be “LG ATNQ22GPLA4 18K BTU Ceiling Cassette AC” Model or equal and approved.</p> <p>Refrigeration Pipework</p> <p>Refrigeration liquid line pipework of size 6.35mm including Amaflex insulation.</p> <p>Refrigeration gas line pipework of size 12.7mm including Amaflex insulation. Surge Protector</p> <p>Power surge protector as Solatek to suite or equal and approved.</p> <p>PVC Drain Pipework</p> <p>25mm diameter grey uPVC pipework</p> <p>Electrical Works</p> <p>Allow for associated electrical works including but not limited to wiring from local isolators provided by others within one meter to all indoor units, outdoor units and control system. Allow for labelling all the circuits and equipment.</p> <p>Cleaning and Flushing the Installation</p> <p>Allow for cleaning and flushing the whole installation with appropriate medium before charging the system with refrigerant.</p> <p>Refrigerant</p> <p>Allow R410A refrigerant for charging air conditioning system.</p> <p>Trunking</p> <p>75x50mm approved PVC trunking for concealing the refrigerant pipework.</p>	<p>2</p> <p>15</p> <p>15</p> <p>2</p> <p>10</p> <p>1</p> <p>1</p> <p>1</p> <p>10</p>	<p>No.</p> <p>LM</p> <p>LM</p> <p>No.</p> <p>LM</p> <p>Item</p> <p>Item</p> <p>Item</p> <p>LM</p>		
<p>Total for First Floor Air Conditioning Carried Forward to Collection Page MECH BQ-32</p>					

AIR CONDITIONING COLLECTION PAGE

Item	Description	Total Cost (Kshs)
1	Total for Ground Floor Air Conditioning B/F from MECH BQ-26	
2	Total for First Floor Air Conditioning B/F from MECH BQ-31	
	TOTAL FOR AIR CONDITIONING WORKS C/F to Page MECH BQ -40	

BILL NO. 6: MEDICAL GAS PIPELINE SYSTEM INSTALLATIONS(PIPEWORK INFRASTRUCTURE ONLY)					
ITEM	DESCRIPTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	The Bills of Quantities shall be read together with Particular Specifications and Contract Drawings. <b>GROUND FLOOR</b> <b>TERMINAL UNITS &amp; PROBES</b> Medical gas terminal units shall conform to BS EN ISO 91701:2008 and accept probes to BS 5682:1998. Terminal units shall be capable of single-handed insertion and removal of medical gas probe. The AGSS terminal unit shall conform to BS 6834:1987.				
A	Oxygen terminal units	20	No.		
B	Nitrous oxide terminal units	11	No.		
C	Medical air terminal units	13	No.		
D	Surgical air terminal units	3	No.		
E	Medical vacuum terminal units	20	No.		
F	AGSS terminal units	11	No.		
G	Oxygen probes	20	No.		
H	Nitrous oxide probes	11	No.		
I	Medical air probess	13	No.		
J	Surgical air probes	3	No.		
K	Medical vacuum probes	20	No.		
L	AGSS probes	11	No.		
	<b>MONITORING EQUIPMENT</b>				
M	Local area alarm complete with cabling. The area alarm shall be as <u>BeaconMedæes Medipoint 26 Medical Gas Area Alarms</u> or approved equivalent.	1	No.		
N	Central main alarm in the plant room complete with cabling and all necessary accessories	1	No.		
	<b>DISTRIBUTION SYSTEM</b> Copper pipes manufactured from phosphorous de-oxidised nonarsenical copper to BS EN 1412:1996 grade CW024A (Cu-DHP) conforming to HTM 02-01: 12mm diameter copper pipe				
O	15mm diameter copper pipe	20	LM		
P	22 mm diameter copper pipe	100	LM		
Q	28 mm diameter copper pipe	100	LM		
R		20	LM		
	Sub-total c/f to next page				

ITEM	DESCRIPTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-total b/f from previous page				
	<u>Elbows</u>				
A	15 mm diameter copper elbow	50	No.		
B	22 mm diameter copper elbow	30	No.		
C	28 mm diameter copper elbow	15	No.		
	<u>Tees</u>				
D	15 mm diameter equal Tee	25	No.		
E	22 mm diameter equal Tee	28	No.		

F	28 mm diameter equal Tee <u>Adaptors/Connectors</u>	12	No.		
G	28 x 22 mm adaptors/connectors	12	No.		
H	28 x 15 mm adaptors/connectors	10	No.		
I	22 x 15 mm adaptors/connectors	30	No.		
J	15 x 12 mm adaptors/connectors <u>Line Ball Valves (lva) c/w NISTs</u> Medical Gas Line Ball Valve c/w NISTs conforming to HTM 0201.	40	No.		
K	15 mm dia. Medical Gas Line Ball Valve	12	No.		
L	22 mm dia. Medical Gas Line Ball Valve	12	No.		
M	28 mm dia. Medical Gas Line Ball Valve <u>Zone Service Unit</u> The AVSU conforming to BS EN 739:1998, HTM 02-01 and BS EN ISO 7396-1:2007.	5	No.		
N	22 mm dia avsu <u>Area Service Module (ASM)</u>	12	No.		
O	Area Service Module conforming to HTM O2-01 and capable of carrying local area medical gas alarm and Six AVSUs. The actual locations of ASM's shall be decided on site.	2	No.		
P	Area Service Module conforming to HTM O2-01 and capable of carrying local area medical gas alarm and Five AVSUs. The actual locations of ASM's shall be decided on site.	2	No.		
Q	Area Service Module conforming to HTM O2-01 and capable of carrying local area medical gas alarm and two AVSUs. The actual locations of ASM's shall be decided on site.	1	No.		
Sub-total c/f to next page					

ITEM	DESCRIPTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
Sub-total b/f from previous page					
	<u>THEATRE CEILING PENDANT</u>				

A	<p>Flexible pendant principally designed for use in operating theatres and anaesthetic rooms and for connection to fixed medical pipeline installations from ceiling level. The pendant should have six medical gas/vacuum services located radially and the Anaesthetic Gas Scavenging Disposal System (AGSS) located centrally and following clockwise sequence when viewed from below:- oxygen, Nitrous oxide, N2O/O2 mixture 50%/50%, medical air 400kpa, medical air 700Kpa, medical vacuum with AGSS mounted centrally. Each medical gas/vacuum service is transmitted by reinforced anti-static plastic flexible hose, colour coded in accordance with BS 5682:1984. Each terminal unit should be shrouded by a white plastic cover to minimise the collection of dust or moisture and the shroud to act as a buffer to prevent damage to adjacent terminal units.</p> <p>The pendant shall consist of mounting brackets, first and second fix gas service kits and a shroud which provided a neat appearance at ceiling level. It shall incorporate self closing shuttle valves into each pressure gas first fix assembly to automatically shuff-off when a hose is removed for maintenance. The pressure test kit should be capable of sealing the first fix gas service kit enabling carvass pressure testing. The flexible pendant will incorporate pendant mounted terminal units and AGS (Anaesthetic Gas Scavenging) terminal units with their appropriate probes. The flexible pendant shall fully comply with BS 5682:1984, BS 6834:1987 and IS 9170. The flexible pendant to be as medaes flexible pendant with "Gem 10 terminal units" or equal and approved.</p> <p><u>BEDHEAD TRUNKING AND HEADWALL SYSTEMS</u></p>	2	No		
B	250mm x 50mm deep single compartment metal trunking constructed from heavy gauge powder coated steel complete with all coupling and earthing accessories for Medical Gas pipelines. The trunking shall be rectagular section. Medical Gas Terminal Unit mounting cover fabricated from HG powder coated steel plate matching the cable tray above.	30	LM		
C	Allow for heavy gauge alluminium tranking with three chamber white in colour	60	LM		
Total for Ground Floor Medical Gases Pipeline System carried forward to Collection Page MECH BQ -39					

ITEM	DESCRIPTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
<u>FIRST FLOOR</u>					
<u>TERMINAL UNITS &amp; PROBES</u>					
Medical gas terminal units shall conform to BS EN ISO 91701:2008 and accept probes to BS 5682:1998. Terminal units shall be capable of single-handed insertion and removal of medical gas probe. The AGSS terminal unit shall conform to BS 6834:1987.					
A	Oxygen terminal units	27	No.		
B	Nitrous oxide terminal units	2	No.		



C	Medical air terminal units	11	No.		
D	Surgical air terminal units	2	No.		
E	Medical vacuum terminal units	27	No.		
F	AGSS terminal units	2	No.		
G	Oxygen probes	27	No.		
H	Nitrous oxide probes	2	No.		
I	Medical air probess	11	No.		
J	Surgical air probes	2	No.		
K	Medical vacuum probes	27	No.		
L	AGSS probes	2	No.		
	<u>DISTRIBUTION SYSTEM</u>				
	Copper pipes manufactured from phosphorous de-oxidised nonarsenical copper to BS EN 1412:1996 grade CW024A (Cu-DHP) conforming to HTM 02-01:				
M	12mm diameter copper pipe	20	LM		
N	15mm diameter copper pipe	100	LM		
O	22 mm diameter copper pipe	100	LM		
P	28 mm diameter copper pipe	50	LM		
Q	35 mm diameter copper pipe	35	LM		
	<u>Elbows</u>				
R	15 mm diameter copper elbow	50	No.		
S	22 mm diameter copper elbow	30	No.		
T	28 mm diameter copper elbow	15	No.		
U	35 mm diameter copper elbow	16	No.		
	<u>Tees</u>				
V	15 mm diameter equal Tee	25	No.		
W	22 mm diameter equal Tee	28	No.		
X	28 mm diameter equal Tee	12	No.		
	<u>Adaptors/Connectors</u>				
Y	35 x 28 mm adaptors/connectors	10	No.		
Z	28 x 22 mm adaptors/connectors	12	No.		
AA	28 x 15 mm adaptors/connectors	10	No.		
BB	22 x 15 mm adaptors/connectors	30	No.		
CC	15 x 12 mm adaptors/connectors	40	No.		
	<u>Line Ball Valves (Iva) c/w NISTs</u>				
	Medical Gas Line Ball Valve c/w NISTs conforming to HTM 0201.				
DD	15 mm dia. Medical Gas Line Ball Valve	12	No.		
EE	22 mm dia. Medical Gas Line Ball Valve	12	No.		
FF	28 mm dia. Medical Gas Line Ball Valve	5	No.		
	Sub-total c/f to next page				

ITEM	DESCRIPTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-total b/f from previous page				

A	35 mm dia. Medical Gas Line Ball Valve <u>Zone Service Unit</u> The AVSU conforming to BS EN 739:1998, HTM O2-01 and BS EN ISO 7396-1:2007.	3	No.		
B	22 mm dia avsu <u>Area Service Module (ASM)</u>	6	No.		
C	Area Service Module conforming to HTM O2-01 and capable of carrying local area medical gas alarm and Six AVSUs. The actual locations of ASM's shall be decided on site.	1	No.		
D	Area Service Module conforming to HTM O2-01 and capable of carrying local area medical gas alarm and Three AVSUs. The actual locations of ASM's shall be decided on site.	2	No.		
E	Allow provisional sum of Two Hundred thousand shillings for Mechanical Engineers Approvals inspections, for the above installation, training and various tests during the contract duration.	1	Item	200,000	200,000
Sub-total c/f to next page					

ITEM	DESCRIPTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-total b/f from previous page				
A	<p><b><u>THEATRE CEILING PENDANT</u></b></p> <p>Flexible pendant principally designed for use in operating theatres and anaesthetic rooms and for connection to fixed medical pipeline installations from ceiling level. The pendant should have six medical gas/vacuum services located radially and the Anaesthetic Gas Scavenging Disposal System (AGSS) located centrally and following clockwise sequence when viewed from below:- oxygen, Nitrous oxide, N2O/O2 mixture 50%/50%, medical air 400kpa, medical air 700Kpa, medical vacuum with AGSS mounted centrally. Each medical gas/vacuum service is transmitted by reinforced anti-static plastic flexible hose, colour coded in accordance with BS 5682:1984. Each terminal unit should be shrouded by a white plastic cover to minimise the collection of dust or moisture and the shroud to act as a buffer to prevent damage to adjacent terminal units.</p> <p>The pendant shall consist of mounting brackets, first and second fix gas service kits and a shroud which provided a neat appearance at ceiling level. It shall incorporate self closing shuttle valves into each pressure gas first fix assembly to automatically shuff-off when a hose is removed for maintenance. The pressure test kit should be capable of sealing the first fix gas service kit enabling carvass pressure testing. The flexible pendant will incorporate pendant mounted terminal units and AGS (Anaesthetic Gas Scavenging) terminal units with their appropriate probes. The flexible pendant shall fully comply with BS 5682:1984, BS 6834:1987 and IS 9170. The flexible pendant to be as medaes flexible pendant with "Gem 10 terminal units" or equal and approved.</p>				
B	<p><b><u>BEDHEAD TRUNKING AND HEADWALL SYSTEMS</u></b></p> <p>250mm x 50mm deep single compartment metal trunking constructed from heavy gauge powder coated steel complete with all coupling and earthing accessories for Medical Gas pipelines. The trunking shall be rectagular section. Medical Gas Terminal Unit mounting cover fabricated from HG powder coated steel plate matching the cable tray above.</p>	1	No		
C	<p>Allow for heavy gauge alluminium tranking with three chamber white in colour</p> <p><b>PROJECT ENGINEER STATIONERY</b></p>	60	LM		
D	<p>Photocopy paper, size A4, 80g/cm<sup>3</sup>, White, 500 sheets</p>	20	No.		
E	<p>ASUS Zenbook Pro Duo 15 OLED UX582ZM-H2901W, Core i9, 32GB, 1TB SSD, 6GB Graphics, Win11 Home, 15.6" 4K OLED Touch Screen, No ODD – 90NB0VR1-M003Z0</p>	1	No.		
	Total for First Floor Medical Gases Pipeline System carried forward to Collection Page MECH BQ -39				

MEDICAL GAS PIPELINE INSTALLATIONS COLLECTION PAGE

Item	Description	Total Cost (Kshs)
1	Total for Ground Floor B/F from MECH BQ-35	
2	Total for First Floor B/F from MECH BQ-38	
	TOTAL FOR AIR CONDITIONING WORKS C/F to Page MECH BQ -40	

MECHANICAL SUMMARY PAGE-PHASE 1		
SANITARY FITTINGS, AIR CONDITIONING INSTALLATIONS & MEDICAL GAS PIPELINE INSTALLATIONS FOR GROUND & FIRST FLOOR AND INTERNAL COLD & HOT PLUMBING, DRAINAGE & FIRE FIGHTING INSTALLATIONS FOR ENTIRE BLOCK,		
Item	Description	AMOUNT (KSHS)
1	Total for Bill No. 1: Sanitary fittings Installation Works for Ground & First Floor B/F from page MECH BQ-9	
2	Total for Bill No. 2: Internal Plumbing and Drainage Installations Works B/F from page MECH BQ-16	
3	Total for Bill No. 4: Fire fighting Installations B/F from page MECH BQ-19	
4	Total for Bill No. 5: Air Conditioning Installations Works for Ground & First Floor B/F from page MECH BQ-32	
5	Total for Bill No. 6: Medical Gas Pipeline System Installations for Ground & First Floor (PIPEWORK INFRASTRUCTURE ONLY) B/F from page MECH BQ-39	
	Total Amount for Mechanical Works in Phase 1	

SCHEDULE OF UNIT RATES

ITEM	DESCRIPTION	UNIT	RATE (KShs)
1.	Close coupled Water closet c/w cistern	No.	
2.	Chrome plated square shaped towel ring with fixing screws and plates	Item	
3.	4 Way ceiling cassette indoor unit of capacity 3.5kw	Item	
4.	4-way ceiling cassette indoor unit of capacity 5.6kw	Item	
5.	4-way ceiling cassette indoor unit of capacity Cooling capacity: 5.1 kW (18,000 Btu/hr)	Item	
6.	High quality shower cubicle of size 900 x 1200 x 1900mm complete with 900 x 1900mm pivot door in chrome plated frame with frosted glass of thickness 10mm, side panels, 90mm High Flow Waste fitting, frame to be screwed to the wall	Item	
7.	High pressure instant water heater completes with a surge protector, external flow control, auto protection from overheating and ability to work under low pressure	Item	
8.	Double Towel Bar, Chrome plated 600mm long towel rack and brackets as one piece, plugged and screwed into the wall	Item	
9.	Floor Shower Drain	Item	
10.	High Static Ceiling concealed duct of capacity 10.6 kW (35,000 Btu/hr)		
11.	4000liters cylindrical tank		

MECH BQ- 42

SECTION 8:

TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED

CONTENTS

CLAUSE No.

PAGE

1.	GENERAL NOTES TO THE TENDERER.....	8-1
2.	TECHNICAL SCHEDULE.....	8-2
3.	TECHNICAL DATA .....	8-3 to 8-4

(i)

TECHNICAL SCHEDULE

1. General Notes to the Tenderer

- 1.1 The tenderer shall submit technical schedules for all materials and equipment upon which he has based his tender sum.
- 1.2 The tenderer shall also submit separate comprehensive descriptive and performance details for all plant apparatus and fittings described in the technical schedules. Manufacturer's literature shall be accepted. Failure to comply with this may have his tender disqualified.
- 1.3 Completion of the technical schedule shall not relieve the Contractor from complying with the requirements of the specifications except as may be approved by the Engineer.



8-1

**TECHNICAL SCHEDULE**

The tenderer must complete in full the technical schedule. Apart from the information required in the technical schedule, the tenderer **MUST SUBMIT** comprehensive manufacturer's technical brochures and performance details clearly **HIGHLIGHTED** by a marker for all items listed in this schedule (fill forms attached).

ITEM	DESCRIPTION	MANUFACTURER	COUNTRY OF ORIGIN	REMARKS (Catalogue No. etc.)
------	-------------	--------------	-------------------------	------------------------------------

1.	Water Closet (WC) Pan			
2.	Medical Wash Hand Basin			
3.	Plaster Sink			
4.	SCRUB-UP SINK			
5.	Sluice Unit			
6.	Cleaners Sink			
7.	Disabled Persons Water Closet and Wash Hand Basin Facility			
8.	Sterilization Sink			
9.	Assisted bath			
10.	Vertical close end plastic molded tank of capacity 5000litres			
11.	Arabian Toilet Spray			
12.	Swinging type hosereel fitted with 30 metres long			
13.	25mm diameter approved medium pressure screw down full way non-rising stem wedge gate valve			
14.	Hosereel Pumpset			
15.	Swinging type hosereel fitted with 30 metres long			

8-2

ITEM	DESCRIPTION	MANUFACTURER	COUNTRY OF ORIGIN	REMARKS (Catalogue No. etc.)
------	-------------	--------------	-------------------	------------------------------

17.	Vanity Wash Hand Basin (W/HB)			
18.	Medical gas terminal units			
19.	Local area alarm complete with cabling			
20.	Central main alarm			
21.	Zone Service Unit			
22.	Area Service Module			
23.	Flexible Theatre pendant			
24.	Medical Gas Line Ball Valve c/w NISTs			
25.	high wall type air-cooling unit of capacity 5.1KW (18,000 Btu/hr).			
26.	AHU. Flow rate of supply of 1500 m <sup>3</sup> /h @ 600Pa			
27.	Ditto Flow rate of supply of 2268 m <sup>3</sup> /h @ 750Pa,			
28.	Extract fan of capacity 1200m <sup>3</sup> /h against a pressure drop of 350Pa			
29.	Extract fan of capacity 1815m <sup>3</sup> /h against a pressure drop of 550Pa			
30.	Energy recovery ventilator (ERV) for providing cool & warm fresh air supply and exhaust air capacity 1000CMH			
31.	Laminar flow diffuser 2000x2000mm			

SECTION 9:

DRAWING SCHEDULE

**CONTENTS**

CLAUSE No.  
PAGE

1. DRAWING SCHEDULE.....	9-1
<u>DRAWING SCHEDULE:</u>	

Drawings shall be provided during project implementation





# ELECTRICAL WORKS

**PROPOSED KEGONGA LEVEL IV  
HOSPITAL.**

**ELECTRICAL ENGINEERING  
WORKS**

**EVALUATION CRITERIA, TENDER  
SPECIFICATIONS & BILLS OF QUANTITIES  
FOR SUPPLY, INSTALLATION, TESTING AND  
COMMISSIONING OF ELECTRICAL  
INSTALLATION WORKS**



**STAGE 2: TECHNICAL EVALUATION****(A) COMPLIANCE TO TECHNICAL SPECIFICATIONS**

Bidders must provide Technical Brochures to assess their technical compliance with these specifications.

ITEM	Description	COMPLIANCE	
		√	×
1	<u>LIGHT FITTINGS</u> i. LED Type ii. Backlit iii. Power Factor: $\geq 0.9$ iv. Efficiency: 90Lm/Watt v. Operating Frequency Range: 50 – 60Hz vi. Operating Voltage Range: 220 – 240Vac vii. Correlated Colour Temperature (CCT): $\geq 6500K$		
2	<u>SWITCHES/ SOCKETS</u> i. White in colour ii. Screwless Front Plate		
3	<u>NETWORK CABINETS</u> i. Cooling extractor fans ii. Caster wheels iii. Inbuilt 2-gang power socket outlet iv. Cable Management channel rack v. Cable support hooks vi. Cable support rings and straps vii. Cable duct cover		
4	<u>NETWORK CABLES</u> i. category 6A compliant STP cable ii. Made of polyethylene insulation iii. Pulling force should support up to 50N/mm <sup>2</sup> iv. Low Smoke Zero Halogen outer sheath		
	<b>RESPONSIVENESS</b>		

**TENDER SPECIFICATIONS & BILLS OF  
QUANTITIES FOR SUPPLY, INSTALLATION,  
TESTING AND COMMISSIONING OF  
ELECTRICAL INSTALLATION WORKS**

TABLE OF CONTENTS

SECTION A: General Specifications of Materials and Works.....	Elect-A/1 - A/22
SECTION B: Particular Specifications of Materials and Works.....	Elect-B/1 - B/38
SECTION C: Schedule of Contract Drawings.....	Elect- C/1
SECTION D: Technical Schedule.....	Elect-D/1 - D/4

SECTION E: Schedule of Unit Rates..... Elect-E/1 - E/2

SECTION F: Bills of Quantities..... Elect-F/1 - F/19

SECTION A

GENERAL SPECIFICATIONS

OF  
MATERIALS AND WORKS

## GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

1. General
2. Standard of Materials
3. Workmanship
4. Procurement of Materials
5. Record Drawings
6. Regulations and Standards
7. Setting out Works
8. Testing on Site

## 1. GENERAL

- 1.1. This specification is to be read in conjunction with any other information herein issued with it. Bills of quantities and schedule of unit rates shall be the basis of all additions and omissions during the progress of the works.

## 2. STANDARD OF MATERIALS

- 2.1. Where the material and equipment are specifically described and named in the Specification followed by approved equal, they are so named or described for the purpose of establishing a standard to which the contractor shall adhere.
- 2.2. Should the contractor install any material not specified herein before receiving approval from the proper authorities, the Engineer shall direct the contractor to remove the material in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.
- 2.3. All materials condemned by the Engineer as not approved for use, are to be removed from the premises and suitable materials delivered and installed in their place at the expense of the Contractor. All materials required for the works shall be from branded manufacturers, and shall be new and the best of the respective kind and shall be of a uniform pattern.

## 3. WORKMANSHIP

- 3.1. The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman and to the satisfaction of the Engineer. Helpers shall have qualified supervision.
- 3.2. Any work that does not in the opinion of the Engineer conform to the best standard practice will be removed and reinstated at the contractor's expense.
- 3.3. Permits, Certificates or Licences must be held by all tradesmen for the type of work; in which they are involved where such permits, certificates or licences exist under Government legislation.

## 4. PROCUREMENT OF MATERIALS

- 4.1. The contractor is advised that no assistance can be given in the procurement or allotment of any materials or products to be used in and necessary for the construction and completion of the work.
- 4.2. Contractors are warned that they must make their own arrangements for the supply of materials and/or products specified or required.

## 5. RECORD DRAWINGS

- 5.1. These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.
- 5.2. The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.
- 5.3. Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.
- 5.4. One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

## 6. REGULATIONS AND STANDARDS

- 6.1. All work executed by the contractor shall comply with the current edition of the “Regulations” for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, Electric Power Act, Kenya Bureau of Standards (KeBS), Institution of Electrical Engineers (I.E.E) Wiring Regulations, Current recommendation of CCITT and CCIR, and with the Regulations of the Local Electricity Authority and the Communications Authority of Kenya (CAK)
- 6.2. Where the sets of regulations appear to conflict, they shall be clarified with the Engineer.

## 7. SETTING OUT WORK

- 7.1. The contractor, at his own expenses, is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail to the Engineer before proceeding and must allow in his tender for all such modifications and for the provision of any such sketches or drawings related thereto.

## 8. TESTING ON SITE

- 8.1. The contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specifications No. 1 and No.2, Electric Supply Company’s By-Laws, Communications Authority of Kenya (CAK) requirements or any other supplementary Regulations as may be produced by the engineer.

Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation shall be rectified by the contractor at his own expense.

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS FOR ELECTRICAL INSTALLATION WORKS.

- 2.1 General
- 2.2 Standard of Materials
- 2.3 Workmanship
- 2.4 Procurement of Materials
- 2.5 Shop Drawings
- 2.6 Record Drawings
- 2.7 Regulations and Standards
- 2.8 Setting out Works
- 2.9 Position of Electrical Plant and Apparatus
- 2.10 M.C.B Distribution Panels and Consumer Units
- 2.11 Fused Switchgear and Isolators
- 2.12 Conduits and Conduit Runs
- 2.13 Conduit Boxes and Accessories
- 2.14 Labels
- 2.15 Earthing
- 2.16 Cables and Flexible Cords
- 2.17 Armoured PVC Insulated and Sheathed Cables
- 2.18 Cable Supports; Markers and Tiles
- 2.19 PVC Insulated Cables



- 2.20 Heat Resisting Cables
- 2.21 Flexible Cords
- 2.22 Cable Ends and phase Colours
- 2.23 Cable Insulation Colours
  
- 2.24 Sub-circuit Wiring
- 2.25 Space Factor
- 2.26 Insulation
- 2.27 Lighting Switches
- 2.28 Sockets and Switched sockets
- 2.29 Fused Spur Boxes
- 2.30 Cooker Outlets
- 2.31 Connectors
- 2.32 Lamp holders
- 2.33 Lamps
- 2.34 lighting Fittings Street Lighting Lanterns
- 2.35 Position of Points and Switches
- 2.36 Street/Security Lighting Columns
- 2.37 Timing Control Switch
- 2.38 Wiring System for Street Lighting
- 2.39 Metal control Pillar
- 2.40 Current Operated Earth leakage circuit breaker

- 2.41 MV Switchboard
- 2.42 Steel Conduits and Steel Trunking
- 2.43 Testing on Site

## 2.1 GENERAL

This specification is to be read in conjunction with the drawings which are issued with it. Bills of quantities shall be the basis of all additions and omissions during the progress of the works.

## 2.2 STANDARD OF MATERIALS

Where the material and equipment are specifically described and named in the Specification followed by approved equal, they are so named or described for the purpose of establishing a standard to which the sub-contractor shall adhere.

Should the Sub-contractor install any material not specified herein before receiving approval from the proper authorities, the Engineer shall direct the Sub-contractor to remove the material in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.

All materials condemned by the Engineer as not approved for use, are to be removed from the premises and suitable materials delivered and installed in their place at the expense of the Sub-contractor. All materials required for the works shall be new and the best of the respective kind and shall be of a uniform pattern.

## 2.3 WORKMANSHIP

The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman and to the satisfaction of the Engineer. Helpers shall have qualified supervision.

Any work that does not in the opinion of the Engineer conform to the best standard practice will be removed and reinstated at the Sub-contractor's expense.

Permits, Certificates or Licenses must be held by all tradesmen for the type of work; in which they are involved where such permits, certificates or licenses exist under Government legislation.

#### 2.4 PROCUREMENT OF MATERIALS

The sub-contractor is advised that no assistance can be given in the procurement or allotment of any materials or products to be used in and necessary for the construction and completion of the work.

Sub-contractors are warned that they must make their own arrangements for the supply of materials and/or products specified or required.

#### 2.5 SHOP DRAWINGS

Before manufacture or Fabrication is commenced the sub-contractor shall submit Two copies of detailed drawings of all control pillars, meter cubicles, medium voltage switchboards including their components showing all pertinent information including sizes, capacities, construction details, etc., as may be required to determine the suitability of the equipment for the approval of the Engineer. Approval of the detailed drawings shall not relieve the sub-contractor of the full responsibility of errors or the necessity of checking the drawings himself or of furnishing the materials and equipment and performing the work required by the plans and specifications.

#### 2.6 RECORD DRAWINGS

These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

#### 2.7 REGULATIONS AND STANDARDS

All work executed by the Sub-contractor shall comply with the current edition of the “Regulations” for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, and with the Regulations of the Local Electricity Authority.

Where the two sets of regulations appear to conflict, they shall be clarified with the Engineers. All materials used shall comply with relevant Kenya Bureau of Standards Specification.

#### 2.8 SETTING OUT WORK

The sub-contractor at his own expenses; is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail

to the Engineer before proceeding and must allow in his Tender for all such modifications and for the provision of any such sketches or drawings related thereto.

## 2.9 POSITIONS OF ELECTRICAL PLANT AND APPARATUS

The routes of cables and approximate positions of switchboards etc, as shown on the drawings shall be assumed to be correct for purpose of Tendering, but exact positions of all electrical Equipment and routes of cables must be agreed on site with the Engineer before any work is carried out.

## 2.10 MCB DISTRIBUTION PANELS AND CONSUMER UNITS

All cases of MCB Panels and consumer units shall be constructed in heavy gauge sheet with hinged covers.

Removable undrilled gland plates shall be provided on the top and bottom of the cases. Miniature circuit breakers shall be enclosed in moulded plastic with the tripping mechanism and arc chambers separated and sealed from the cable terminals.

The operating dolly shall be tripfree with a positive movement in both make and break position. Clear indication of the position of the handle shall be incorporated.

The tripping mechanism shall be on inverse characteristic to prevent tripping in temporary overloads and shall not be affected by normal variation in ambient temperature.

A locking plate shall be provided for each size of breaker; A complete list of circuit details on typed cartridge paper glued to stiff cardboards and covered with a sheet of Perspex, and held in position with four suitable fixings, shall be fitted to the inner face of the lids of each distribution panel. The appropriate MCB ratings shall be stated on the circuit chart against each circuit in use: Ivorine labels shall be secured to the insulation barriers in such a manner as to indicate the number of the circuits shown on the circuit chart.

Insulated barriers shall be fitted between phases, and neutrals in all boards, and to shroud live parts.

Neutral cables shall be connected to the neutral bar in the same sequence as the phase cables are connected to the MCB's. This shall also apply to earth bars when installed.

## 2.11 FUSED SWITCHGEAR AND ISOLATORS

All fused switchgear and isolators whether mounted on machinery, walls or industrial panels shall conform to the requirements of KS 04 – 226 PART: 1: 1985.

All contacts are to be fully shrouded and are to have a breaking capacity on manual operations as required by KS 04 – 182: 1980.

Fuse links for fused switches are to be of high rupturing capacity cartridge type, conforming to KS 04 – 183: 1978.

Isolators shall be load breaking/fault making isolators.

Fused switches and isolators are to have separate metal enclosures. Mechanical interlocks are to be provided between the door and main switch operating mechanism so arranged that the door may not be opened with the switch in the 'ON' position. Similarly; it shall not be possible to close the switch with the door open except that provision to defeat the mechanical interlock and close the switch with

the door in the open position for test purposes. The 'ON' and 'OFF' positions of all switches and isolators shall be clearly indicated by a mechanical flag indicator or similar device. In T.P & N fused switch units, bolted neutral links are to be fitted.

## 2.12 CONDUITS AND CONDUIT RUNS

Conduit systems are to be installed so as to allow the loop-in system of wiring:

All conduits shall be black rigid super high impact heavy gauge class 'A' PVC in accordance with KS 04 – 179: 1988 and IEE Regulations. No conduit less than 20mm in diameter shall be used anywhere in this installation.

Conduit shall be installed buried in plaster work and floor screed except when run on wooden or metal surface when they will be installed surface supported with saddles every 600mm. Conduit run in chases shall be firmly held in position by means of substantial pipe hooks driven into wooden plugs.

The Sub-contractor's attention is drawn to the necessity of keeping all conduits entirely separate from other piping services such as water and no circuit connections will be permitted between conduits and such pipes.

All conduits systems shall be arranged wherever possible to be self-draining to switch boxes and conduit outlet points for fittings:

The systems, when installed and before wiring shall be kept plugged with well fitting plugs and when short conduit pieces are used as plugs, they shall be doubled over and tied firmly together with steel wire; before wiring all conduit systems shall be carried out until the particular section of the conduit installation is complete in every respect.

The sets and bends in conduit runs are to be formed on site using appropriate size bending springs and all radii of bends must not be less than 2.5 times the outside diameter of the conduit. No solid or inspection bends, tees or elbows will be used.

Conduit connections shall either be by a demountable (screwed up) assembly or adhesive fixed and water tight by solution. The tube and fittings must be clean and free of all grease before applying the adhesive. When connections are made between the conduit and switch boxes, circular or non-screwed boxes, care shall be taken that no rough edges of conduit stick out into the boxes.

Runs between draw in boxes are not to have more than two right angle bends or their equivalent. The sub-contractor may be required to demonstrate to the Engineers that wiring in any particular run is easily withdrawable and the sub-contractor may, at no extra cost to the contract; be required to install additional draw-in boxes required. If conduit is installed in straight runs in excess of 6000mm, expansion couplings as manufactured by Egatube shall be used at intervals of 6000mm.

Where conduit runs are to be concealed in pillars and beams, the approval of the Structural Engineer, shall be obtained. The sub-contractor shall be responsible for marking the accurate position of all holes chases etc, on site, or if the Engineer so directs, shall provide the Main Contractor with dimensional drawings to enable him to mark out and form all holes and chases. Should the sub-

contractor fail to inform the main contractor of any inaccuracies in this respect they shall be rectified at the sub-contractor's expense.

It will be the Sub-contractor's responsibility to ascertain from site, the details of reinforced concrete or structural steelwork and check from the builder's drawings the positions of walls, structural concrete and finishes. No reinforced concrete or steelwork may be drilled without first obtaining the written permission of the Structural Engineer.

The drawings provided with these specifications indicate the appropriate positions only of points and switches, and it shall be the Sub-Contractors responsibility to mark out and centre on site the accurate positions where necessary in consultation with the Architect and the Engineer. The sub-contractor alone shall be responsible for the accuracy of the final position.

## 2.13 CONDUIT BOXES AND ACCESSORIES

All conduit outlets and junction boxes are to be either malleable iron and of standard circular pattern of the appropriate type to suit saddles being used or super high impact PVC manufactured to KS 04 – 179 : 1983.

Small circular pattern boxes are to be used with conduits up to and including 25mm outside diameter. Rectangular pattern adaptable boxes are to be used for conduits of 32mm outside diameter and larger. For drawing in of cables in exposed runs of conduit, standard pattern through boxes are to be used:

Boxes are to be not less than 50mm deep and of such dimensions as will enable the largest appropriate number of cables for the conduit sizes to be drawn in without excessive bending.

Outlet boxes for lighting fittings are to be of the loop-in type where conduit installation is concealed and the sub-contractor shall allow one such box per fitting, except where fluorescent fittings are specified when two such boxes per fitting shall be fitted flush with ceiling and if necessary fitted with break joint rings. Pattresses shall be fitted where required to outlets on surface conduit runs.

Adaptable boxes are two of PVC or mild steel (of not less than 12swg) and black enamelled or galvanised finish according to location. They shall be of square or oblong shape location. They shall be of square or oblong shape complete with lids secured by four 2 BA brass roundhead screws; No adaptable box shall be less than 75mm x 75mm x 50mm or larger than 300mm x 300mm x 75mm and shall be adequate in depth in relation to the size of conduit entering it. Conduits shall only enter boxes by means of conduit bushes.

## 2.14 LABELS

Labels fitted to switches and fuse boards; -

- (i) Shall be Ivorine engraved black on white.
- (ii) Shall be secured by R.H brass screws of same manufacturing throughout.
- (iii) Shall be indicated on switches: -
  - a) Reference number of switch
  - b) Special current rating
  - c) Item of equipment controlled

- (iv) Shall indicate on MCB panels
  - a) Reference number
  - b) Type of board, i.e.; lighting, sockets, etc.
  - c) Size of cable supplying panel
  - d) where to isolate feeder cable
  
- (v) Shall be generally not less than 75mm x 50mm.

## 2.15 EARTHING

The earthing of the installation shall comply with the following requirements; -

- (i) It shall be carried out in accordance with the appropriate sections of the current edition of the Regulations, for the Electrical Equipment of Buildings issued by Institute of Electrical Engineers of Great Britain.
  
- (ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross sectional area Copper tape shall be provided and all equipment including the lead sheath and armouring of cables, distribution boards and metal frames shall be bonded thereto.
  
- (iii) The earth tape in Sub-clause (ii) shall be connected by means of a copper tape or cable of suitable cross sectional area to an earth electrode which shall be a copper earth rod (see later sub-clause).
  
- (iv) All tapes to be soft high conductivity copper, untinned except where otherwise specified and where run underground on or through walls, floors, etc., it shall be served with corrosion resisting tape or coated with corrosion compound and braided
  
- (v) Where the earth electrode is located outside the building a removable test link shall be provided inside the building as near as possible to the point of entry to the tape, for isolating the earth electrode for testing purposes.
  
- (vi) Earthing of sub-main equipment shall be deemed to be satisfactory where the submain cables are M.I.C.S. or conduit with separate earth wire, and installation is carried out in accordance with the figures stated in the current edition of the I.E.E Regulations.
  
- (vii) Where an earth rod is specified (see Sub-clause (iii) it shall be proprietary manufacture, solid hand drawn copper of 15mm diameter driven into the ground to a minimum depth of 3.6M. It shall be made up to 1.2m sections with internal screw and socket joints and fitted with hardened steel tip and driving cap.
  
- (viii) Earth plates will not be permitted
  
- (ix) Where an earth rod is used the earth resistance shall be tested in the manner described in the current edition of the IEE Regulations, by the Sub-Contractor in the presence of the Engineer and the Sub-Contractor shall be responsible for the supply of all test equipment.

- (x) Where copper tape is fixed to the building structure it shall be by means of purpose made non-ferrous saddles which space the conductor away from the structure a minimum distance of 20mm. Fixings, shall be made using purpose made plugs; No fixings requiring holes to be drilled through the tape will be accepted.
- (xi) Joints in copper tape shall be tinned before assembly riveted with a minimum of two copper rivets and seated solid.
- (xii) Where holes are drilled in the earth tape for connection to items of equipment the effective cross sectional area must not be less than required to comply with the IEE regulations.
- (xiii) Bolts, nuts and washers for any fixing to the earth tape must be of non-ferrous material.
- (xiv) Attention is drawn to the need for the earthing metal parts of lighting fittings and for bonding ball joint suspension in lighting fittings.

## 2.16 CABLES AND FLEXIBLE CORDS

All cables used in this Sub-Contract shall be manufactured in accordance with the current appropriate Kenya standard Specification which are as follows:-

P.V.C. Insulated Cables and Flexible Cords	---	Ks 04-192:1988
P.V.C Insulated Armoured Cables	---	Ks 04-194:1990
Armouring of Electric cables	---	Ks 04-290:1987

The successful Sub-Contractor will, at the Engineers discretion be required to submit samples of cables for the Engineers approval; the Engineer reserves the right to call for the cables of an alternative manufacture without any extra cost being incurred.

P.V.C. insulated cables shall be 500/1000 volt grade. No cables smaller than 1.5mm<sup>2</sup> shall be used unless otherwise specified. The installation and the finish of cables shall be as detailed in later clauses. The colour of cables shall conform to the details stated in the "Cable Braid and insulation Colours" Clause.

## 2.17 ARMOURED P.V.C. INSULATED AND SHEATHED CABLES:

Shall be 600/1000 volt grade manufactured to Ks 04-194:1988 and Ks 04-187/188 with copper stranded conductors.

The wire armour of the cable shall be used wholly as an earth continuity conductor and the resistance of the wire armour shall have a resistance not more than twice of the largest current carrying conductor of the cable.

P.V.C./S.W.A./P.V.C. cables shall be terminated using "Telecom" "B" type or approved equal or approved equal glands and a P.V.C. tapered sleeve shall be provided to shroud each gland.

## 2.18 CABLE SUPPORTS, MARKERS AND TILES



All PVC/SWA/PVC cables run inside the building shall be fixed in rising ducts or on ceilings by means of die cast cable hooks or clamps, of appropriate size to suit cables, fixed by studs and back nuts to their channel sections.

Alternatively, fixing shall be by BICC claw type cleating system with die-cast cleats and galvanised mild steel back straps or similar approved equal method. For one or two cables run together the cleats shall be fixed a special channel section supports or backstraps described above which shall in turn be secured to walls or ceilings of ducts by rawbolts.

In excessively damp or corrosive atmospheric conditions special finishes may be required and the Sub-contractor shall apply to the Engineer for further instructions before ordering cleats and channels for such areas.

The above type of hooks and clamps and channels or cleats and blackstraps shall also be used for securing cables in vertical ducts.

Cables supports shall be fixed at 600mm maximum intervals, the supports being supplied and erected under this Sub-contract. Saddles shall not be used for supporting cables nor any other type of fixing other than one of the two methods described above or other system which has received prior approval of the Engineer;

Cables are to be kept clear of all pipe work and the Sub-contractor shall work in close liaison with other services Sub-contractors.

The Sub-Contractor shall include for the provision of fixing of approved type coloured slip on cables end markers to indicate permanently the correct phase and neutral colours on all ends.

Provision shall be made for supplying and fixing approved non-corrosive metal cable markers to be attached to the outside of all PVC/SWA/PVC cables at 15mm intervals indicating cable size and distinction.

Where PVC/SWA/PVC cables are outside the building they shall be laid underground 750mm deep with protecting concrete interlocking cover tiles laid over which shall be provided and laid under this Sub-contract.

All necessary excavations and reinstatement of ground including sanding or trenches will be carried out by the Sub-Contractor, unless otherwise stated.

## 2.19 PVC INSULATED CABLES

Shall be of non-braided type as CMA reference 6491 x 600/1000/1000-volt grade cables, or equal approved.

PVC cables shall conform to the details of the “Cables and Flexible cords” and “Cable Braid and Insulation Colours” clauses.

2.20 HEAT RESISTING CABLES

Final connections to cookers, water heaters, etc., shall be made using butyl rubber insulated cable as CMA reference 610 butyl (Single core 600/1000 Volt).

This type of cable shall be used in all instances where a temperature exceeding 100°F, but not exceeding 150°F is likely to be experienced. Final connections to all lighting fittings (and other equipment where a temperature in excess of 150°C likely to be experienced) shall be made using silicon rubber insulated cable or equal and approved.

2.21 FLEXIBLE CORDS

Shall be in accordance with the “Cable and Flexible Cords” clause. No cord shall be less than 24/0.2mm in size unless otherwise specified.

Circular white twin TRS flex shall be used for plain pendant fittings up to 100 watts. For all other types of lighting fittings, the flexible cable shall be silicone rubber insulated.

No polythene insulated flexible cable shall be used in any lighting fitting or other appliance (see “Heat Resisting Cables” Clause 30).

2.22 CABLE ENDS AND PHASE COLOURS

All cable ends connected up in switchgear, MCB panels etc, shall have the insulation carefully cut back and the ends sealed with Hellerman rubber slip on cable end markers.

The markers shall be of appropriate phase colour for switch and all other live feeds to the details of the “Cable Insulation Colours” clause. Black cable with black end markers shall only be used for neutral cables.

2.23 CABLE INSULATION COLOURS

Unless otherwise stated in later clauses the insulation colours shall be in accordance with the following table.

Where other systems are installed the cable colours shall be in accordance with the details stated in the appropriate clause.

<u>SYSTEM</u>	<u>INSULATION COLOUR</u>	<u>CABLE END MARKER</u>
1) Main and Sub-Main		
a) Phase	Red	Red
b) Neutral	Black	Black
2) Sub-Circuits Single Phase		
a) Phase	Red	Red

- b) Neutral                                  Black                                  Black

## 2.24 SUB-CIRCUIT WIRING

For all lighting and sockets wiring shall be carried out in the “looping in” system and there shall be no joints whatsoever. No lighting circuits shall comprise more than 20 points when protected by 10A MCB. Cables with different cross-section area of copper shall not be used in combination.

Lighting circuits P.V.C. cable.

- (i) 1.5mm<sup>2</sup> for all lighting circuits indicated on the drawing.  
Power circuits P.V.C cable (minimum sizes).
- (ii) 2.5mm<sup>2</sup> for one, two or three 5Amp sockets wired in parallel.
- (iii) 2.5mm<sup>2</sup> for one 15Amp socket.
- (iv) 2.5mm<sup>2</sup> for maximum of ten switched 13 Amp sockets wired from 30 Amp MCB.

The wiring sizes for lighting circuits and sockets are shown on the drawings. In such cases, the sizes shown on the drawings shall prevail over the sizes specified.

Wiring sizes for other appliances shall be shown on the drawing or specified in later clauses of this specification.

## 2.25 SPACE FACTOR

The maximum number of cables that may be accommodated in a given size of conduit or trunking or duct is not to exceed the number in Tables B.5 and B.6 or as stated in Regulation B.91, B.117 and B.118 of the I.E.E Regulations whichever is appropriate.

## 2.26 INSULATION

The insulation resistance to earth and between poles of the whole wiring system, fittings and lumps, shall not be less than the requirements of the latest edition of the I.E.E Regulations. Complete tests shall be made on all circuits by the Sub-contractor before the installations are handed over.

A report of all tests shall be furnished by the Sub-Contractor to the Engineer. The Engineer will then check test with his own instruments if necessary.

## 2.27 LIGHTING SWITCHES

These shall be mounted flush with the walls, shall be contained in steel or alloy boxes with a screwless front plate and shall be of the gangs' ratings and type shown in the drawings. They shall be as manufactured by M.K. Electrical Ltd., or other equal and approved to KS 04 – 247: 1988.

#### 2.28 SOCKETS AND SWITCHED SOCKETS

These shall be flush pattern in steel/pvc box and shall be of the gangs and type specified in the drawings.

They shall be 13- Amp, 3-pin, shuttered, switched with a screwless front plate and as manufactured by “M.K. Electrical Co. Ltd.”, or other approved equal to KS 04 – 246: 1987.

#### 2.29 FUSED SPUR BOXES

These shall be flush, D.P switched as in steel/pvc box and of type and make specified in the drawings complete with pilot light and as manufactured by “M. K. Electrical Company Ltd”, or other approved equal. KS 04 – 247: 1988

#### 2.30 COOKER OUTLETS

These shall be flush mounted with 13-A switched socket outlet and neon indicator Lamps with a screwless front plate.

The cooker control units shall be as manufactured by “M.K. Electrical Company Ltd”, or other approved equal KS 04 – 247: 1988

#### 2.31 CONNECTORS

Shall be specified in the drawings and appropriate rating. These shall be fitted at all conduit box lighting point outlets for jointing of looped P.V.C cables with flexible cables of specified quality.

#### 2.32 LAMPHOLDERS

Shall be of extra heavy H.O skirted and shall be provided for every specified lighting fitting and shall be B.C.; E.S.; or G.E.S as required. All E.S. and G.E.S. holders shall be heavy brass type (except for plain pendants where the reinforced bakelite type shall be used). The screwed cap of the E.S and G.E.S. holders shall be connected to the neutral.

Where lampholders are supported by flexible cable, the holders shall have “cord grip” arrangements and in the case of metal shades earthing screws shall be provided on each of the holders.

The Sub-Contractor must order the appropriate type of holder when ordering lighting fittings, to ensure that the correct types of holders are provided irrespective of the type normally supplied by the manufacturers.

## 2.33 LAMPS

All lamps shall be suitable for normal stated supply voltage and the number and sizes of lamps detailed on the drawings shall be supplied and fixed. The Sub-Contractor must verify the actual supply voltage with the supply authority before ordering the lamps.

Tungsten filament lamps shall be manufactured in accordance with KS 04 – 112:1978 for general service lamps and KS 04 – 307:1985 for lamps other than general services. Tubular fluorescent lamps shall comply with KS 04 – 464:1982

Pearl lamps shall be used in all fittings unless otherwise specified.

## 2.34 LIGHTING FITTINGS AND STREET LIGHTING LANTERNS

This Sub-Contract shall include for the provision, handling charges, taking the delivery, safe storage, wiring (including internal wiring) assembling and erecting of all lighting fittings shown on the drawings.

All fittings and pendants shall be fixed to the conduit boxes with brass R/H screws. These to be in line with metal finish of fittings. The lighting fittings are detailed for the purpose of establishing a high standard of finish and under no circumstances will substitute fittings be permitted.

In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to the central conduit box fittings. Supports shall be provided and fixed by the Sub-Contractor.

The whole of the metal work of each lighting fittings shall be effectively bonded to earth. In the case of ball and/or knuckle joints short lengths of flexible cable shall be provided, bonded to the metal work on either side of the joints. If the above provisions are not made by the manufacturers -, the Sub-contractor shall include cost of additional work necessary in his tender. See “Flexible Cords” clause for details of internal wiring of lighting fittings.

Minimum size of internal wiring shall be 20/0.20mm (23/0067). Each lighting fitting shall be provided with number type and size of lamps as detailed on the drawings. It is to be noted that some fittings are suspended as shown on the drawings.

Where two or more points are shown adjacent to each other on the drawings, e.g. socket outlet and telephone outlet, they shall be lined up vertically or horizontally on the centre lines of the units concerned.

Normally, the units shall be lined up on vertical centre lines, but where it is necessary to mount units at low level they shall be lined up horizontally.

## 2.35 POSITIONS OF POINTS AND SWITCHES

Although the approximate positions of all points are shown on the drawings, enquiry shall be made as to the exact positions of all M.C.B panels, lighting points, socket outlets etc, before work is actually commenced. The Sub-contractor must approach the Architect with regard to the final layout of all lights on the ceiling and walls.

The Sub-contractor must consult with the Engineer in liaison with the Clerk of Works, or the General Foreman on site regarding the positions of all points before fixing any conduit etc. The Sub-Contractor shall be responsible for all alterations made necessary by the noncompliance with the clause.

#### 2.36 STREET/SECURITY OUTDOOR LIGHTING COLUMNS:

The column shall be at a minimum of 225mm in the ground on 75mm thick concrete foundations and the pole up to 150mm shall be surrounded with concrete. The top bracket and plain section of the columns shall be common to and interchangeable with all brackets with maximum mismatching tolerance of 3mm between any pole and bracket. After manufacture and before erection the columns shall be treated with an approved mordant solution which shall be washed off and the whole allowed to dry. Thereafter, the columns shall be painted with one undercoat and two coats of gloss paint to an approved colour. All columns shall be complete with fused cut-outs.

#### 2.37 TIMING CONTROL SWITCH

These shall be installed where shown on the drawings. Photocell timing control circuits which will operate 'on' with a specified level of darkness and 'off' with a given level of light. The initial adjustment will be done with approval of the Electrical Engineer.

#### 2.38 WIRING SYSTEM FOR STREET LIGHTING

Cables shall be as indicated on the drawings, and shall be laid in a cable trench 450mm deep along the road sides and 600mm deep across the roads and 900mm away from the road kerb or 1500mm away from the edges of the road. 'Loop-in' and 'Loop-out' arrangement shall be used at every pole. Wiring to the lanterns on each pole shall be with 1.5mm<sup>2</sup> PVC twin insulated and sheathed cable with earth wire shall be laid at least 600mm below the finished road level on a compact bed of murram at least 50mm thick and covered with a concrete surrounded 150mm thick.

#### 2.39 METAL CONTROL PILLAR

These shall be metal clad and fabricated as per contract drawings and specification. The SubContractor shall supply, install, test and commission control pillars including supplying, fixing connecting switchgears as detailed on the appropriate drawings.

#### 2.40 CURRENT OPERATED EARTH LEAKAGE CIRCUIT BREAKER

Current operated earth leakage circuit breaker shall conform to B.S.S. 4293:68 rated at 240 volts D.P. 50 cycles A.C. Mains.

The breaker shall be provided with test switch and fitted in weather proof enclosure for surface mounting. The rated load current and earth fault operating current shall be as specified in the drawings. These shall be as manufactured by Crabtree, Siemens or other equal and approved.

#### 2.41 M.V. SWITCHBOARD AND SWITCHGEAR

The switchboard shall be manufactured in accordance with KS04-226 which co-ordinates the requirements for electrical power switchgear and associated apparatus. It is not intended that this K.S. should cover the requirements for specified apparatus for which separate Kenyan Standard exist. All

equipment and material used in the switchboard shall be in accordance with the appropriate Kenya Standard.

The switchboard shall comprise the equipment shown on the drawings together with all current transformers, auxiliary fuses, labels, small wiring and interconnections necessary for the satisfactory operation of the switchboard.

The Switchboard shall be of the flush fronted, enclosed, metal clad type with full front or rear access as called for in the particular specifications, suitable for indoor use, sectionalized as necessary to facilitate transport and erection. The maximum height of the switchboard is to be approximately 2.0 metres. A suitable connection chamber containing all field terminals shall be provided at the top or bottom of the switchboard as appropriate.

Before manufacture, the Sub-Contractor shall submit to the consulting Engineer for approval of detailed drawings showing the layout, construction and connection of the switchboard.

All bus-bars and bus-bar connections shall consist of high conductivity copper and be provided in accordance with KS 04-226: 1985. The bus-bars shall be clearly marked with the appropriate phase and neutral colours which should be red, yellow, blue for the phases and black for neutral. The bus-bars shall be so arranged in the switchboard that the extensions to the left and right may be made in the future with ease should the need arise.

Small wiring, which will be neatly arranged and cleated, shall be executed in accordance with B.S. 158 and the insulation of the wiring shall be coloured according to the phase or neutral connection.

Switches and fuse switches, shall be in strict accordance with KS04-183:1978 Class 2 switches. Means of locking the switch in the "OFF" position shall be provided.

All fuse switches shall comply with KS04-183:1978, PARTS 2 and 3 a fault rating at least equal to the fault rating of the switchboard in which they are installed. Cartridge fuse links to KS 04-183:1978 category A.C. 46, class Q1 and fusing factor not exceeding 1.5 shall be supplied with each fused switch.

Mounting arrangements shall be such that individual complete fuse switches may be disconnected and withdrawn when necessary without extensive dismantling work.

When switches are arranged in their formation all necessary horizontal and vertical barriers shall be provided to ensure segregation from adjacent units. Means of locking the switch in the "OFF" position shall be provided.

## 2.42 STEEL CONDUITS AND STEEL TRUNKING

Conduits shall be of heavy gauge class "B" welded to Standard specification KS 04-180:1985. In no case will conduit smaller than 20mm diameter be used on the works. Conduits installed within buildings shall be black enamelled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanised. Conduit fittings, accessories or equipment used in conjunction with galvanised conduits shall also be galvanised or otherwise as approved by the service engineer.

Metal trunking shall be fabricated from mild steel of not less than 18 swg. All sections of trunking shall be rigidly fixed together and attached to the framework or fabric or the building at intervals of not less than 1.2m. Joint trunking shall not overhang fixing points by more than 0.5m.

All trunking shall be made electrically continuous by means of 25 x 3mm copper links across each joint and where the trunking is galvanised, the links shall be made by galvanised flat iron strips.

All trunking fittings (i.e. Bends, tees, etc) shall leave the main through completely clear of obstructions and continuously open except through walls and floors at which points suitable fire resisting barriers shall be provided as may be necessary. The inner edge of bends and tees shall be chamfered where cables larger than 35mm<sup>2</sup> are employed.

Where trunking passes through ceilings and walls the cover shall be solidly fixed to 150mm either side of ceilings and floors and 50mm either side of walls.

Screws and bolts securing covers to trunking or sections of covers together shall be arranged so that damage to cables cannot occur either when fixing covers or when installing cables in the trough.

Where trunking is used to connect switchgear or fuseboards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

Where vertical sections of trunking are used which exceed 4.5m in length, staggered tie off points shall be provided at 4.5m intervals to support the weight of cables.

Unless otherwise stated, all trunking systems shall be painted as for conduit.

Where a wiring system incorporates galvanised conduit and trunking, the trunking shall be deemed to be galvanised unless specified otherwise.

The number of cables to be installed in trunking shall be such as to permit easy drawing in without damage to the cables, and shall in no circumstances be such that a space factor of 45% is exceeded.

Conduit and trunking shall be mechanically and electrically continuous. Conduit shall be tightly screwed between the various lengths so that they butt at the socketed joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects.

Oil and any other insulating substance shall be removed from the screw threads; where conduits terminate in fuse-gear, distribution boards, adaptable boxes, non-spouted switchboxes, etc., they shall, unless otherwise stated, be connected thereto by means of smooth bore male brass bushes, compression washers and sockets. All exposed threads and abrasions shall be painted using an oil paint for black enameled tubing and galvanizing paint for galvanised tubing immediately after the conduits are erected. All bends and sets shall be made cold without altering the section of the conduit.

The inner radius of the bend shall not be less than four (4) times the outside diameter of the conduit. Not more than two right angle bends will be permitted without the inter-position of a draw-in-box. Where straight runs of conduit are installed, draw-in-boxes shall be provided at distances not exceeding 15m. No tees, elbows, sleeves, either of inspection or solid type, will be permitted.

Conduit shall be swabbed out prior to drawing in cables, and they shall be laid so as to drain of all condensed moisture without injury to end connections.



Conduits and trunking shall be run at least 150mm clear of hot water and steam pipes, and at least 75mm clear of cold water and other services unless otherwise approved by the services engineer.

All boxes shall conform to KS 04 – 668: 1986, to be of malleable iron, and black enamelled or galvanized according to the type of conduit specified. All accessory boxes shall have threaded brass inserts.

Box lids where required shall be heavy gauge metal, secured by means of zinc plated or cadmium plated steel screws.

All adaptable boxes and lids of the same size shall be interchangeable. Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.

Where used in conjunction with mineral insulated copper sheathed cable, galvanized boxes shall be used and painted after erection.

Draw-in boxes in the floors are generally to be avoided but where they are essential they must be grouped in positions approved by the services engineer and covered and by the suitable floor traps, with non-ferrous trays and covers.

The floor trap covers are to be recessed and filled in with a material to match the floor surface.

The Sub-contractor must take full responsibility for the filling in of all covers, but the filling in material will be supplied and the filling carried out by the main building contractor.

Where buried in the ground outside the building the whole of the buried conduit is to be painted with two coats of approved bitumastic composition before covering up.

Where run on the surface, unpainted fittings and joints shall be painted with two coats of oil bound enamel applied to rust and grease free metalwork.

## 2.43 TESTING ON SITE

The Sub-contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specification and the Electric Supply Company's By-Laws.

- (a) Tests shall be carried out to prove that all single pole switches are installed in the 'live' conductor.
- (c) Tests shall be carried out to prove that all socket outlets and switched socket outlets are connected to the 'live' conductor in the terminal marked as such, and that each earth pin is effectively bonded to the earth continuity system. Tests shall be carried out to verify the continuity of all conductors of each 'ring' circuit.

- (d) Phase tests shall be carried out on completion of the installation to ensure that correct phase sequence is maintained throughout the installation. Triplicate copies of the results of the above tests shall be provided within 14 days of the witnessed tests and the Subcontractor will be required to issue to the service engineer the requisite certificate upon completion as required by the regulations referred to above.
- (e) Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparently by such inspections or tests shall be rectified by the Sub-contractor at his own expense.
- (f) The Sub-contractor shall provide accurate instruments and apparatus and all labour required to carry out the above tests. The instruments and apparatus shall be made available to the services engineer to enable him to carry out such tests as he may require.
- (g) The Sub-contractor shall generally attend on other contractors employed on the project and carry out such electrical tests as may be necessary.
- (h) The Sub-contractor shall test to the services engineer's approval and as specified elsewhere in this specification or in standards and regulations already referred to, all equipment, plant and apparatus forming part of the works and before connecting to any power or other supply and setting to work.
- (i) Where such equipment, etc., forms part of or is connected to a system whether primarily or of an electrical nature or otherwise (e.g. air conditioning system) the Sub-contractor shall attend on and assist in balancing, regulating testing and commissioning, or if primarily an electrical or other system forming part of works, shall balance, regulate, test and commission the system to the service engineer's approval.

#### APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

The electrical sub-contractor shall comply with the following: -

1. Government Electrical Specifications No. 1 and No. 2.
2. All requirements of Kenya Power and Lighting Company Limited, and Communications Authority of Kenya (CAK).



SECTION B  
PARTICULAR SPECIFICATIONS  
OF  
MATERIALS AND WORKS

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Electrical works

## PARTICULAR AND TECHNICAL SPECIFICATIONS OF MATERIALS AND WORKS FOR ICT WORKS

### SITE LOCATION

The site of the proposed works is at KEGONGA LEVEL IV HOSPITAL

### SCOPE OF WORKS

The works to be carried out under this sub-contract comprise supply, installation, testing and commissioning of the following: -

(a) Electrical Works

This shall include conduiting, cabling, fittings and accessories.

(b) Voice and data installation works

This shall include conduiting and Trunking.

(c) Lightning Protection

This shall include air terminations, copper tape, junction clamps, test clamps and earthing.

(d) TV Installation

This shall include the following: -

- Master Antenna Television (M.A.T.V)
- Cabling using low attenuation TV co- axial cable
- TV outlet plates

### MATERIALS FOR THE WORKS

Materials shall be as specified in Section F and in the Bills of Quantities of this document which shall be read in conjunction with contract drawings. Alternative materials shall be accepted only after approval by the Project Electrical Engineer.

**PART A: PARTICULAR SPECIFICATIONS FOR ELECTRICAL INSTALLATION WORKS**

**1. SITE LOCATION**

The site of the proposed works is at KEGONGA LEVEL IV HOSPITAL

**1. SCOPE OF WORKS**

The works to be carried out under this sub-contract comprise supply, installation, testing and commissioning of the following: -

- a) Electrical Works  
This shall include conduiting, cabling, fittings and accessories.
- b) Telephone and data installation  
This shall include conduiting, Trunking and data outlet plates.

**2. MATERIALS FOR THE WORKS**

Materials shall be as specified in Section D and in the Bills of Quantities of this document which shall be read in conjunction with contract drawings. Alternative materials shall be accepted only after approval by the Project Manager.

**3. BROCHURES FOR FIRE ALARM PANEL & ANY ELECTRICAL EQUIPMENT AND FITTINGS**

For consideration and qualification tenderers shall, at their own cost, provide coloured manufacturer's brochures detailing technical literature and specifications where applicable.

**4. MINIMUM SPECIFICATIONS FOR FIRE ALARM**

Fire alarm shall be the addressable type and capable of integration with other brands of other manufacturers.

**5. MINIMUM SPECIFICATIONS FOR LED LIGHTING FITTINGS**

LED TUBES, PANELS & BULBS LIGHT FITTING TECHNICAL SPECIFICATIONS IEC Compliant		
Item	Minimum Specifications	Proposed solution
Brand	State the brand, model and attach Technical Brochure (Mandatory)	

Operating	<input type="checkbox"/> voltage range: 130-300 V ac <input type="checkbox"/> frequency range: 50-60Hz <input type="checkbox"/> Power factor $\geq 0.9$ lagging <input type="checkbox"/> Total Harmonic Distortion (THD) $<15\%$ <input type="checkbox"/> Ambient temperature range -10 to +35 °Operating <input type="checkbox"/> Colour Consistency $\leq 5\text{SDCM}$	
Performance	<input type="checkbox"/> System efficacy $> 90\text{lm/W}$	
	<input type="checkbox"/> Lamp colour temperature: Offices/Task areas: 4000K - 6500K Residential areas: 3000K – 4000K <input type="checkbox"/> Colour Rendering Index $\geq 80$ <input type="checkbox"/> Median useful life $\geq 30000$ hr	
Standards Compliance	CB/EMC/CE	
General	<input type="checkbox"/> Driver/power unit/transformer - PSU-E <input type="checkbox"/> Backlit type <input type="checkbox"/> Protection class IEC - Safety class II (II)	

Bidders must provide Technical Brochures to assess their technical compliance with these specifications

## PART B: PARTICULAR SPECIFICATIONS FOR STRUCTURED CABLING WORKS

### 1.0 NETWORK CABINETS

- a) To be located on each floor in designated rooms as indicated in the electrical drawings.
- b) Must be metallic (appropriately sized as specified in the BQ) with a front clear glass, freestanding, complete with lock and key and the following accessories;
  - Cable Management channel rack
  - Cable support hooks
  - Cable support rings and straps
  - Cable duct cover
  - Feed through cable panels
  - Vented equipment shelving
  - Blank filler panels
  - Hinged wall mounted brackets



- Glass viewing window
  - Colored Designation strips
  - Management lock and key
  - Cooling extractor fans
  - Caster wheels
  - Inbuilt 2-gang power socket outlet
- c) Power to the cabinet shall be switched off from within the cabinets. Proper power socket cables to be supplied with the cabinet.
- d) The cabinet for active devices shall conform to ANSI/TIA/EIA-568A specifications with forced cooling

## 2.0 CABLES

### 2.1) STP CABLE

The STP cable must be category 6A compliant STP cable, with the following specifications;

- a) 4-pair cables with 100-ohm impedance.
- b) Compliant to standards such as TIA/EIA – 268-B. 2-1 and IEC 61156-5
- c) Made of polyethylene insulation
- d) Pulling force should support up to 50N/mm<sup>2</sup>
- e) Low Smoke Zero Halogen outer sheath

### 2.2) OPTICAL FIBRE CABLE

The fibre cable must be 8 core multimode fibre with the following specifications: -

- a) Cable size: 8 core.
- b) Termination: SC Duplex connectors.
- c) Graded Index: Nominal 62.5/125 micro. m

## 3.0 CAT 6A PATCH PANELS

The Contractor shall provide factory made patch panels, Cat 6A complete with cable management and front designation strips, 110 PCB mounted connectors and integral RJ mounted jack sockets.

## 4.0 FIBER PATCH PANELS

All Backbone Fiber links to individual floors should be terminated on Fiber Patch Panels. Connector interfaces should support ST, Sc simplex, Sc duplex, FC, LC or MT-RJ.

## 5.0 BACK BONE

Backbone cabling inclusive of switches and all necessary accessories shall be carried out in readiness for the termination of edge switches.

The Backbone cabling shall be flexible and allow for easy ‘add on’s’ for future expansions. Hence enough capacity shall be allowed for future expansion.

## 6.0 EDGE/FLOOR SWITCHES

These shall be per floor/wing and have enough capacity for expansion

SECTION C

SCHEDULE OF CONTRACT DRAWINGS

SCHEDULE OF CONTRACT DRAWINGS

DRAWING NO.	DRAWING TITLE
As shall be issued by the Engineer	

NOTE:

Tenderers are advised to inspect the electrical drawings at the office of the Chief Engineer (Electrical) – State Department for Public Works, at Chief Engineer’s (Electrical) Office, Hill Plaza Building, Community area, Nairobi along Ngong road, during normal working hours.

## SECTION D

### TECHNICAL SCHEDULE

#### TECHNICAL SCHEDULE

1. The technical schedule shall be submitted by tenderers to facilitate and enable the Project Manager to evaluate the tenders, especially where the tenderer intends to supply or has based his tender sum on equipment, which differs in manufacture, type or performance from the specifications indicated by the Project Manager.
2. This schedule shall form part of the technical evaluation criterion, and tenderers are therefore advised to complete the schedule as they shall be considered nonresponsive.

D/1

TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED  
(To be completed by the Tenderer)

ITEM	DESCRIPTION	TYPE/MAKE	MODEL	COUNTRY OF ORIGIN
------	-------------	-----------	-------	-------------------

1	Light Fittings			
2	Switches/sockets			
3	Power Cables			
4	Metallic Trunking			
5	Distribution Board			
6	CircuitBreakers (MCBs/MCCBs)			
7	Patch panels			
8	Patch cords			
9	CAT 6A Cables			

SECTION E  
SCHEDULE OF UNIT RATES

## SCHEDULE OF UNIT RATES

1. The tenderer shall insert unit rates against the items in the following schedules and may add such other items as he considers appropriate.
2. The unit rates shall include for supply, transport, insurance, delivery to site, storage as necessary, assembling, cleaning, installing, connecting, profit and maintenance in defects liability and any other obligation under this contract.
3. The unit rates will be used to assess the value of additions or omissions arising from authorized variations to the contract works.
4. Where trade names or manufacturer's catalogue numbers are mentioned in the specification, the reference is intended as a guide to the type of article or quality of material required. Alternative brands of equal and approved quality will be accepted.
5. The prices quoted shall be deemed to include for all obligations under the subcontract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (including V.A.T and all taxes applicable at the time of tender.



E/1

SCHEDULE OF UNIT RATES

(To be completed by the Tenderer)

ITEM	DESCRIPTION	QTY/UNIT	RATE(KSHS)
1.	100A MCCB	1No.	
2.	Industrial socket outlets, 5 pin: a) 20A b) 32A c) 40A	1No. 1No. 1No.	
3.	IP 65 rated Isolators as KATKO, 3 Phase a) 40A	1No.	
4.	PVC/SWA/PVC Copper cable: a) 16.0mm sq. 2 core b) 16.0 mm sq 4core c) 6.0 mm sq 4core	1M 1M 1M	
5.	Distribution Boards/Consumer unit as Merlin Gerin or an approved equivalent: a) 8 Way TPN Distribution Board b) 12way Consumer unit c) 4-way consumer unit d) 6way consumer unit	1No. 1No. 1No. 1No.	
6.	Network Cabinets a) 42U Data Cabinet b) 12U Data Cabinet	1No. 1No.	

SECTION F  
BILLS OF QUANTITIES

BILLS OF QUANTITIES

SPECIAL NOTES FOR BILLS OF QUANTITIES

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.

2. The prices quoted shall be deemed to include for all obligations under the subcontract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (including V.A.T and all taxes applicable at the time of tender.

3 All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part.

4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere to. Otherwise alternative brands of equal and approved quality will be accepted.

Should the sub-contractor install any material not specified here in before receiving approval from the Project Manager, the sub-contractor shall remove the material in question and, at his own cost, install the proper material.

5. The grand total of prices in the price summary page must be carried forward to the Form of Tender.

6. Tenderers must enclose, together with their submitted tenders, detailed manufacturer's Brochures detailing Technical Literature and specifications on the items they intend to offer.

This shall be used in the tender evaluation to determine the first line aesthetics and quality of fittings offered.

F/1

Statement of Compliance

- a) I confirm compliance of all clauses of the General Conditions, General Specifications and Particular Specifications in this tender.
- b) I confirm I have not made and will not make any payment to any person, which can be perceived as an inducement to win this tender.

Signed: .....for and on behalf of the Tenderer

Date: .....

Official Rubber Stamp: .....

ELECTRICAL INSTALLATION WORKS

PROPOSED KEGONGA LEVEL IV HOSPITAL ELECTRICAL INSTALLATION WORKS BILL NO.1: SUB-CONTRACT PRELIMINARIES					
ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT(Kshs)
1	Discrepancies clause 1.02				
2	Conditions of sub-contract Agreement clause 1.03				
3	Payments clause 1.04				
4	Site location clause 1.06				
5	Scope of contract works clause 1.08				
6	Extent of contractors duties clause 1.09				
7	Firm price contract clause 1.12				
8	Variation clause 1.13				
9	Prime cost and provisional sum clause 3.14 (insert profit and attendance which is a percentage of expended PC or provisional sum				
10	Bond clause 1.15	1	item		
11	Government legislation and regulations clause 1.16				
12	Import duty and VAT clause 1.17 (Note this clause applies for materials supplied only VAT will also be paid by the subcontractors as allowed in eh summary page)				

ELECTRICAL INSTALLATION WORKS

13	Insurance company fees clause 1.18				
14	Provision of services by the Main contractor clause 1.19				
15	Samples and materials generally clause 1.21				
Sub Total carried to page H/6					-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT(Ksh.)
16	Supplies clause 1.20				
17	Bills of quantities clause 1.23				
18	Contractors office in Kenya clause 1.24				
19	Builders work clause 1.25				
20	Setting to work and regulating system clause 1.29				
21	Identification of plant components clause 1.30				
22	Working drawings clause 1.32				
23	Records Drawings (As Installed) and instructions clause 1.33				
24	Maintenance Manual clause 1.34				
25	Hand over clause 1.35				
26	Painting clause 1.36				
27	Testing and inspection - manufactured plant clause 1.38				
28	Testing and inspection - installation clause 1.39				

ELECTRICAL INSTALLATION WORKS

29	Storage of materials clause 1.41				
30	Initial Maintenance Clause 1.42				
31	Attendance Upon Tradesmen etc (Insert percentage only) clause 1.58				
32	Local and other authorities notice clause 1.60				
33	Temporary Works clause 1.63				
34	Patent Rights clause 1.64				
35	Mobilization and Demobilization clause 1.65				
Sub Total carried to page H/6					-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT(Ksh.)
36	Extended preliminaries clause 1.66 (see Appendix - clause 1.70)				
37	Supervision by Engineer and site meetings clause 1.67	1	item	300,000	300,000.00
38	Allow for profit,tax and attendance for the above	1	%		
39	Amendment to Scope of subcontract works clause 1.68				
40	Contract obligation and employers obligation clause 1.69				
41	Any other preliminaries				

ELECTRICAL INSTALLATION WORKS

	Subtotal brought forward from page H/4	-
	Subtotal brought forward from page H/5	-
	Subtotal brought forward from page H/6	
	Total for Bill No 1 Carried Forward to Main Summary Page	



KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

BILL NO.2

SCHEDULE No. 1: GROUND FLOOR - WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				
A	<b>LIGHTING POINTS</b>				
1.00	Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	34	No		
	b) Two way switching	73	No		
	c) Unswitched	2	No		
1.01	Lift Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors	1	No		
1.02	Signage point wired in 3 x 1.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 20 mm Ø HG PVC conduits concealed in building fabric complete with all the necessary accessories	3	No		
B	<b>LIGHTING FITTINGS</b>				
1.03	10Amp concealed Screw Ivory Switch Plates flush mounted on walls as MK or approved equivalent. a) 1 gang 1 way	34	No		
	b) 1gang 2 way	16	No		
	c) 2gang 1 way	3	No		
	d) 2gang 2 way	1	No		
1.04	Light Fittings complete with all accessories and lamps as follows:				
	a) Standard 600mm x 600mm, Recessed, LED daylight Panel Light complete with driver as PHILLIPS or approved equivalent.	46	No		
	b) Ditto but with emergency pack.	16	No		
	c) Circular Ceiling Slim Downlight as PHILLIPS DN135B LED20S CORELINE or approved equivalent for Passage	10	No		
	d) Circular Recessed Ceiling Spotlight as PHILLIPS Cat. No. RS 100B LED 8 10S CORELINE or approved equivalent.	8	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

	e) Maintained Emergency LED EXIT sign as PHILIPS or approved equivalent	2	No		
	Total carried forward to Next page				-

SCHEDULE No.1 CONT'D - GROUND FLOOR - WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
	f) 14 Watts TL5 LED Mirror light fitting as PHILIPS or equal and approved	6	No		
	g) Outdoor LED luminaire for external areas as Phillips EnduraLED Bulkhead or approved equivalent (TYPE BH)	16	No		
	i)Cleanroom luminaire module size 300x1200mm, 5500 lumens complete with Emergency pack as , PHILIPS LED CR150B for Theatres.	4	No.		
	j) Infrared presence detector for washroom installation height upto 4m, 360 degrees angles of coverage, reach 20m max	4	No.		
	k) Modern hanging decorative pendants as approved by the client for the reception	10	No.		
C	SOCKET OUTLET AND POWER POINTS				
1.05	13A Ring Mains Raw power Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	49	No		
1.06	13A Twin Ivory sockets outlets as MK or approved equivalent	49	No		
1.07	13A Ring Mains Clean Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate for the theatre	8	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

1.08	13A Splashproof twin socket outlets as in MK or approved equivalent.	8	No		
Total carried forward to Next page					-

SCHEDULE No.1 CONT'D - GROUND FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
1.09	Air Conditioning Power Point comprising wiring in 5x4.0mm <sup>2</sup> PVC-SC-CU cables in concealed PVC conduits for theatre plant room	1	No		
1.10	20A DP Ivory Switch as in MK or any other approved equivalent.	1	No		
1.11	Data/Telephone outlets points comprising of 20mm Ø HG PVC conduits and complete with a draw wire.	11	No		
1.12	TV Outlet points wired with 75 Ohms coaxial cable drawn in concealed 20mm Ø PVC HG conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	3	No		
1.13	Flat TV single coaxial, Ivory type, socket plate as MK or approved equivalent.	3	No		
1.14	Theatre lamp 20 Amps double pole switches with neon indicator as CLIPSAL or approved equivalent	1	No		
1.15	Automatic Hand drier point completely wired in 3x2.5mm <sup>2</sup> PVC CU cables drawn in concealed 25mm HG PVC conduits (Average length per point 30 LM).	3	No.		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

1.16	20A DP Ivory Switch as in MK or any other approved equivalent.	3	No		
1.17	Macerator DP power point comprising of 3 x 4 mm <sup>2</sup> SC PVC insulated CU cables drawn in 32 mm Ø HG PVC conduits	1	No		
1.18	20 Amps double pole switches with neon indicator as CLIPSAL or approved equivalent	1	No		
1.19	Power Point comprising wiring in 5x6.0mm <sup>2</sup> PVC-SC-CU cables in concealed PVC conduits for radiology	2	No		
Total carried forward to Next page					-

SCHEDULE No.1 CONT'D - GROUND FLOOR - WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
1.20	32A TPN isolator as in MK or any other approved equivalent.	2	No		
<b>D BEDHEAD UNITS</b>					
1.21	Lighting point wired in 3x1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	13	No		
1.22	13A Ring Mains Raw power Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	26	No		
1.23	Powder coated metal clad, Bedhead unit comprising of 2 No. 600mm, 18 Watts LED light fittings (Reading and night light), Patient Nurse-call call cord, 1 No. RJ45 data outlet and 2 No. 13Amps 240V Twin socket outlet.	13	No		
<b>E CONSUMER UNITS / DISTRIBUTION BOARDS &amp; SUB-MAINS</b>					

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

1.24	Submains circuit comprising of 4Core 16 mm2 PVC/SWA/PVC CU cable laid on cable tray complete with all the necessary accessories from the Meterboard to the Floor Distribution Board.	60	Lm		
1.25	600mm x 100mm, steel, hot dip galvanised, cable ladder for power cables complete with all accessories laid in duct.	4	Lm		
Total carried forward to Next page					-

SCHEDULE No.1 CONT'D - GROUND FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
1.26	6-way 100A TPN distribution board surface mounted complete with 100 A TPN integral isolator and lockable cover and all accessories excluding MCBs as HAGER or approved equivalent	1	No		
1.27	The following MCBs as HAGER or approved equivalent for item above. i)10A SP MCB	3	No		
	ii)20A SP MCB	3	No		
	iii)32A SP MCB	3	No		
	iv)20A TP MCB	1	No		
	v)Blanking Plate	6	No		
1.28	300mm x 50mm perforated, steel, hot dip galvanised, cable tray for power cables complete with all fixing/anchoring accessories.	30	LM		
F	<u>FIRE DETECTION AND ALARM SYSTEM</u> Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
1.29	Fire alarm point completely wired in wired in 2x1.5mm2 heat resistant screened cables drawn in 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	29	No.		
1.30	Addressable optical smoke detector as MENVIER or equal and approved.	25	No.		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

1.31	Addressable Electronic Fire Alarm sounder complete with Red Flashing beacon as MENVIER or approved equivalent.	2	No.		
Total carried forward to Next page					-

SCHEDULE No.1 CONT'D - GROUND FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
1.32	Addressable/Resettable manual call point (Break-glass) incorporating integral short circuit isolator and reset key as Menvier or Approved Equivalent	2	No.		
G	<u>NURSE CALL SYSTEM</u>				
1.33	Nurse call system points comprising of wiring in 8 core PVC insulated copper cable drawn in concealed 20mm dia. HG conduits	35	No.		
1.34	Wall mounted dome over door lights for Nurse call system.	4	No.		
1.35	Nurse call system patient call/ nurse reset switch on bedhead unit complete with patient Nurse call cord on bedhead unit as Intercall or approved equivalent	20	No.		
1.36	Control panel with a minimum of 48 No. patient stations, lamp test facility for the dome lights and LEDs, continuous supervision of addressable devices to Engineer's approval as Intercall or approved equivalent	1	No.		
1.37	Nurse call system ceiling pull cord call switch in toilet area as Intercall or approved equivalent	7	No.		
1.38	Nurse call system patient call/ nurse reset switch in toilet area as Intercall or approved equivalent	1	No.		
1.39	Nurse call system pull cord call switch in assisted bath as Intercall or approved equivalent	2	No.		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

1.40	Nurse call system patient call/ nurse reset switch in assisted bath as Intercall or approved equivalent	1	No		
H	<u>SECURITY SYSTEMS</u>				
1.41	CCTV outlets points comprising of 20mm Ø HG PVC conduits concealed and complete with a draw wire.	6	No		
	Total carried forward to summary page				-

KEGONGA LEVEL IV HOSPITAL ELECTRICAL INSTALLATION WORKS

SCHEDULE No.1 CONT'D - GROUND FLOOR WING B

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				
A	<u>LIGHTING POINTS</u>				
1.42	Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	42	No		
	b) Two way switching	53	No		
	c) Unswitched	2	No		
1.43	Lift Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors	4	No		
B	<u>LIGHTING FITTINGS</u>				
1.44	10A Screwless Ivory Switch Plates flush mounted on walls as MK or approved equivalent. a) 1 gang 1 way	23	No		
	b) 1 gang 2 way	12	No		
	c) 2 gang 2 way	1	No		
1.45	Light Fittings complete with all accessories and lamps as follows:				
	a) Standard 600mm x 600mm, Recessed, LED daylight Panel Light complete with driver as PHILLIPS or approved equivalent.	62	No		
	b) Ditto but with emergency pack.	12	No		
	c) Circular Ceiling Slim Downlight as PHILLIPS DN135B LED20S CORELINE or approved equivalent	7	No		
	d) Circular Recessed Ceiling Spotlight as PHILLIPS Cat. No. RS 100B LED 8 10S CORELINE or approved equivalent.	10	No		
	e) Maintained Emergency LED EXIT sign as PHILIPS or approved equivalent	2	No		
	f) 14 Watts TL5 LED Mirror light fitting as PHILIPS or equal and approved	4	No		
	g) Infrared presence detector for washroom installation height upto 4m, 360 degrees angles of coverage, reach 20m max	4	No.		



KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

SCHEDULE No.1 CONT'D - GROUND FLOOR WING B

	h) Modern hanging decorative pendants as approved by the client for the reception	12	No.		
	Total carried forward to the next page				-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
C	<u>SOCKET OUTLET AND POWER POINTS</u>				
1.46	13A Ring Mains Raw Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	35	No		
1.47	13A Twin Ivory sockets outlets as MK or approved equivalent	35	No		
1.48	Radial Power Point wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric complete with all the necessary accessories excluding 13A Fused Switched Connection Unit for the Fire Alarm Panel.	1	No.		
1.49	Data/Telephone outlets points comprising of 20mm <sup>2</sup> HG PVC conduits and complete with a draw wire.	13	No		
1.50	TV Outlet points wired with 75 Ohms coaxial cable drawn in concealed 20mm <sup>2</sup> PVC HD conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	3	No		
1.51	Flat TV/coax single Ivory socket plate as MK or approved equivalent.	3	No		
1.52	Automatic Hand drier circuit completely wired in 3×2.5mm <sup>2</sup> PVC CU cables drawn in concealed 25mm HG PVC conduits.	2	UNIT		
1.53	20A DP Ivory Switch as in MK or any other approved equivalent.	2	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

SCHEDULE No.1 CONT'D - GROUND FLOOR WING B

1.54	LED Single-panel X-ray film viewer with automatic film activation as DARAY Medical DX4101LED or approved equivalent	6	No		
Total carried forward to the next page					-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
	<u>CONSUMER UNITS / DISTRIBUTION BOARDS &amp; SUB-MAINS</u>				
E					
1.55	Submains comprising 4Core 16 mm <sup>2</sup> PVC/SWA/PVC CU cable laid on cable tray complete with all the necessary accessories from the Meterboard to the Floor Distribution Board.	60	Lm		
1.56	600mm x 100mm, steel, hot dip galvanised, cable ladder for power cables complete with all accessories laid in duct.	4	Lm		
1.57	8-way 100A TPN distribution board surface mounted complete with 100 A TP integral isolator and lockable cover and all accessories excluding MCBs as Harvels	1	No		
1.58	a)The following MCBs asHarvels or approved equivalent for item above. i)10A SP MCB	3	No		
	ii)20A SP MCB	3	No		
	iii)32A SP MCB	3	No		
	iv)32A TP MCB	2	No		
	v)Blanking Plate	9	No		
1.59	300mm x 50mm perforated, steel, hot dip galvanised, cable tray for power cables complete with all accessories.	30	Lm		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

SCHEDULE No.1 CONT'D - GROUND FLOOR WING B

Total carried forward to Next page					-
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ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
F	<u>FIRE DETECTION AND ALARM SYSTEM</u>				
	Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
1.60	Fire alarm point completely wired in wired in 2x1.5mm <sup>2</sup> heat resistant screened cables drawn in 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	27	No.		
1.61	Addressable optical smoke detector as Menvier MENVIER or equal and approved.	21	No.		
1.62	Addressable Electronic Fire Alarm sounder complete with Red Flashing beacon as MENVIER or approved equivalent.	1	No.		
1.63	Addressable Resettable call point incorporating integral short circuit isolator and reset key as Menvier or Approved Equivalent	3	No.		
1.64	1 Loop Addressable fire detection and alarm panel complete with 72 hour stand by batteries, zone indicator lights, test and reset buttons and supervisory buzzer as Menvier or approved equivalent.	1	No.		
1.65	Any other item to complete the installation	1	Item		
H	<u>SECURITY SYSTEMS</u>				

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

SCHEDULE No.1 CONT'D - GROUND FLOOR WING B

1.66	CCTV outlets points comprising of 20mm <sup>2</sup> HG PVC conduits concealed and complete with a draw wire.	3	No		
	Total carried forward to summary page				-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

COLLECTION PAGE FOR GROUND FLOOR

ITEM	DESCRIPTION	AMOUNT
1.00	Total brought forward from G.F Wing A	-
2.00	Total brought forward from G.F Wing B	-
	TOTAL CARRIED TO MAIN SUMMARY PAGE	-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

BILL NO.2

SCHEDULE No. 2: FIRST FLOOR - WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				
A	LIGHTING POINTS				
2.00	Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	65	No		
	b) Two way switching	93	No		
	c) Unswitched	5	No		
2.01	Lift Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors	1	No		
B	LIGHTING FITTINGS				
2.02	10Amp concealed Screw Ivory Switch Plates flush mounted on walls as MK or approved equivalent.				
	a) 1 gang 1 way	29	No		
	b) 1 gang 2 way	11	No		
	c) 2gang 1 way	1	No		
	d) 2gang 2 way	1	No		
2.03	Light Fittings complete with all accessories and lamps as follows:				
	a) Standard 600mm x 600mm, Recessed, LED daylight Panel Light complete with driver as PHILLIPS or approved equivalent.	57	No		
	b) Ditto but with emergency pack.	12	No		
	c) Circular Ceiling Slim Downlight as PHILLIPS DN135B LED20S CORELINE or approved equivalent	12	No		
	d) Circular Recessed Ceiling Spotlight as PHILLIPS Cat. No. RS 100B LED 8 10S CORELINE or approved equivalent.	10	No		
	e) Maintained Emergency LED EXIT sign as PHILIPS or approved equivalent	3	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

	f)Cleanroom luminaire module size 300x1200mm, 5500 lumens complete with Emergency pack as , PHILIPS LED CR150B for Theatres.	8	No.		
Total carried forward to Next page					-

SCHEDULE No.2 CONT'D - FIRST FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
	g) 14 Watts TL5 LED Mirror light fitting as PHILIPS or equal and approved	2	No		
	h) Infrared presence detector for washroom installation height upto 4m, 360 degrees angles of coverage, reach 20m max	4	No.		
C	<u>SOCKET OUTLET AND POWER POINTS</u>				
2.04	13A Ring Mains Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	28	No		
2.05	13A Twin Ivory sockets outlets as MK or approved equivalent	20	No		
2.06	13A Ring Mains Clean Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate for the theatre	8	No		
2.07	13A Splashproof twin socket outlets as in MK or approved equivalent.	8	No		
2.08	Data/Telephone outlets points comprising of 20mm Ø HG PVC conduits and complete with a draw wire.	13	No		

KEGONGA LEVEL IV HOSPITAL ELECTRICAL INSTALLATION WORKS

2.09	TV Outlet points wired with 75 Ohms coaxial cable drawn in concealed 20mm Ø PVC HG conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	2	No		
Total carried forward to Next page					-

SCHEDULE No.2 CONT'D - FIRST FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
2.10	Flat TV/coax single Ivory socket plate as MK or approved equivalent.	2	No		
2.11	Theatre lamp 20 Amps double pole switches with neon indicator as CLIPSAL or approved equivalent	1	No		
2.12	Automatic Hand drier circuit completely wired in 3×2.5mm <sup>2</sup> PVC CU cables drawn in concealed 25mm HG PVC conduits.	4	No.		
2.13	20A DP Ivory Switch as in MK or any other approved equivalent.	4	No		
2.14	Air Conditioning Power Point comprising wiring in 5×4.0mm <sup>2</sup> PVC-SC-CU cables in concealed PVC conduits for theatre plant room	1	No		
2.15	20A TPN isolator as in MK or any other approved equivalent.	1	No		
	<b>D <u>BEDHEAD UNITS</u></b>				
2.16	Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	17	No		



KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

2.17	13A Ring Mains power Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	34	No		
2.18	Powder coated metal clad, Bedhead unit comprising of 2 No. 600mm, 18 Watts LED light fittings (Reading and night light), Patient Nurse-call call cord, 1 No. RJ45 data outlet and 2 No. 13Amps 240V Red Twin socket outlet for clean power	17	No		
Total carried forward to Next page					-

SCHEDULE No.2 CONT'D - FIRST FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
E	<u>CONSUMER UNITS / DISTRIBUTION</u>				
2.19	Submains comprising 4Core 10 mm <sup>2</sup> PVC/SWA/PVC CU cable drawn in cable tray complete with all the necessary accessories from the Meterboard to the Floor Distribution Board.	70	Lm		
2.20	600mm x 100mm, steel, hot dip galvanised, cable ladder for power cables complete with all accessories laid in duct.	4	Lm		
2.21	6-way 100A TPN distribution board surface mounted complete with 100 A TP integral isolator and lockable cover and all accessories excluding MCBs as Harvels	1	No		
2.22	The following MCBs as Harvels or approved equivalent for item above. i)10A SP MCB	3	No		
	ii)20A SP MCB	4	No		
	iii)32A SP MCB	3	No		
	iv)20A TPN MCB	1	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

	v)Blanking Plate	5	No		
2.23	300mm x 50mm perforated, steel, hot dip galvanised, cable tray for power cables complete with all accessories.	30	Lm		
	Total carried forward to next page				-

SCHEDULE No.2 CONT'D - FIRST FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
F	<u>FIRE DETECTION AND ALARM SYSTEM</u>				
	Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
2.24	Fire alarm point completely wired in wired in 2x1.5mm <sup>2</sup> heat resistant screened cables drawn in 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	23	No.		
2.25	Addressable optical smoke detector as Menvier MENVIER or equal and approved.	19	No.		
2.26	Addressable Electronic Fire Alarm sounder complete with Red Flashing beacon as MENVIER or approved equivalent.	2	No.		
2.27	Addressable Resettable call point incorporating integral short circuit isolator and reset key as Menvier or Approved Equivalent	2	No.		
2.28	Any other item to complete the installation	1	Item		
G	<u>NURSE CALL SYSTEM</u>				
2.29	Nurse call system points comprising of wiring in 6 core PVC insulated copper cable drawn in concealed 20mm dia. HG conduits	21	No.		
2.30	Wall mounted dome over door lights for Nurse call system.	4	No.		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

2.31	Nurse call system patient call/ nurse reset switch on bedhead unit complte with patient Nurse call cord on bedhead unit	17	No.		
Total carried forward to next page					-

SCHEDULE No.2 CONT'D - FIRST FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
H	<u>SECURITY SYSTEMS</u>				
2.32	CCTV outlets points comprising of 20mm Ø HG PVC conduits concealed and complete with a draw wire.	4	No		
Total carried forward to summary page					-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

SCHEDULE No.2 CONT'D - FIRST FLOOR WING B

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				
A	<b>LIGHTING POINTS</b>				
2.33	Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	116	No		
	b) Two way switching	42	No		
	c) Unswitched	9	No		
2.34	Lift Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors	3	No		
2.35	10Amp concealed Screw Ivory Switch Plates flush mounted on walls as MK or approved equivalent.				
	a) 1 gang 1 way	25	No		
	b) 1 gang 2 way	9	No		
	c) 2gang 2 way	1	No		
B	<b>LIGHTING FITTINGS</b>				
2.36	Light Fittings complete with all accessories and lamps as follows:				
	a) Standard 600mm x 600mm, Recessed, LED daylight Panel Light complete with driver as PHILLIPS or approved equivalent.	52	No		
	b) Ditto but with emergency pack.	12	No		
	c) Circular Ceiling Slim Downlight as PHILLIPS DN135B LED20S CORELINE or approved equivalent	16	No		
	d) Circular Recessed Ceiling Spotlight as PHILLIPS Cat. No. RS 100B LED 8 10S CORELINE or approved equivalent.	11	No		
	e) Maintained Emergency LED EXIT sign as PHILIPS or approved equivalent	1	No		
	f) 14 Watts TL5 LED Mirror light fitting as PHILIPS or equal and approved	4	No		

KEGONGA LEVEL IV HOSPITAL ELECTRICAL INSTALLATION WORKS

SCHEDULE No.2 CONT'D - FIRST FLOOR WING B

g) Infrared presence detector for washroom installation height upto 4m, 360 degrees angles of coverage, reach 20m max	4	No.		
Total carried forward to next page				-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
C	<u>SOCKET OUTLET AND POWER POINTS</u>				
2.37	13A Ring Mains Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	40	No		
2.38	13A Twin Ivory sockets outlets as MK or approved equivalent	10	No		
2.39	13A Twin Ivory sockets outlets for clean power as MK or approved equivalent	30	No.		
2.40	Data/Telephone outlets points comprising of 20mm Ø HG PVC conduits complete with a draw wire.	6	No		
2.41	TV Outlet points wired with 75 Ohms coaxial cable drawn in concealed 20mm Ø PVC HD conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	4	No		
2.42	Flat TV single coaxial, Ivory type, socket plate as MK or approved equivalent.	4	No		
2.43	Automatic Hand drier circuit completely wired in 3×2.5mm <sup>2</sup> PVC CU cables drawn in concealed 25mm HG PVC conduits.	2	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

SCHEDULE No.2 CONT'D - FIRST FLOOR WING B

2.44	20A DP Ivory Switch as MK or any other approved equivalent.	2	No		
2.45	LED Single-panel X-ray film viewer with automatic film activation as DARAY Medical DX4101LED or approved equivalent	1	No		
	Total carried forward to next page				-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
D	<u>BEDHEAD UNITS</u>				
2.46	Lighting point wired in 3×1.5 mm <sup>2</sup> single core PVC cables drawn in 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	34	No		
2.47	13A Ring Mains power Socket Outlet Points wired in 3 x 2.5 mm <sup>2</sup> SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	68	No		
2.48	Powder coated metal clad, Bedhead unit comprising of 2 No. 600mm, 18 Watts LED light fittings (Reading and night light), Patient Nurse-call call cord, 1 No. RJ45 data outlet and 2 No. 13Amps 240V Red Twin socket outlet for clean power.	34	No		
	Total carried forward to next page				-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
					-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

SCHEDULE No.2 CONT'D - FIRST FLOOR WING B

	Balance B/ f				
	Supply, install, test and commission the following :-				
	<u>CONSUMER UNITS / DISTRIBUTION BOARDS &amp;</u>				
E	<u>SUB-MAINS</u>				
2.49	Submains comprising 4Core 16 mm <sup>2</sup> PVC/SWA/PVC CU cable drawn in cable tray complete with all the necessary accessories from the Meterboard to the Floor Distribution Board.	70	Lm		
2.50	600mm x 100mm, steel, hot dip galvanised, cable ladder for power cables complete with all accessories laid in duct.	4	Lm		
2.51	6-way 100A TPN distribution board surface mounted complete with 100 A TP integral isolator and lockable cover and all accessories excluding MCBs as Harvels	1	No		
2.52	The following MCBs asHarvels or approved equivalent for item above. i)10A SP MCB	3	No		
	ii)20A SP MCB	4	No		
	iii)32A SP MCB	3	No		
	iv)Blanking Plate	8	No		
2.53	300mm x 50mm perforated, steel, hot dip galvanised, cable tray for poer cables complete with all accessories.	30	Lm		
	Total carried forward to next page				-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
F	<u>FIRE DETECTION AND ALARM SYSTEM</u>				
	Supply, deliver, install and commission a complete Fire Detection and Alarm system,				

KEGONGA LEVEL IV HOSPITAL ELECTRICAL INSTALLATION WORKS

SCHEDULE No.2 CONT'D - FIRST FLOOR WING B

2.54	Fire alarm point completely wired in 2x1.5mm <sup>2</sup> heat resistant screened cables drawn in 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	15	No.		
2.55	Addressable optical smoke detector as Menvier MENVIER or equal and approved.	12	No.		
2.56	Addressable Electronic Fire Alarm sounder complete with Red Flashing beacon as MENVIER or approved equivalent.	1	No.		
2.57	Addressable Resettable call point incorporating integral short circuit isolator and reset key as Menvier or Approved Equivalent	2	No.		
2.58	Any other item to complete the installation	1	Item		
<b>G <u>NURSE CALL SYSTEM</u></b>					
2.59	Nurse call system points comprising of wiring in 6 core PVC insulated copper cable drawn in concealed 20mm dia. HG conduits	34	No.		
2.60	Wall mounted dome over door lights for Nurse call system.	6	No.		
Total carried forward to next page					-

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
2.61	Nurse call system patient call/ nurse reset switch on bedhead unit complete with patient Nurse call cord on bedhead unit	34	No.		
2.62	Nurse call system ceiling pull cord call switch in toilet area as Intercall or approved equivalent	3	No.		



KEGONGA LEVEL IV HOSPITAL ELECTRICAL INSTALLATION WORKS

SCHEDULE No.2 CONT'D - FIRST FLOOR WING B

2.63	Nurse call/reset switch in toilet area	1	No.		
2.64	Nurse call system pull cord call switch in assisted bath	3	No.		
2.65	Nurse call/reset switch in assisted bath	2	No		
2.66	Control panel with a minimum of 48 No. patient stations, lamp test facility for the dome lights and LEDs, continuous supervision of addressable devices to Engineer's approval.	1	No.		
H	<u>SECURITY SYSTEMS</u>				
2.67	CCTV outlets points comprising of 20mm Ø HG PVC conduits concealed and complete with a draw wire.	3	No		
Total carried forward to summary page					-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

COLLECTION PAGE FOR FIRST FLOOR

ITEM	DESCRIPTION	AMOUNT
1.00	Total brought forward from F.F Wing A	-
2.00	Total brought forward from F.F Wing B	-
	TOTAL CARRIED TO MAIN SUMMARY PAGE	-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

BILL NO.2

SCHEDULE No. 3: SECOND FLOOR - WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				
A	LIGHTING POINTS				
3	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	26	No		
	b) Two way switching	66	No		
	c) Unswitched	2	No		
3.01	Lift Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors	1	No		
B	<u>SOCKET OUTLET AND POWER POINTS</u>				
3.02	13A Ring Mains Raw Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	27	No		
3.03	Data/Telephone outlets points comprising of 20mm <sup>2</sup> HG PVC conduits and complete with a draw wire.	14	No		
3.04	TV Outlet points comprising of concealed 20mm <sup>2</sup> PVC HD conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	10	No		
3.05	Automatic Hand drier point comprising of concealed 25mm HG PVC conduits.	2	No		
	Total carried forward to next page				-

SCHEDULE No.3 CONT'D - SECOND FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
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KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

	Balance B/ f				-
	Supply, install, test and commission the following :-				
C	<u>BEDHEAD UNITS</u>				
3.06	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	20	No		
3.07	13A Ring Mains Raw power Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	40	No		
D	<u>FIRE DETECTION AND ALARM SYSTEM</u>				
	Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
3.08	Fire alarm point comprising of 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	18	No.		
E	<u>NURSE CALL SYSTEM</u>				
3.09	Nurse call system points comprising of concealed 20mm dia. HG conduits	89	No.		
F	<u>SECURITY SYSTEMS</u>				
3.10	CCTV outlets points comprising of 20mm Ø HG PVC conduits concealed and complete with a draw wire.	4	No		
	Total carried forward to summary page				-

WING B-SECOND FLOOR

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				

KEGONGA LEVEL IV HOSPITAL ELECTRICAL INSTALLATION WORKS

A	LIGHTING POINTS				
3.11	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	45	No		
	b) Two way switching	60	No		
	c) Unswitched	2	No		
3.12	Lift Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors	3	No		
B	<u>SOCKET OUTLET AND POWER POINTS</u>				
3.13	13A Ring Mains Raw Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	26	No		
3.14	Data/Telephone outlets points comprising of 20mm Ø HG PVC conduits and complete with a draw wire.	19	No		
3.15	TV Outlet points comprising of concealed 20mm <sup>2</sup> PVC HD conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	12	No		
3.16	Automatic Hand drier point comprising of concealed 25mm HG PVC conduits.	3	No		
	Total carried forward to next page				-

SCHEDULE No.3 CONT'D - SECOND FLOOR WING B

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
C	<u>BEDHEAD UNITS</u>				

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

3.17	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	28	No		
3.18	13A Ring Mains Raw power Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	56	No		
D	<u>FIRE DETECTION AND ALARM SYSTEM</u> Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
3.19	Fire alarm point comprising of 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	24	No.		
E	<u>NURSE CALL SYSTEM</u>				
3.20	Nurse call system points comprising of concealed 20mm dia. HG conduits	42	No.		
F	<u>SECURITY SYSTEMS</u>				
3.21	CCTV outlets points comprising of 20mm <sup>2</sup> HG PVC conduits concealed and complete with a draw wire.	4	No		
Total carried forward to summary page					-

COLLECTION PAGE FOR SECOND FLOOR

ITEM	DESCRIPTION	AMOUNT
1.00	Total brought forward from S.F Wing A	-
2.00	Total brought forward from S.F Wing B	-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

	TOTAL CARRIED TO MAIN SUMMARY PAGE	-
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KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

BILL NO.2

SCHEDULE No. 4: THIRD FLOOR - WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				
A	LIGHTING POINTS				
4	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	34	No		
	b) Two way switching	57	No		
	c) Unswitched	2	No		
4.01	Lift Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors	1	No		
B	<u>SOCKET OUTLET AND POWER POINTS</u>				
4.02	13A Ring Mains Raw Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	27	No		
4.03	Data/Telephone outlets points comprising of 20mm <sup>2</sup> HG PVC conduits and complete with a draw wire.	14	No		
4.04	TV Outlet points comprising of concealed 20mm <sup>2</sup> PVC HD conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	10	No		
4.05	Automatic Hand drier point comprising of concealed 25mm HG PVC conduits.	2	No		
	Total carried forward to next page				-

SCHEDULE No.4 CONT'D - THIRD FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
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KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

	Balance B/ f				-
	Supply, install, test and commission the following :-				
C	<u>BEDHEAD UNITS</u>				
4.06	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	20	No		
4.07	13A Ring Mains Raw power Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	40	No		
D	<u>FIRE DETECTION AND ALARM SYSTEM</u>				
	Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
4.08	Fire alarm point comprising of 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	18	No.		
E	<u>NURSE CALL SYSTEM</u>				
4.09	Nurse call system points comprising of concealed 20mm dia. HG conduits	89	No.		
F	<u>SECURITY SYSTEMS</u>				
4.10	CCTV outlets points comprising of 20mm Ø HG PVC conduits concealed and complete with a draw wire.	4	No		
	Total carried forward to summary page				-

WING B-SECOND FLOOR

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

A	LIGHTING POINTS				
4.11	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	98	No		
	b) Two way switching	60	No		
	c) Unswitched	9	No		
4.12	Lift Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors	3	No		
B	<u>SOCKET OUTLET AND POWER POINTS</u>				
4.13	13A Ring Mains Raw Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	33	No		
4.14	Data/Telephone outlets points comprising of 20mm Ø HG PVC conduits and complete with a draw wire.	14	No		
4.15	TV Outlet points comprising of concealed 20mm <sup>2</sup> PVC HD conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	8	No		
4.16	Automatic Hand drier point comprising of concealed 25mm HG PVC conduits.	3	No		
	Total carried forward to next page				-

SCHEDULE No.4 CONT'D - THIRD FLOOR WING B

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
C	<u>BEDHEAD UNITS</u>				

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

4.17	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	28	No		
4.18	13A Ring Mains Raw power Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	56	No		
D	<u>FIRE DETECTION AND ALARM SYSTEM</u> Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
4.19	Fire alarm point comprising of 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	24	No.		
E	<u>NURSE CALL SYSTEM</u>				
4.20	Nurse call system points comprising of concealed 20mm dia. HG conduits	45	No.		
F	<u>SECURITY SYSTEMS</u>				
4.21	CCTV outlets points comprising of 20mm <sup>2</sup> HG PVC conduits concealed and complete with a draw wire.	4	No		
Total carried forward to summary page					-

COLLECTION PAGE FOR THIRD FLOOR

ITEM	DESCRIPTION	AMOUNT
1.00	Total brought forward from T.F Wing A	-
2.00	Total brought forward from T.F Wing B	-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

	TOTAL CARRIED TO MAIN SUMMARY PAGE	-
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KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

BILL NO.2

SCHEDULE No.5: FOURTH FLOOR - WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				
A	LIGHTING POINTS				
5	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	89	No		
	b) Two way switching	113	No		
	c) Unswitched	21	No		
5.01	Lift Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors	1	No		
B	<u>SOCKET OUTLET AND POWER POINTS</u>				
5.02	13A Ring Mains Raw Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	12	No		
5.03	13A Clean Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	18	No		
5.04	Autoclave power point comprising of 25 mm Ø HG PVC conduits concealed in building fabric complete with all the necessary accessories	2	No		
5.05	Data/Telephone outlets points comprising of 20mm <sup>2</sup> HG PVC conduits and complete with a draw wire.	10	No		
5.06	TV Outlet points comprising of concealed 20mm <sup>2</sup> PVC HD conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	2	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

5.07	Automatic Hand drier point comprising of concealed 25mm HG PVC conduits.	2	No		
Total carried forward to next page					-

SCHEDULE No.5 CONT'D -FOURTH FLOOR WING A

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
C	<u>BEDHEAD UNITS</u>				
5.08	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	7	No		
5.09	13A Ring Mains Raw power Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	14	No		
D	<u>FIRE DETECTION AND ALARM SYSTEM</u>				
	Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
5.10	Fire alarm point comprising of 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	15	No.		
E	<u>NURSE CALL SYSTEM</u>				
5.11	Nurse call system points comprising of concealed 20mm dia. HG conduits	53	No.		
F	<u>SECURITY SYSTEMS</u>				

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

5.12	CCTV outlets points comprising of 20mm Ø HG PVC conduits concealed and complete with a draw wire.	4	No		
Total carried forward to summary page					-

WING B-FOURTH FLOOR

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test & commission of the following;				
A	<b>LIGHTING POINTS</b>				
5.13	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	77	No		
	b) Two way switching	68	No		
	c) Unswitched	18	No		
5.14	Lift Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors	3	No		
B	<b>SOCKET OUTLET AND POWER POINTS</b>				
5.15	13A Ring Mains Raw Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	30	No		
5.16	Data/Telephone outlets points comprising of 20mm Ø HG PVC conduits and complete with a draw wire.	10	No		
5.17	TV Outlet points comprising of concealed 20mm <sup>2</sup> PVC HD conduit from housing unit to amplifier in ceiling space via Telephone/television draw boxes.	4	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

5.18	Automatic Hand drier point comprising of concealed 25mm HG PVC conduits.	2	No		
Total carried forward to next page					-

SCHEDULE No.5 CONT'D - FOURTH FLOOR WING B

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
C	<u>BEDHEAD UNITS</u>				
5.19	Lighting point comprising of 20mm heavy gauge conduits concealed in walls and floors for; a) One way switching	17	No		
5.20	13A Ring Mains Raw power Socket Outlet Points comprising of 25 mm Ø HG PVC conduits/Trunking concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	34	No		
D	<u>FIRE DETECTION AND ALARM SYSTEM</u>				
	Supply, deliver, install and commission a complete Fire Detection and Alarm system,				
5.21	Fire alarm point comprising of 20mmØ concealed HG PVC conduits including all accessories but excluding the fire alarm devices	26	No.		
E	<u>NURSE CALL SYSTEM</u>				
5.22	Nurse call system points comprising of concealed 20mm dia. HG conduits	61	No.		
F	<u>SECURITY SYSTEMS</u>				



KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

5.23	CCTV outlets points comprising of 20mm <sup>2</sup> HG PVC conduits concealed and complete with a draw wire.	3	No		
Total carried forward to summary page					-

COLLECTION PAGE FOR FOURTH FLOOR

ITEM	DESCRIPTION	AMOUNT
1.00	Total brought forward from F.F Wing A	-
2.00	Total brought forward from F.F Wing B	-
TOTAL CARRIED TO MAIN SUMMARY PAGE		-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

BILL NO.2 SCHEDULE No. 6: ROOFTOP SERVICES

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test &commission of the following; WING A ROOFTOP <u>MECHANICAL POWER POINTS</u>				
6.01	Extract fan Power Point comprising concealed PVC conduits	3	No		
6.02	Solar waterheating booster power point comprising concealed PVC conduits	2	No		
6.03	Rercirculation pump Power Point comprising concealed PVC conduits	2	No		
6.04	Lift machine power point comprising concealed PVC conduits	1	No		
	Total carried forward to summary page				-

WING B-ROOF TOP

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test &commission of the following; A <u>MECHANICAL POWER POINTS</u>				
6.05	Extract fan Power Point comprising concealed PVC conduits	3	No		
6.06	Solar waterheating booster power point comprising concealed PVC conduits	2	No		
6.07	Rercirculation pump Power Point comprising concealed PVC conduits	1	No		
6.08	Hose reel power point comprising concealed PVC conduits	2	No		

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

6.09	Lift machine power point comprising concealed PVC conduits	3	No		
Total carried forward to summary page					-

COLLECTION PAGE FOR ROOFTOP SERVICES

ITEM	DESCRIPTION	AMOUNT
1.00	Total brought forward from R.F Wing A	-
2.00	Total brought forward from R.F Wing B	-
TOTAL CARRIED TO MAIN SUMMARY PAGE		-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

BILL NO.2

SCHEDULE No. 7: POWER DISTRIBUTION

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
7.01	<p>Supply, install, test and commission the following :-</p> <p><b>LV SUB-SWITCHBOARD</b>                      415 Volts, Powder coated, Metal clad, floor mounting freestanding Switchboard with 300 Amperes TPN bus bars fully wired for one incoming MCCB, 10 No. TPN outgoing MCCBs with suitable large scale Ammeter, Voltmeter, Selector switches and provision for KPLC metering equipment and cut outs all as detailed in the design drawings including testing, provision for earthing and labeling the board complete with all fixing materials and accessories.</p> <p>a) 1 No.250A TPN incomer                      b) 1 No. 50A TP                      c) 3 No. 63A TP                      d) TPN spare ways</p>	1	Item		
7.02	<p>Earthing of switchboard comprising of copper earth electrode of size 1500mm long and 15mm diameter enclosed by a concrete manhole of size 300X300X450 mm with removable concrete cover and a 38mm diameter PVC heavy gauge lead in duct and bonded to the boards using 16mm sq cable</p> <p>Trenching to a minimum depth of 600mm, Laying, Sifting, Tiling , Back Filling and Compacting to Ground Level for the ducts</p>	1	Item		
7.03	<p>600 x 450 x 600mm deep Manhole Complete with Heavy Duty Cover and all Accessories</p>	150	LM		
7.04		7	No		
	Total carried forward to next page				-

SCHEDULE No.9 CONT'D - POWER DISTRIBUTION

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Balance B/ f				-
	Supply, install, test and commission the following :-				
7.05	100 mm Ø H.G PVC DUCTS	20	LM		
	ARMOURED CABLE				
7.06	1 x 240mm <sup>2</sup> 4 core PVC/ SWA/ PVC underground CU cable from the meterboard to the LVboard	70	LM		
7.07	Trenching to a minimum depth of 700 m, Laying, Sifting, Tiling with Hatari Tiles, Back Filling and Compacting to Ground Level for the ducts	60	LM		
	ENGINEERS STATIONERY				
7.08	Photocopy paper A4 (80gm <sup>3</sup> ) white	5	Rea m		
7.09	Training for 2 number officers from SDPW electrical department at KSG (300,000)	1	No		
7.10	HP color Laserjet pro MFP M479fdw printer, wireless, Ethernet, USB interface with LCD Touchscreen	1	No		
	Total carried forward to the summary page				-

COLLECTION PAGE FOR POWER DISTRIBUTION

ITEM	DESCRIPTION	AMOUNT
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KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

1.00	Total brought forward from Power distribution	-
	TOTAL CARRIED TO MAIN SUMMARY PAGE	-

KEGONGA LEVEL IV HOSPITALELECTRICAL INSTALLATION WORKS

BILL NO.2

SCHEDULE No. 8:LIGHTNING PROTECTION

	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply,Install,Test and Commission as per BS 7671:2008 the following as described below:  LIGHTNING PROTECTION				
8.00	25mmx3mm copper tape including copper saddles at 1500mm intervals and bonding to water tanks and other metal work on the roof , all as FURSE	350	LM		
8.01	Copper air terminations (lightning arrestors) inclusive of base clamp and all fixing materials as FURSE	6	No.		
8.02	Test clamp as FURSE EARTHING.	6	No.		
8.03	Earthing, for item above, comprising of the following and any other necessary accessories:- a) 12.5 mm x 1200 mm earth rod as FURSE cat. No. RB 105. b) 12.5 mm dia. Driving stud as FURSE cat.No. ST100. c) Rod to cable clamp as FURSE cat. No. CR510. d) Concrete inspection pit as FURSE cat. No. PT005 (or a well made 320mm x 320mm x 210 mm depth pit) e) 25mmx3mm copper tape	6 6 6 6 50	No. No. No. No. LM		
	Total Amount Carried Forward to Summary Page				-

KEGONGA LEVEL IV HOSPITAL STRUCTURED CABLING AND SECURITY WORKS

BILL NO.2

SCHEDULE 9: STRUCTURED CABLING

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, Install, test and Commission the following				
A	HORIZONTAL CABLING				
9.01	RJ45 cat 6A STP (Dual) Data and voice outlets complete with faceplates and labelling system as Siemons or its equal and approved equivalent	55	No.		
9.02	Cat 6A STP 4-pair screened cable as Siemons pulled between cabinet and work stations.	5500	Lm.		
B	CABINETS				
9.03	22U Wall/ground Mounted cabinet with low noise (low dB) fans and power outlet sockets, as described in particular specifications	2	No.		
9.04	48 port RJ45 cat 6A Data patch panel for STP termination as Siemon.	2	No.		
9.05	Cable Manager	10	No.		
TOTAL C/F TO SUMMARY PAGE					0.00

KEGONGA LEVEL IV HOSPITAL ELECTRICAL INSTALLATION WORKS

MAIN SUMMARY PAGE

ItemNo.	Description	Amount(KShs)
1.00	Bill No. 1 Preliminaries and General Conditions	
2.00	Bill No. 2 Schedule 1: Ground floor	
3.00	Bill No. 2 Schedule 2: First floor	



4.00	Bill No. 2 Schedule 3: Second floor	
5.00	Bill No. 2 Schedule 4: Third floor	
6.00	Bill No. 2 Schedule 5: Fourth floor	
7.00	Bill No. 2 Schedule 6: Rooftop services	
8.00	Bill No. 2 Schedule 7: Power distribution	
9.00	Bill No. 2 Schedule 8: Lightning protection	
10.00	Bill No. 2 Schedule 9: Structured cabling	
11.00	Provisional sum for Kenya Power connection	1,000,000.00
12.00	Contingency Sum	2,000,000.00
Total Amount for Electrical Installations		

Amount of tender in words: KenyaShillings.....

.....

Tenderers Signature and Stamp.....

.....

Address.....

Date.....

Witness: Name and Signature.....

Address.....

Date .....

# PROVISIONAL SUMS

PROPOSED CONSTRUCTION OF LEVEL 4 HOSPITAL AND ASSOCIATED WORKS FOR KEGONGA

Item No.	Description	Qty	Unit	Rate KShs	Amount KShs
<p><b><u>SECTION NO. 9 - PROVISIONAL SUMS</u></b></p> <p><i>The following provisional sums are to be measured on completion and priced in accordance with the rates contained in these bills of quantities or prorata thereto or deducted in whole if not required</i></p>					
A	<p>Provide a Sum of Shillings <b>One Million, Five Hundred Thousand (Kshs. 1,500,000.00)</b> Only for Main Entrance Roof Feature and Concrete Fins at the Ramp Area to later detail</p>	ITEM			1,500,000.00
B	<p>Provide a Sum of Shillings <b>Five Hundred Thousand (Kshs. 500,000.00)</b> Only for Landscaping Works</p>	ITEM			500,000.00
C	<p>Provide a Sum of Shillings <b>Three Million (Kshs. 3,000,000.00)</b> Only for Joinery Works</p>	ITEM			3,000,000.00
D	<p>Provide a Sum of Shillings <b>Five Million (Kshs. 5,000,000.00)</b> Only for contingencies to be omitted or expended in whole or in part at the discretion of the Project Manager</p>	ITEM			5,000,000.00
<p><b><u>SECTION NO. 9</u></b> <span style="float: right;"><b>Carried to</b></span></p> <p><b><u>PROVISIONAL SUMS</u></b> <span style="float: right;"><b>Main summary</b></span></p>					<p><b>10,000,000.00</b></p>
				<b>KSHS</b>	

Provisional Sums	PS / 1	Tenderer's Sign.....			

# GRAND SUMMARY

**PROPOSED CONSTRUCTION OF LEVEL 4 HOSPITAL AND ASSOCIATED WORKS FOR KEGONGA**

**GRAND SUMMARY**

ITEM	DESCRIPTION	Page No.	FOR TENDERER USE ONLY	FOR OFFICIAL USE ONLY
A		<b>PAGE</b>	<b>K.SHS.</b>	<b>K.SHS.</b>
B		PP/9		
C	PARTICULAR PRELIMINARIES	GP/10		
D	GENERAL PRELIMINARIES	GF/24		
E	BUILDER'S WORK; GROUND FLOOR	FF/19		
F	BUILDER'S WORK; FIRST FLOOR	SF/6		
G	BUILDER'S WORK; SECOND FLOOR	TF/6		
H	BUILDER'S WORK; THIRD FLOOR	4F/8		
J	BUILDER'S WORK; FOURTH FLOOR	CIV/15		
K	CIVIL WORKS	BQ - 39		
L	MECHANICAL INSTALLATIONS	F / 53		
	ELECTRICAL INSTALLATIONS	PS/1		
	PROVISIONAL SUMS		<b>10,000,000.00</b>	<b>10,000,000.00</b>
<b>GRAND TOTAL CARRIED TO FORM OF TENDER (VAT INCLUSIVE)</b>				

AMOUNT IN WORDS : KENYA SHILLINGS .....

.....

.....

TENDERER'S NAME .....

ADDRESS .....

DATE .....

TENDERER'S SIGNATURE .....

WITNESS'S NAME.....

ADDRESS .....

DATE .....

WITNESS SIGNATURE.....

**JOB NO:**

**GS**

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## **PART III - THE CONDITIONS OF CONTRACT AND CONTRACT**

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## SECTION VIII - GENERAL CONDITIONS OF CONTRACT (GCC)

[Name of Procuring Entity]

[Name of Contract]

[Architect Name and Address]

### General Conditions of Contract

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#### 1. GENERAL PROVISIONS

##### 1.1 Definitions

In this Contract, except where context otherwise requires, the following terms shall be interpreted as indicated below. Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.

“**Accepted Contract Amount**” means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.

“**Base Date**” means a date 30 day prior to the submission of tenders.

“**Bill of Quantities**” means the priced and completed Bill of Quantities forming part of the tender.

“**Completion Date**” means the date of completion of the Works as certified by the Engineer.

“**Contract Price**” means the price defined in the contract and there after as adjusted in accordance with the provisions of the Contract.

“**Contract**” means the agreement entered into between the Procuring Entity and the Contractor as recorded in the Agreement Form and signed by the parties including all attachments and appendices thereto and all documents incorporated by reference therein to execute, complete, and maintain the Works.

“**Contractor's Documents**” means the calculations, computer programs and other software, progress reports, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.

“**Contractor's Equipment**” means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor's Equipment excludes Temporary Works, Procuring Entity's Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.

“**Contractor's Personnel**” means the Contractor's Representative and all personnel whom the Contractor utilizes on Site, who may include the staff, labor and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the Works.

**“Contractor's Representative”** means the person named by the Contractor in the Contractor appointed from time to time by the Contractor who acts on behalf of the Contractor.

**“Contractor”** means the person(s) named as contractor in the Form of Tender accepted by the Procuring Entity.

**“Cost”** means expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.

**“Day”** means a calendar day and **“year”** means 365 days.

**“Dayworks”** means Work inputs subject to payment on a time basis for labour and the associated materials and plant.  
**“Defect”** means any part of the Works not completed in accordance with the Contract.

**“Defects Liability Certificate”** means the certificate issued by Architect upon correction of defects by the Contractor.

**“Defects Liability Period”** means the period named in the Special Conditions of Contract and calculated from the Completion Date, within which the contractor is liable for any defects that may develop in the handed over works.

**“Defects Notification Period”** means the period for notifying defects in the Works or a Section (as the case may be) under Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects], which extends over the days stated in the Special Conditions of Contract.

**“Drawings”** means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Procuring Entity in accordance with the Contract.

**“Final Payment Certificate”** means the payment certificate issued under Sub-Clause 14.13 [Issue of Final Payment Certificate].

**“Final Statement”** means the statement defined in Sub-Clause 14.11 [Application for Final Payment Certificate].

**“Force Majeure”** is defined in Clause 19 [Force Majeure].

**“Foreign Currency”** means a currency of another country (not Kenya) in which part (or all) of the Contract Price is payable, but not the Local Currency.

**“Goods”** means Contractor's Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.

**“Interim Payment Certificate”** means a payment certificate issued under Clause 14 [Contract Price and Payment], other than the Final Payment Certificate.

**“Laws”** means all national legislation, statutes, ordinances, and regulations and by-laws of any legally constituted public authority.

**“Letter of Acceptance”** means the letter of formal acceptance of a tender, signed by Procuring Entity, including any annexed memoranda comprising agreements between and signed by both Parties.

**“Local Currency”** means the currency of Kenya.

**“Materials”** means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.

**“Notice of Dissatisfaction”** means the notice given by either Party to the other under Sub-Clause 20.3 indicating its dissatisfaction and intention to commence arbitration.

**“Special Conditions of Contract”** means the pages completed by the Procuring Entity entitled Special Conditions of Contract which constitute Part A of the Special Conditions.

**“Party”** means the Procuring Entity or the Contractor, as the context requires.

**“Payment Certificate”** means a payment certificate issued under Clause 14 [Contract Price and Payment].

**“Performance Certificate”** means the certificate issued under Sub-Clause 11.9 [Performance Certificate].

**“Performance Security”** means the security (or securities, if any) under Sub-Clause 4.2 [Performance Security].

**“Permanent Works”** means the permanent works to be executed by the Contractor under the Contract.

**“Plant”** means the apparatus, machinery and other equipment intended to form or forming part of the Permanent Works, including vehicles purchased for the Procuring Entity and relating to the construction or operation of the Works.

**“Procuring Entity's Equipment”** means the apparatus, machinery and vehicles (if any) made available by the Procuring Entity for the use of the Contract or in the execution of the Works, as stated in the Specification; but does not include Plant which has not been taken over by the Procuring Entity.

**“Procuring Entity's Personnel”** means the Engineer, the Engineer, the assistants and all other staff, labor and other employees of the Architect and of the Procuring Entity; and any other personnel notified to the Contractor, by the Procuring Entity or the Engineer, as Procuring Entity's Personnel.

**“Procuring Entity”** means the Entity named in the Special Conditions of Contract.

**“Engineer”** is the person named in the Appendix to Conditions of Contract (or any other competent person appointed by the Procuring Entity and notified to the Contractor, to act in replacement of the Engineer) who is responsible for supervising the execution of the Works and administering the Contract and shall be an “Architect” or a “Quantity Surveyor” registered under the Architects and Quantity Surveyors Act Cap 525 or an “Engineer” registered under Engineers Registration Act Cap 530.

**“Engineer”** means the person appointed by the Procuring Entity to act as the Architect for the purposes of the Contract and named in the Special Conditions of Contract, or other person appointed from time to time by the Procuring Entity and notified to the Contractor

**“Provisional Sum”** means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under Sub-Clause 13.5 [Provisional Sums].

**“Retention Money”** means the accumulated retention moneys which the Procuring Entity retains under Sub-Clause 14.3 [Application for Interim Payment Certificates] and pays under Sub-Clause 14.9 [Payment of Retention Money].

**“Schedules”** means the document(s) entitled schedules, completed by the Contractor and submitted with the Form of Tender, as included in the Contract.

**“Section”** means a part of the Works specified in the Special Conditions of Contract as a Section (if any)

**“Site Investigation Reports”** are those reports that may be included in the tendering documents which are actual and interpretative about the surface and sub-surface conditions at the Site.

**“Site”** means the places where the Permanent Works are to be executed, including storage and working areas, and to which Plant and Materials are to be delivered, and any other places as may be specified in the Contract as forming part of the Site.

**“Specification”** means the document entitled specification, as included in the Contract, and any additions and modifications to the specification in accordance with the Contract. Such document specifies the Works.

**“Start Date” or “Commencement Date”** is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with the Site possession date(s).

**“Statement”** means a statement submitted by the Contractor as part of an application, under Clause 14 [Contract Price and Payment], for a payment certificate.

**“Subcontractor”** means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works.

**“Taking-Over Certificate”** means a certificate issued under Clause 10 [Procuring Entity's Taking Over].

**“Temporary Works”** means all temporary works of every kind (other than Contractor's Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.

**“Temporary works”** means works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.

**“Tender”** means the Form of Tender and all other documents which the Contractor submitted with the Form of Tender, as included in the Contract.

**“Tests after Completion”** means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Specification after the Works or a Section (as the case may be) are taken over by the Procuring Entity.

**“Tests on Completion”** means the tests which are specified in the Contract agreed by both Parties or instructed as a Variation, and which are carried out under Clause 9 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Procuring Entity.

**“Time for Completion”** means the time for completing the Works or a Section (as the case may be) as stated in the Special Conditions of Contract (with any extension calculated from the Commencement Date).

**“Unforeseeable”** means not reasonably foreseeable by an experienced contractor by the Base Date.

**“Variation”** means any change to the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].

**“Works”** means the items the Procuring Entity requires the Contractor to undertake as defined in the Appendix to Conditions of Contract. **“Works”** may also mean the Permanent Works and the Temporary Works, or either of them as appropriate.

## 1.2 Interpretation

In the Contract, except where the context requires otherwise: a)

- Words indicating one gender include all genders;
- b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- c) provisions including the word “agree”, “agreed” or “agreement” require the agreement to be recorded in writing;
- d) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

### **1.3 Communications**

1.3.1 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- a) In writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Special Conditions of Contract; and
- b) delivered, sent, or transmitted to the address for the recipient's communications as stated in the Special Conditions of Contract. However:
  - i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and
  - ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

1.3.2 Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Engineer, a copy shall be sent to the Architect or the other Party, as the case may be.

### **1.4 Law and Language**

1.4.1 The Contract shall be governed by the laws of **Kenya**.

1.4.2 The ruling language of the Contract shall be **English**.

### **1.5 Priority of Documents**

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

- a) The Contract Agreement,
- b) The Letter of Acceptance,
- c) The Special Conditions – Part A,
- d) the Special Conditions – Part B
- e) the General Conditions of Contract
- f) the Form of Tender,
- g) the Specifications and Bills of Quantities
- h) the Drawings, and
- i) the Schedules and any other documents forming part of the Contract.

If an ambiguity or discrepancy is found in the documents, the Architect shall issue any necessary clarification or instruction.

## **1.6 Contract Agreement**

The Parties shall enter into a Contract Agreement within 14 days after the Contractor receives the Contract Agreement, unless the Special Conditions establish otherwise. The Contract Agreement shall be based upon the form annexed to the Special Conditions. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Procuring Entity.

## **1.7 Assignment**

The Contractor shall not assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, the contractor:

- a) May assign the whole or any part with the prior consent of the Procuring Entity, and
- b) may, as security in favor of a bank or financial institution, assign its right to moneys due, or to become due, under the Contract.

## **1.8 Care and Supply of Documents**

- 1.8.1 The Specifications and Drawings shall be in the custody and care of the Procuring Entity. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawings and Bills of Quantities shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.
- 1.8.2 Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Procuring Entity. Unless otherwise stated in the Contract, the Contractor shall supply to the Architect two copies of each of the Contractor's Documents.
- 1.8.3 The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Procuring Entity's Personnel shall have the right of access to all these documents at all reasonable times.
- 1.8.4 If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.

## **1.9 Timely provision of Drawings or Instructions**

- 1.9.1 The Contractor shall give notice to the Architect whenever the Works are likely to be delayed or disrupted if any necessary drawing or instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary drawing or instruction, details of why and by when it should be issued, and the nature and amount of the delay or disruption likely to be suffered if it is late.
- 1.9.2 If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Architect to issue the notified drawing or instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:
  - a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
  - b) payment of any other associated costs accrued, which shall be included in the Contract Price.

1.9.3 After receiving this further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

1.9.4 However, if and to the extent that the Architect failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, or costs accrued.

#### **1.10 Procuring Entity's Use of Contractor's Documents**

1.10.1 As agreed between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.

1.10.2 The Contractor shall be deemed (by signing the Contract) to give to the Procuring Entity a non-terminable transferable non-exclusive royalty-free license to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This license shall:

- a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,
- b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and
- c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.

1.10.3 The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Procuring Entity for purposes other than those permitted under Sub-Clause 1.10.2.

#### **1.11 Contractor's Use of Procuring Entity's Documents**

As agreed between the Parties, the Procuring Entity shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Procuring Entity. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Procuring Entity's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

#### **1.12 Confidential Details**

1.12.1 The Contractor's and the Procuring Entity's Personnel shall ensure confidentiality at all times. The confidentiality shall survive termination or completion of the contract. They shall disclose all such confidential and other information as may be reasonably required in order to verify compliance with the Contract and allow its proper implementation.

1.12.2 The Contractor's and the Procuring Entity's Personnel shall also treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.

#### **1.13 Compliance with Laws**

The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Special Conditions of Contract:

- a) The Procuring Entity shall have obtained (or shall obtain) the planning, zoning, building permit or similar permission for the Permanent Works, and any other permissions described in the Specifications as having been (or to be) obtained by the Procuring Entity; and the Procuring Entity shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and
- b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licenses and approvals, as required by the Laws in relation to the execution and completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Procuring Entity harmless against and from the consequences of any failure to do so, unless the Contractor is impeded to accomplish these actions and shows evidence of its diligence.

#### **1.14 Joint and Several Liability**

If the Contractor constitutes (under applicable Laws) a joint venture, consortium or other unincorporated grouping of two or more persons:

- a) These persons shall be deemed to be jointly and severally liable to the Procuring Entity for the performance of the Contract;
- b) these persons shall notify the Procuring Entity of their leader who shall have authority to bind the Contractor and each of these persons; and
- c) the Contractor shall not alter its composition or legal status without the prior consent of the Procuring Entity.

#### **1.15 Inspections and Audit by the Procuring Entity**

Pursuant to paragraph 2.2(e). of Appendix B to the General Conditions, the Contractor shall permit and shall cause its subcontractors and sub-consultants to permit, the Public Procurement Regulatory Authority, Procuring Entity and/or persons appointed or designated by the Government of Kenya to inspect the Site and/or the accounts and records relating to the procurement process, selection and/or contract execution, and to have such accounts and records audited by auditors appointed by the Procuring Entity if requested by the Procuring Entity. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Sub-Clause 15.6 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Procuring Entity's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Procuring Entity's prevailing sanctions procedures).

## **2. THE PROCURING ENTITY**

### **2.1 Right of Access to the Site**

- 2.1.1 The Procuring Entity shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the **Special Conditions of Contract**. The right and possession may not be exclusive to the Contractor. If, under the Contract, the Procuring Entity is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Procuring Entity shall do so in the time

and manner stated in the Specification. However, the Procuring Entity may withhold any such right or possession until the Performance Security has been received.

- 2.1.2 If no such time is stated in the Special Conditions of Contract, the Procuring Entity shall give the Contractor right of access to, and possession of, the Site within such times as required to enable the Contractor to



proceed without disruption in accordance with the programme submitted under Sub-Clause 8.3 [Programme].

2.1.3 If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Procuring Entity to give any such right or possession within such time, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

2.1.4 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

2.1.5 However, if and to the extent that the Procuring Entity's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

## **2.2 Permits, Licenses or Approvals**

2.2.1 The Procuring Entity shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain properly:

- a) Copies of the Laws of Kenya which are relevant to the Contract but are not readily available, and
- b) any permits, licenses or approvals required by the Laws of Kenya:
  - i) which the Contractor is required to obtain under Sub-Clause 1.13 [Compliance with Laws],
  - ii) for the delivery of Goods, including clearance through customs, and iii) for the export of Contractor's Equipment when it is removed from the Site.

## **2.3 Procuring Entity's Personnel**

The Procuring Entity shall be responsible for ensuring that the Procuring Entity's Personnel and the Procuring Entity's other contractors on the Site:

- a) co-operate with the Contractor's efforts under Sub-Clause 4.6 [Co-operation], and
- b) take actions similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of Sub-Clause 4.8 [Safety Procedures] and under Sub-Clause 4.18 [Protection of the Environment].

## **2.4 Procuring Entity's Financial Arrangements**

The Procuring Entity shall make and maintain all necessary financial arrangements which will enable the Procuring Entity to pay the Contract Price punctually (as estimated at that time) in accordance with Clause 14 [Contract Price and Payment].

# **3. THE ENGINEER**

## **3.1 Architect Duties and Authority**

3.1.1 The Procuring Entity shall appoint the Architect who shall carry out the duties as signed to him in the Contract.

The Architect staff shall include suitably qualified Assistants and other professionals who are competent to carry out these duties. The Architect Name and Address shall be provided in the **Special Conditions of Contract**.

- 3.1.2 The Architect shall have no authority to amend the Contract.
- 3.1.3 The Architect May exercise the authority attributable to the Architect as specified in or necessarily to be implied from the Contract. If the Architect is required to obtain the approval of the Procuring Entity before exercising a specified authority, the requirements shall be as stated in the **Special Conditions of Contract**. The Procuring Entity shall promptly inform the Contractor of any change to the authority attributed to the Engineer.
- 3.1.4 However, whenever the Architect exercises a specified authority for which the Procuring Entity's approval is required, then (for the purposes of the Contract) the contractor shall require the Architect to provide evidence of such approval before complying with the instruction.
- 3.1.5 Except as otherwise stated in these Conditions:
- a) Whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Architect shall be deemed to act for the Procuring Entity;
  - b) the Architect has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract;
  - c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Architect (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances; and
  - d) any act by the Architect in response to a Contractor's request shall be notified in writing to the Contractor within 14 days of receipt.
- 3.1.6 The following provisions shall apply:
- The Architect shall obtain the specific approval of the Procuring Entity before taking action under the following Sub-Clauses of these Conditions:
- a) Sub-Clause 4.12: agreeing or determining an extension of time and/or additional cost.
  - b) Sub-Clause 13.1: instructing a Variation, except;
    - i) In an emergency situation as determined by the Engineer, or
    - ii) If such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the **Special Conditions of Contract**.
  - c) Sub-Clause 13.3: Approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 13.1 or 13.2.
  - d) Sub-Clause 13.4: Specifying the amount payable in each of the applicable three currencies.
- 3.1.7 Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forth with comply, despite the absence of approval of the Procuring Entity, with any such instruction of the Engineer. The Architect shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 13 and shall notify the Contractor accordingly, with a copy to the Procuring Entity.

## 3.2 Delegation by the Engineer

- 3.2.1 The Architect may from time to time assign duties and delegate authority to assistants and may also revoke such assignment or delegation. These assistants may include a resident Engineer, and/or independent inspectors appointed to inspect and/ or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties. However, unless otherwise agreed by both Parties, the Architect shall not delegate the authority to determine any matter in accordance with Sub-Clause 3.5 [Determinations].
- 3.2.2 Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorized to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer. However:
- a) Any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Architect to reject the work, Plant or Materials;
  - b) If the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Engineer, who shall promptly confirm, reverse or vary the determination or instruction.

### **3.3 Instructions of the Engineer**

- 3.3.1 The Architect may issue to the Contractor (at anytime) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer, or from an assistant to whom the appropriate authority has been delegated under Clause 3.2.1.
- 3.3.2 The Contractor shall comply with the instructions given by the Architect or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Architect or a delegated assistant:
- a) Gives an oral instruction,
  - b) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and
  - c) does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation,

Then the confirmation shall constitute the written instruction of the Architect or delegated assistant (as the case may be).

### **3.4 Replacement of the Engineer**

If the Procuring Entity intends to replace the Engineer, the Procuring Entity shall, in not less than 21 days before the intended date of replacement, give notice to the Contractor of the name, address and relevant experience of the intended person to replace the Engineer.

### **3.5 Determinations**

- 3.5.1 Whenever these Conditions provide that the Architect shall proceed in accordance with this Sub-Clause 3.5 to agree or determine any matter, the Architect shall consult with each Party in an endeavor to reach agreement. If agreement is not achieved, the Architect shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances.

3.5.1 The Architect shall give notice to both Parties of each agreement determination, with supporting particulars, within 30 days from the receipt of the corresponding claim or request except when otherwise specified. Each Party shall give effect to each agreement or determination unless and until revised under Clause 20 [Claims, Disputes and Arbitration].

## 4. THE CONTRACTOR

### 4.1 Contractor's General Obligations

4.1.1 The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Architect instructions, and shall remedy any defects in the Works.

4.1.2 The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

4.1.3 All equipment, material, and services to be incorporated in or required for the Works shall have their origin in any eligible source country.

4.1.4 The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (i) shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract, and (ii) shall not otherwise be responsible for the design specification of the Permanent Works.

4.1.5 The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Engineer.

4.1.6 If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Special Conditions:

- a) The Contractor shall submit to the Architect the Contractor's Documents for this part in accordance with the procedures specified in the Contract;
- b) these Contractor's Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in Sub-Clause 1.4 [Law and Language], and shall include additional information required by the Architect to add to the Drawings for co-ordination of each Party's designs;
- c) the Contractor shall be responsible for this part and it shall, when the Works are completed, befit for such purposes for which the part is intended as are specified in the Contract; and
- d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the Architect the "as-built" documents and, if applicable, operation and maintenance manuals in accordance with the

Specification and in sufficient detail for the Procuring Entity to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.

### 4.2 Performance Security

4.2.1 The Contractor shall obtain (at his cost) a Performance Security for proper performance, in the amount stated in the **Special Conditions of Contract** and denominated in the currency (ies) of the Contract or in a freely convertible currency acceptable to the Procuring Entity. If an amount is not stated in the Special Conditions of Contract, this Sub-Clause shall not apply.

- 4.2.2 The Contractor shall deliver the Performance Security to the Procuring Entity within 30 days after receiving the Notification of Award and shall send a copy to the Engineer. The Performance Security shall be issued by a reputable bank selected by the Contractor and shall be in the form annexed to the Special Conditions, as stipulated by the Procuring Entity in the Special Conditions of Contract, or in another form approved by the Procuring Entity.
- 4.2.3 The Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 30 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security until the Works have been completed and any defects have been remedied.
- 4.2.4 The Procuring Entity shall not make a claim under the Performance Security, except for amounts to which the Procuring Entity is entitled under the Contract.
- 4.2.5 The Procuring Entity shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Procuring Entity was not entitled to make the claim.
- 4.2.6 The Procuring Entity shall return the Performance Security to the Contractor within 14 days after receiving a copy of the Taking-Over Certificate.
- 4.2.7 Without limitation to the provisions of the rest of this Sub-Clause, whenever the Architect determines an addition or a reduction to the Contract Price as a result of a change in cost and/ or legislation, or as a result of
- a) Variation, amounting to more than 25 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Architect request promptly increase, or may decrease, as the case may be, the value of the Performance Security in that currency by an equal percentage.

### **4.3 Contractor's Representative**

- 4.3.1 The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract. The Contractor's Representative's Name and Address shall be provided in the **Special Conditions of Contract**.
- 4.3.2 Unless the Contractor's Representative **is named in the Contract**, the Contractor shall, prior to the Commencement Date, submit to the Architect for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked in terms of Sub-Clause 6.9 [Contractor's Personnel], or if the appointed person fails to act as Contractor's Representative, the Contractor shall similarly submit the name and particulars of an other suitable person for such appointment.
- 4.3.3 The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's Representative or appoint a replacement.
- 4.3.4 The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Architect prior consent, and the Architect shall be notified accordingly.
- 4.3.5 The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer].
- 4.3.6 The Contractor's Representative may delegate any powers, functions and authority to any competent person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the

Architect has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

- 4.3.7 The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

#### **4.4 Sub-contractors**

- 4.4.1 The Contractor shall not subcontract the whole of the Works. The contractor may however subcontract the works as provided in Clause 34.2.
- 4.4.2 The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor. Unless otherwise stated in the Special Conditions: a) The Contractor shall not be required to obtain consent to suppliers solely of Materials, or to a subcontract for which the Subcontractor is named in the Contract;
- b) The prior consent of the Procuring Entity shall be obtained to other proposed Subcontractors;
  - c) the Contractor shall give the Procuring Entity not less than 14 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site; and
  - d) each subcontract shall include provisions which would entitle the Procuring Entity to require the subcontract to be assigned to the Procuring Entity under Sub-Clause 4.5 [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 15.2 [Termination by Procuring Entity].
- 4.4.3 The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 1.12 [Confidential Details] apply equally to each Subcontractor.
- 4.4.4 Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from Kenya to be appointed as Subcontractors.

#### **4.5 Assignment of Benefit of Subcontract**

If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Engineer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Procuring Entity, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Procuring Entity for the work carried out by the Subcontractor after the assignment takes effect.

#### **4.6 Co-operation**

- 4.6.1 The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to:
- a) The Procuring Entity's Personnel,
  - b) Any other contractors employed by the Procuring Entity, and
  - c) The personnel of any legally constituted public authorities, who may be employed in the execution on or near the Site of any work not included in the Contract.
- 4.6.2 Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to suffer delays and/or to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor.

4.6.3 If, under the Contract, the Procuring Entity is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Architect in the time and manner stated in the Specification.

#### **4.7 Setting Out of the Works**

4.7.1 The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contractor notified by the Engineer. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works.

4.7.2 The Procuring Entity shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.

4.7.3 If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/ or Cost, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such costs accrued, which shall be included in the Contract Price.

4.7.4 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this.

#### **4.8 Safety Procedures**

The Contractor shall:

- a) Comply with all applicable safety regulations,
- b) Take care for the safety of all persons entitled to be on the Site,
- c) Use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,
- d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Procuring Entity's Taking Over], and
- e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.

#### **4.9 Quality Assurance**

4.9.1 The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Architect shall be entitled to audit any aspect of the system.

4.9.2 Details of all procedures and compliance documents shall be submitted to the Architect for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Engineer, evidence of the prior approval by the Contractor itself shall be apparent on the document itself.

Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

#### **4.10 Site Data**

4.10.1 The Procuring Entity shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Procuring Entity's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Procuring Entity shall similarly make available to the Contractor all such data which come into the Procuring Entity's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

4.10.2 To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined

the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

- a) The form and nature of the Site, including sub-surface conditions,
- b) the hydrological and climatic conditions,
- c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,
- d) the Laws, procedures and labour practices of Kenya, and
- e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

#### **4.11 Sufficiency of the Accepted Contract Amount**

4.11.1 The Contractor shall be deemed to:

- a) Have satisfied itself as to the correctness and sufficiency of the Accepted Contract Amount, and
- b) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 [Site Data].

4.11.2 Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any defects.

#### **4.12 Unforeseeable Physical Conditions**

4.12.1 In this Sub-Clause, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including subsurface and hydrological conditions but excluding climatic conditions.

4.12.2 If the Contractor encounters adverse physical conditions which he considers to have been Unforeseeable, the Contractor shall give notice to the Architect as soon as practicable.

4.12.3 This notice shall describe the physical conditions, so that they can be inspected by the Architect and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical conditions, and shall comply with any instructions which the Architect may give. If an instruction constitutes a Variation, Clause 13 [Variations and Adjustments] shall apply.



4.12.4 If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be entitled subject to notice under Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost, which shall be included in the Contract Price.

4.12.5 Upon receiving such notice and inspecting and/or investigating these physical conditions, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent these physical conditions were Unforeseeable, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

4.12.6 However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Architect may also review whether other physical conditions in similar parts of the Works (if any) were more favorable than could reasonably have been foreseen when the Contractor submitted the Tender. If and to the extent that these more favorable conditions were encountered, the Architect may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (b) and all these reductions, for all the physical conditions encountered in similar parts of the Works, shall not result in a net reduction in the Contract Price.

4.12.7 The Architect shall take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Tender, which shall be made available by the Contractor, but shall not be bound by the Contractor's interpretation of any such evidence.

#### **4.13 Rights of Way and Facilities**

Unless otherwise specified in the Contract the Procuring Entity shall provide effective access to and possession of the Site including special and/or temporary rights-of-way which are necessary for the Works. The Contractor shall obtain, at his risk and cost, any additional rights of way or facilities out side the Site which he may require for the purposes of the Works.

#### **4.14 Avoidance of Interference**

4.14.1 The Contractor shall not interfere unnecessarily or improperly with:

- a) The convenience of the public, or
- b) The access to and use and occupation of all roads and foot paths, irrespective of whether they are public or in the possession of the Procuring Entity or of others.

4.14.2 The Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

#### **4.15 Access Route**

4.15.1 The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper use of appropriate vehicles and routes.

4.15.2 Except as otherwise stated in these Conditions:

- a) The Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;
- b) the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions;
- c) the Procuring Entity shall not be responsible for any claims which may arise from the use or otherwise of any access route;
- d) the Procuring Entity does not guarantee the suitability or availability of particular access routes; and
- e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.

#### **4.16 Transport of Goods**

Unless otherwise stated in the Special Conditions:

- a) the Contractor shall give the Architect not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;
- b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and
- c) the Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods and shall negotiate and pay all claims arising from their transport.

#### **4.17 Contractor's Equipment**

The Contractor shall be responsible for all Contractor's Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Engineer. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.

#### **4.18 Protection of the Environment**

- 4.18.1 The contractor shall comply with the applicable environmental laws, regulations and policies.
- 4.18.2 The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.
- 4.18.3 The Contractors shall ensure that emissions, surfaced is charges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

#### **4.19 Electricity, Water and Gas**

- 4.19.1 The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require for his construction activities and to the extent defined in the Specifications, for the tests.
- 4.19.2 The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas, and other services as may be available on the Site and of which details and prices are given in the Specifications. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed.

4.19.3 The quantities consumed and the amounts due (at these prices) for such services shall be agreed or determined by the Architect in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Procuring Entity.

#### **4.20 Procuring Entity's Equipment and Free-Issue Materials**

4.20.1 The Procuring Entity shall make the Procuring Entity's Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Specification. Unless otherwise stated in the Specification:

- a) The Procuring Entity shall be responsible for the Procuring Entity's Equipment, except that
- b) the Contractor shall be responsible for each item of Procuring Entity's Equipment whilst any of the Contractor's Personnel is operating it, driving it, directing it or in possession or control of it.

4.20.1 The appropriate quantities and the amounts due (at such stated prices) for the use of Procuring Entity's Equipment shall be agreed or determined by the Architect in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Procuring Entity.

4.20.2 The Procuring Entity shall supply, free of charge, the "free-issue materials" (if any) in accordance with the details stated in the Specification. The Procuring Entity shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them and shall promptly give notice to the Architect of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Procuring Entity shall immediately rectify the notified shortage, defect or default.

4.20.3 After this visual inspection, the free-issue materials shall come under the care, custody and control of the Contractor. The Contractor's obligations of inspection, care, custody and control shall not relieve the Procuring Entity of liability for any shortage, defect or default not apparent from a visual inspection.

#### **4.21 Progress Reports**

4.21.1 Unless otherwise stated in the Special Conditions, monthly progress reports shall be prepared by the Contractor and submitted to the Architect in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates.

4.21.2 Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works. Each report shall include:

- a) charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- b) photographs showing the status of manufacture and of progress on the Site;
- c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of: i) commencement of manufacture, ii) Contractor's inspections, iii) tests, and
- iv) shipment and arrival at the Site;
- d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];
- e) copies of quality assurance documents, test results and certificates of Materials;
- f) list of notices given under Sub-Clause 2.5 [Procuring Entity's Claims] and notices given under Sub-Clause 20.1 [Contractor's Claims];

- g) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
- h) comparison so factual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

#### **4.22 Security of the Site**

Unless otherwise stated in the Special Conditions:

- a) The Contractor shall be responsible for keeping unauthorized persons off the Site, and
- b) authorized persons shall be limited to the Contractor's Personnel and the Procuring Entity's Personnel; and to any other personnel notified to the Contractor, by the Procuring Entity or the Engineer, as authorized personnel of the Procuring Entity's other contractors on the Site.

#### **4.23 Contractor's Operations on Site**

- 4.23.1 The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Architect as additional working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacentl and.
- 4.23.2 During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.
- 4.23.3 Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfil obligations under the Contract.

#### **4.24 Fossils**

- 4.24.1 All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Procuring Entity. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.
- 4.24.2 The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub- Clause 20.1 [Contractor's Claims] to:
  - a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
  - b) payment of any such Cost, which shall be included in the Contract Price.
 After receiving this further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

### **5. NOMINATED SUBCONTRACTORS**

## **5.1 Definition of “nominated Sub contractor.”**

In this Contract, “nominated Subcontractor” means a Subcontractor: a)

Who is nominated by the Procuring Entity, or

b) Contractor has nominated as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].

## **5.2 Objection to Nomination**

The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Procuring Entity as soon as practicable, with supporting particulars. An objection shall be deemed reasonable if it arises from (among other things) any of the following matters, unless the Procuring Entity agrees in writing to indemnify the Contractor against and from the consequences of the matter:

- a) there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength;
- b) the nominated Subcontractor does not accept to indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and employees; or
- c) the nominated Subcontractor does not accept to enter into a subcontract which specifies that, for the subcontracted work (including design, if any), the nominated Subcontractor shall:
  - i) undertake to the Contractor such obligations and liabilities as will enable the Contractor to discharge his obligations and liabilities under the Contract;
  - ii) indemnify the Contractor against and from all obligations and liabilities arising under or in connection with the Contract and from the consequences of any failure by the Subcontractor to perform these obligations or to fulfil these liabilities, and
  - iii) be paid only if and when the Contractor has received from the Procuring Entity payments for sums due under the Subcontract referred to under Sub-Clause 5.3 [Payment to nominated Subcontractors].

## **5.3 Payments to nominated Subcontractors**

The Contractor shall pay to the nominated Subcontractor the amounts shown on the nominated Subcontractor's invoices approved by the Contractor which the Architect certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with sub-paragraph (b) of Sub-Clause 13.5 [Provisional Sums], except as stated in Sub-Clause 5.4 [Evidence of Payments].

## **5.4 Evidence of Payments**

5.4.1 Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Architect may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

- a) Submits this reasonable evidence to the Engineer, or
- b)
  - i) Satisfies the Architect in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and
  - ii) Submits to the Architect reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement, then the Procuring Entity may (at his sole discretion) pay, direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Procuring Entity, the amount which the nominated Subcontractor was directly paid by the Procuring Entity.

## **6. STAFF AND LABOR**

## **6.1 Engagement of Staff and Labor**

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, feeding, transport, and, when appropriate, housing. The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labor with appropriate qualifications and experience from sources within Kenya.

## **6.2 Rates of Wages and Conditions of Labor**

- 6.2.1 The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by Procuring Entity's whose trade or industry is similar to that of the Contractor.
- 6.2.2 The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in Kenya in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of Kenya for the time being in force, and the Contractor shall perform such duties in regard to such deductions there of as may be imposed on him by such Laws.

## **6.3 Persons in the Service of Procuring Entity**

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst the Procuring Entity's Personnel.

## **6.4 Labor Laws**

The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, employment of children, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights. The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

## **6.5 Working Hours**

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the **Special Conditions of Contract**, unless: a) Otherwise stated in the Contract,  
b) The Architect gives consent, or  
c) The work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer, provided that work done outside the normal working hours shall be considered and paid for as overtime.

## **6.6 Facilities for Staff and Labor**

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities on site for the Contractor's Personnel. The Contractor shall also provide facilities for the Procuring Entity's Personnel as stated in the Specifications. The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

## **6.7 Health and Safety**

- 6.7.1 The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Procuring Entity's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.
- 6.7.2 The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide what ever is required by this person to exercise this responsibility and authority.
- 6.7.3 The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Architect may reasonably require.
- 6.7.4 The Contractor shall conduct an awareness programme on HIV and other sexually transmitted diseases via an approved service provider and shall undertake such other measures taken to reduce the risk of the transfer of these diseases between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

## **6.8 Contractor's Superintendence**

- 6.8.1 Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary superintendence to plan, arrange, direct, manage, inspect and test the work.
- 6.8.2 Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause 1.4 [Law and Language]) and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.

## **6.9 Contractor's Personnel**

- 6.9.1 The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Contractor's Key personnel shall be named in the Special Conditions of Contract. The Architect may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:
- a) Persists in any misconduct or lack of care,
  - b) Carries out duties in competently or negligently,
  - c) fails to conform with any provisions of the Contract,
  - d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment, or
  - e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works.
- 6.9.2 If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

## **6.10 Records of Contractor's Personnel and Equipment**

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

## **6.11 Disorderly Conduct**

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

## **6.12 Foreign Personnel**

6.12.1 The Contractor shall not employ foreign personnel unless the contractor demonstrates that there are no Kenyans with the required skills.

6.12.2 The Contractor shall be responsible for the return of any foreign personnel to the place where they were recruited or to their domicile. In the event of the death in Kenya of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial.

## **6.13 Supply of Water**

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

## **6.14 Measures against Insect and Pest Nuisance**

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce the danger to their health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

## **6.15 Alcoholic Liquor or Drugs**

The Contractor shall not, otherwise than in accordance with the Laws of Kenya, onsite, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift, barter or disposal thereof by Contractor's Personnel.

## **6.16 Prohibition of Forced or Compulsory Labour**

The Contractor shall not employ forced labor, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

## **6.17 Prohibition of Harmful Child Labor**

The Contractor shall not employ children in a manner that is economically exploitative, or is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Where the relevant labour laws of Kenya have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18 years shall not be employed in dangerous work.

## **6.18 Employment Records of Workers**



The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the Engineer. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment].

#### **6.19 Workers' Organizations**

The Contractor shall comply with the relevant labor laws that recognize workers' rights to form and to join workers' organizations of their choosing without interference.

#### **6.20 Non-Discrimination and Equal Opportunity**

The Contractor shall base the labour employment on the principle of equal opportunity and fair treatment and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline.

### **7. PLANT, MATERIALS AND WORKMANSHIP**

#### **7.1 Manner of Execution**

The Contractor shall carry out the manufacture/assemble of plant, the production and manufacture of Materials, and all other execution of the Works:

- a) In the manner (if any) specified in the Contract,
- b) in a proper workman like and careful manner, in accordance with recognized good practice, and
- c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the Contract.

#### **7.2 Samples**

The Contractor shall submit the following samples of Materials, and relevant information, to the Architect for consent prior to using the Material in or for the Works:

- a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and
- b) additional samples instructed by the Architect as a Variation.

Each sample shall be labeled as to origin and intended use in the Works.

#### **7.3 Inspection**

7.3.1 The Procuring Entity's Personnel shall at all reasonable times:

- a) Have full access to all parts of the Site and to all places from which natural Materials are being obtained, and
- b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials.

7.3.2 The Contractor shall give the Procuring Entity's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.

7.3.3 The Contractor shall give notice to the Architect whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Architect shall then either carry out the examination,

inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Architect does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer, uncover the work and there after reinstate and make good, all at the Contractor's cost.

#### **7.4 Testing**

7.4.1 This Sub-Clause shall apply to all tests specified in the Contract.

7.4.2 Except as otherwise specified in the Contract, the Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labor, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Engineer, the time and place for the specified testing of any Plant, Materials and other parts of the Works.

7.4.3 The Architect may, under Clause 13 [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.

7.4.4 The Architect shall give the Contractor not less than 24 hours' notice of the Architect intention to attend the tests. If the Architect does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Engineer, and the tests shall then be deemed to have been made in the Architect presence.

7.4.5 If the Contractor suffers delay and/ or incurs Cost from complying with these instructions or as a result of a delay for which the Procuring Entity is responsible, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

7.4.6 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

7.4.7 The Contractor shall promptly forward to the Architect duly certified reports of the tests. When the specified tests have been passed, the Architect shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Architect has not attended the tests, he shall be deemed to have accepted the readings as accurate.

#### **7.5 Rejection**

7.5.1 If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Architect may reject the Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract.

7.5.2 If the Architect requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Procuring Entity to incur additional costs, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay these costs to the Procuring Entity.

## **7.6 Remedial Work**

- 7.6.1 Notwithstanding any previous test or certification, the Architect may instruct the Contractor to:
- a) Remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,
  - b) remove and re-execute any other work which is not in accordance with the Contract, and
  - c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseen able event or otherwise.
- 7.6.2 The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph (c).
- 7.6.3 If the Contractor fails to comply with the instruction, the Procuring Entity shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity all costs arising from this failure.
- 7.6.4 If the contractor repeatedly delivers defective work, the Procuring Entity may consider termination in accordance with Clause 15.

## **7.7 Ownership of Plant and Materials**

Except as otherwise provided in the Contract, each item of Plant and Materials shall become the property of the Procuring Entity at whichever is the earlier of the following times, free from liens and other encumbrances:

- a) When it is incorporated in the Works;
- b) when the Contractor is paid the corresponding value of the Plant and Materials under Sub-Clause 8.10 [Payment for Plant and Materials in Event of Suspension].

## **7.8 Royalties**

Unless otherwise stated in the Specification, the Contractor shall pay all royalties, rents and other payments for:

- a) Natural materials obtained from outside the Site, and
- b) The disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal are as within the Site are specified in the Contract.

## **8. COMMENCEMENT, DELAYS AND SUSPENSION**

### **8.1 Commencement of Works**

- 8.1.1 Except as otherwise specified in the Special Conditions of Contract, the Commencement Date shall be the date at which the following precedent condition shave all been fulfilled and the Architect notification recording the agreement of both Parties on such fulfilment and instructing to commence the Work is received by the Contractor:
- a) Signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant authorities of Kenya;
  - b) except if otherwise specified in the Special Conditions of Contract, effective access to and possession of the Site given to the Contractor together with such permission(s) under (a) of Sub-Clause 1.13 [Compliance with Laws] as required for the commencement of the Works.
  - c) Receipt by the Contractor of the Advance Payment under Sub-Clause 14.2 [Advance Payment] provided that the corresponding bank guarantee has been delivered by the Contractor.

8.1.2 If the said Architect instruction is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract under Sub-Clause 6.2 [Termination by Contractor].

8.1.3 The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date and shall then proceed with the Works with due expedition and without delay.

## **8.2 Time for Completion**

The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including: a) Achieving the passing of the Tests on Completion, and

b) completing all work which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections].

## **8.3 Programme**

8.3.1 The Contractor shall submit a detailed time programme to the Architect within 4 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include:

- a) The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing,
- b) each of these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- c) the sequence and timing of inspections and tests specified in the Contract, and
- d) a supporting report which includes:
  - i) a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and
  - ii) details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

8.3.2 Unless the Engineer, within 14 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Procuring Entity's Personnel shall be entitled to rely upon the programme when planning their activities.

8.3.3 The Contractor shall promptly give notice to the Architect of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works.

8.3.4 If, at anytime, the Architect gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contractor to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Architect in accordance with this Sub-Clause.

## **8.4 Extension of Time for Completion**

- 8.4.1 The Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking Over of the Works and Sections] is or will be delayed by any of the following causes:
- a) a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,
  - b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,
  - c) exceptionally adverse climatic conditions,
  - d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or
  - e) any delay, impediment or prevention caused by or attributable to the Procuring Entity, the Procuring Entity's Personnel, or the Procuring Entity's other contractors.
- 8.4.2 If the Contractor considers itself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Architect in accordance with Sub-Clause 20.1 [Contractor's Claims]. When determining each extension of time under Sub-Clause 20.1, the Architect shall review previous determinations and may increase, but shall not decrease, the total extension of time.

## 8.5 Delays Caused by Authorities

If the following conditions apply, namely:

- a) The Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in Kenya,
- b) These authorities delay or disrupt the Contractor's work, and
- c) the delay or disruption was Unforeseeable, then this delay or disruption will be considered as a cause of delay under sub-paragraph (b) of Sub-Clause 8.4 [Extension of Time for Completion].

## 8.6 Rate of Progress

- 8.6.1 If, at anytime:
- a) Actual progress is too slow to complete within the Time for Completion, and/or
  - b) Progress has fallen (or will fall) behind the current programme under Sub-Clause 8.3 [Programme], other than as a result of a cause listed in Sub-Clause 8.4 [Extension of Time for Completion], then the Architect may instruct the Contractor to submit, under Sub-Clause 8.3 [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.
- 8.6.2 Unless the Architect notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Procuring Entity to incur additional costs, the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay these costs to the Procuring Entity, in addition to delay damages (if any) under Sub-Clause 8.7 below.
- 8.6.3 Additional costs of revised methods including acceleration measures, instructed by the Architect to reduce delays resulting from causes listed under Sub-Clause 8.4 [Extension of Time for Completion] shall be paid by the Procuring Entity, without generating, however, any other additional payment benefit to the Contractor.

## 8.7 Delay Damages

- 8.7.1 If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion], the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay delay damages to the Procuring Entity for this default. These delay damages shall be the sum stated in the **Special Conditions of Contract**, which shall be paid for everyday which shall elapse between the relevant Time for Completion and the date stated in the

Taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of delay damages (if any) stated in the Special Conditions of Contract.

- 8.7.2 These delay damages shall be the only damages due from the Contractor for such default, other than in the event of termination under Sub-Clause 15.2 [Termination by Procuring Entity] prior to completion of the Works. These damages shall not relieve the Contractor from his obligation to complete the Works, or from any other duties, obligations or responsibilities which he may have under the Contract.

## **8.8 Suspension of Work**

- 8.8.1 The Architect may at anytime instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.

- 8.8.2 The Architect may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following Sub-Clauses 8.9, 8.10 and 8.11 shall not apply.

## **8.9 Consequences of Suspension**

- 8.9.1 If the Contractor suffers delay and/or incurs Cost from complying with the Architect instructions under Sub-Clause 8.8 [Suspension of Work] and/or from resuming the work, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) Payment of any such Cost, which shall be included in the Contract Price.

- 8.9.2 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

- 8.9.3 The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with Sub-Clause 8.8 [Suspension of Work].

## **8.10 Payment for Plant and Materials in Event of Suspension**

The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/ or Materials which have not been delivered to Site, if:

- a) The work on Plant or delivery of Plant and/ or Materials has been suspended for more than 30 days, and
- b) the Contractor has marked the Plant and/ or Materials as the Procuring Entity's property in accordance with the Architect instructions.

## **8.11 Prolonged Suspension**

If the suspension under Sub-Clause 8.8 [Suspension of Work] has continued for more than 84 days, the Contractor may request the Architect permission to proceed. If the Architect does not give permission within 30 days after being requested to do so, the Contractor may, by giving notice to the Engineer, treat the suspension as an omission under Clause 13 [Variations and Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause 16.2 [Termination by Contractor].

## **8.12 Resumption of Work**

After the permission or instruction to proceed is given, the Contractor and the Architect shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the suspension after receiving from the Architect an instruction to this effect under Clause 13 [Variations and Adjustments].

## **9. TESTS ON COMPLETION**

### **9.1 Contractor's Obligations**

- 9.1.1 The Contractor shall carry out the Tests on Completion in accordance with this Clause and Sub-Clause 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of Sub-Clause 4.1 [Contractor's General Obligations].
- 9.1.2 The Contractor shall give to the Architect not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Architect shall instruct.
- 9.1.3 In considering the results of the Tests on Completion, the Architect shall make allowances for the effect of any use of the Works by the Procuring Entity on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Engineer.

### **9.2 Delayed Tests**

- 9.2.1 If the Tests on Completion are being unduly delayed by the Procuring Entity, Sub-Clause 7.4 [Testing] (fifth paragraph) and/ or Sub-Clause 10.3 [Interference with Tests on Completion] shall be applicable.
- 9.2.2 If the Tests on Completion are being unduly delayed by the Contractor, the Architect may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall give notice to the Engineer.
- 9.2.3 If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Procuring Entity's Personnel may proceed with the Test at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.

### **9.3 Retesting of related works**

If the Works, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.5 [Rejection] shall apply, and the Architect or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.

### **9.4 Failure to Pass Tests on Completion**

- 9.4.1 If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 9.3 [Retesting], the Architect shall be entitled to:
  - a) Order further repetition of Tests on Completion under Sub-Clause 9.3; or
  - b) if the failure deprives the Procuring Entity of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Procuring Entity shall have the same remedies as are provided in sub-paragraph (c) of Sub-Clause 1.4 [Failure to Remedy Defects].

## **10. PROCURING ENTITY'S TAKING OVER**

### **10.1 Taking Over of the Works and Sections**

- 10.1.1 Except as stated in Sub-Clause 9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Procuring Entity when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.
- 10.1.2 The Contractor may apply by notice to the Architect for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.
- 10.1.3 The Architect shall, within 30 days after receiving the Contractor's application:
- a) Issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or
  - b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this Sub-Clause.
- 10.1.4 If the Architect fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 30 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.

### **10.2 Taking Over of Parts of the Works**

- 10.2.1 The Architect may, at the sole discretion of the Procuring Entity, issue a Taking-Over Certificate for any part of the Permanent Works.
- 10.2.2 The Procuring Entity shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Architect has issued a Taking-Over Certificate for this part. However, if the Procuring Entity does use any part of the Works before the Taking-Over Certificate is issued:
- a) The part which is used shall be deemed to have been taken over as from the date on which it is used,
  - b) the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Procuring Entity, and
  - c) if requested by the Contractor, the Architect shall issue a Taking-Over Certificate for this part.
- 10.2.3 After the Architect has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.
- 10.2.4 If the Contractor incurs Cost as a result of the Procuring Entity taking over and/or using a part of the Works, other than such use as is specified in the Contract, the Contractor shall (i) give notice to the Architect and (ii) be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to payment of any such accrued costs, which shall be included in the Contract Price. After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this accrued cost.



10.2.5 If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages there after for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of delay damages under Sub-Clause 8.7 [Delay Damages] and shall not affect the maximum amount of these damages.

### **10.3 Interference with Tests on Completion**

10.3.1 If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Procuring Entity is responsible, the Procuring Entity shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been completed.

10.3.2 The Architect shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Architect shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.

10.3.3 If the Contractor suffers delay and/or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such accrued costs, which shall be included in the Contract Price.

10.3.4 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

### **10.4 Surfaces Requiring Reinstatement**

Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.

## **11. DEFECTS LIABILITY**

### **11.1 Completion of Outstanding Work and Remedying Defects**

11.1.1 In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable there after, the Contractor shall:

- a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Engineer, and
- b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Procuring Entity on or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).

11.1.2 If a defect appears or damage occurs, the Contractor shall be notified accordingly by the Engineer.

## **11.2 Cost of Remedying Defects**

- 11.2.1 All work referred to in sub-paragraph (b) of Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:
- a) Any design for which the Contractor is responsible,
  - b) Plant, Materials or workmanship not being in accordance with the Contract, or
  - c) Failure by the Contractor to comply with any other obligation.
- 11.2.2 If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Procuring Entity, and Sub-Clause 13.3 [Variation Procedure] shall apply.

## **11.3 Extension of Defects Notification Period**

- 11.3.1 The Procuring Entity shall be entitled subject to Sub-Clause 2.5 [Procuring Entity's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or by reason of damage attributable to the Contractor. However, a Defects Notification Period shall not be extended by more than two years.
- 11.3.2 If delivery and/ or erection of Plant and/ or Materials was suspended under Sub-Clause 8.8 [Suspension of Work] or Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Clause shall not apply to any defects or damage occurring more than two years after the Defects Notification Period for the Plant and/ or Materials would otherwise have expired.

## **11.4 Failure to Remedy Defects**

- 11.4.1 If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by the Engineer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.
- 11.4.2 If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause 11.2[ Cost of Remedying Defects], the Procuring Entity may (at his option):
- a) Carry out the work itself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity the costs reasonably incurred by the Procuring Entity in remedying the defect or damage;
  - b) Require the Architect to agree or determine a reasonable reduction in the Contract Price in accordance with Sub-Clause 3.5 [Determinations]; or
  - c) if the defect or damage deprives the Procuring Entity of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract otherwise, the Procuring Entity shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.

## **11.5 Removal of Defective Work**

If the defect or damage cannot be remedied expeditiously on the Site and the Procuring Entity gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or

damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.

## **11.6 Further Tests**

- 11.6.1 If the work of remedying of any defector damage may affect the performance of the Works, the Architect may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 14 days after the defect or damage is remedied.
- 11.6.2 These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under Sub-Clause 11.2 [Cost of Remedying Defects], for the cost of the remedial work.

## **11.7 Right of Access**

Until the Completion Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Clause, except as may be inconsistent with the Procuring Entity's reasonable security restrictions.

## **11.8 Contractor to Search**

The Contractor shall, if required by the Engineer, search for the cause of any defect on parts of the works that have already accepted, under the direction of the Engineer. Unless the defect is to be remedied at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Cost of the search plus profit shall be agreed or determined by the Architect in accordance with Sub-Clause 3.5 [Determinations] and shall be included in the Contract Price.

## **11.9 Completion Certificate**

- 11.9.1 Performance of the Contractor's obligations shall not be considered to have been completed until the Architect has issued the Completion Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.
- 11.9.2 The Architect shall issue the Completion Certificate within 30 days after the latest of the expiry dates of the Defects Liability Period, or as soon thereafter as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects. A copy of the Completion Certificate shall be issued to the Procuring Entity.
- 11.9.3 Only the Completion Certificate shall be deemed to constitute acceptance of the Works.

## **11.10 Unfulfilled Obligations**

After the Completion Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.

## **11.11 Clearance of Site**

- 11.11.1 Upon receiving the Completion Certificate, the Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.
- 11.11.2 If all these items have not been removed within 30 days after receipt by the Contractor of the Completion Certificate, the Procuring Entity may sell or otherwise dispose of any remaining items. The Procuring Entity

shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site.

- 11.11.3 Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Procuring Entity's costs, the Contractor shall pay the outstanding balance to the Procuring Entity.

## **12. MEASUREMENT AND DEVALUATION**

### **12.1 Works to be Measured**

- 12.1.1 The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractor shall show in each application under Sub-Clauses 14.3 [Application for Interim Payment Certificates], 14.10 [Statement on Completion] and 14.11 [Application for Final Payment Certificate] the quantities and other particulars detailing the amounts which he considers to be entitled under the Contract.
- 12.1.2 Whenever the Architect requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:
- a) promptly either attend or send another qualified representative to assist the Architect in making the measurement, and
  - b) supply any particulars requested by the Engineer.
- 12.1.3 If the Contractor fails to attend or send a representative, the measurement made by the Architect shall be accepted as accurate.
- 12.1.4 Except as otherwise stated in the Contract, wherever any Permanent Works are to be measured from records, these shall be prepared by the Engineer. The Contractor shall, as and when requested, attend to examine and agree the records with the Engineer, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate.
- 12.1.5 If the Contractor examines and disagrees the records, and/ or does not sign them as agreed, then the Contractor shall give notice to the Architect of the respects in which the records are asserted to be inaccurate. After receiving this notice, the Architect shall review the records and either confirm or vary them and certify the payment of the undisputed part. If the Contractor does not so give notice to the Architect within 14 days after being requested to examine the records, they shall be accepted as accurate.

### **12.2 Method of Measurement**

Except as otherwise stated in the Contract:

- a) Measurement shall be made of the net actual quantity of each item of the Permanent Works, and
- b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

### **12.3 Evaluation**

- 12.3.1 Except as otherwise stated in the Contract, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of work done by evaluating each item of work, applying the measurement agreed or determined in accordance with the above Sub-Clauses 12.1 and 12.2 and the appropriate rate or price for the item.
- 12.3.2 For each item of work, the appropriate rate or price for the item shall be the rate or price specified for such item in the Contractor, if there is no such item, specified for similar work.
- 12.3.3 Any item of work included in the Bill of Quantities for which no rate or price was specified shall be considered as included in other rates and prices in the Bill of Quantities and will not be paid for separately.

- 12.3.4 However, for a new item of work, a new rate or price shall be appropriate for such item of work if:
- a) The work is instructed under Clause 13 [Variations and Adjustments],
  - b) no rate or price is specified in the Contract for this item, and
  - c) no specified rate or price is appropriate because the item of work is not of similar character, or is not executed under similar conditions, as any item in the Contract.
- 12.3.5 Each new rate or price shall be derived from any relevant rates or prices in the Contract. If no rates or prices are relevant for the new item of work, it shall be derived from the reasonable Cost of executing such work, prevailing market rates, together with profit, taking account of any other relevant matters.
- 12.3.6 Until such time as an appropriate rate or price is agreed or determined, the Architect shall determine a provisional rate or price for the purposes of Interim Payment Certificates as soon as the concerned work commences.
- 12.3.7 Where the contract price is different from the corrected tender price, in order to ensure the contractor is not paid less or more relative to the contract price (*which would be the tender price*), payment valuation certificates and variation orders on omissions and additions valued based on rates in the Bill of Quantities or schedule of rates in the Tender, will be adjusted by a plus or minus percentage. The percentage already worked out during tender evaluation is worked out as follows:  $(\text{corrected tender price} - \text{tender price}) / \text{tender price} \times 100$ .

#### 12.4 Omissions

Whenever the omission of any work forms part (or all) of a Variation, the value of which has not been agreed, if:

- a) The Contractor will incur (or has incurred) cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount;
- b) The omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and
- c) this cost is not deemed to be included in the evaluation of any substituted work; then the Contractor shall give notice to the Architect accordingly, with supporting particulars. Upon receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

### 13. VARIATIONS AND ADJUSTMENTS

#### 13.1 Right to Vary

- 13.1.1 Variations may be initiated by the Architect at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal. No Variation instructed by the Architect under this Clause shall in any way vitiate or invalidate the Contract.
- 13.1.2 The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Architect stating (with supporting particulars) that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Architect shall cancel, confirm or vary the instruction.
- 13.1.3 Each Variation may include:
- a) changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),
  - b) changes to the quality and other characteristics of any item of work,
  - c) changes to the levels, positions and/ or dimensions of any part of the Works,
  - d) omission of any work unless it is to be carried out by others,
  - e) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or

- f) changes to the sequence or timing of the execution of the Works.

13.1.4 The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Architect instructs after obtaining approval of the Procuring Entity.

## **13.2 Variation Order Procedure**

13.2.1 Prior to any Variation Order under Sub-Clause 13.1.4 the Architect shall notify the Contractor of the nature and form of such variation. As soon as possible after having received such notice, the Contractor shall submit to the Engineer:

- a) A description of work, if any, to be performed and a programme for its execution, and
- b) the Contractor's proposals for any necessary modifications to the Programme according to Sub-Clause 8.3 or to any of the Contractor's obligations under the Contract, and
- c) the Contractor's proposals for adjustment to the Contract Price.

Following the receipt of the Contractor's submission the Architect shall, after due consultation with the Employer and the Contractor, decide as soon as possible whether or not the variation shall be carried out. If the Architect decides that the variation shall be carried out, he shall issue a Variation Order clearly identified as such in accordance with the Contractor's submission or as modified by agreement.

If the Architect and the Contractor are unable to agree the adjustment of the Contract Price, the provisions of Sub-Clause 13.2.2 shall apply.

### **13.2.2 Disagreement on Adjustment of the Contract Price**

If the Contractor and the Architecture unable to agree on the adjustment of the Contract Price, the adjustment shall be determined in accordance with the rates specified in the Bills of Quantities or Schedule of Daywork Prices. If the rates contained in the Bills of Quantities or Dayworks Prices are not directly applicable to the specific work in question, suitable rates shall be established by the Architect reflecting the level of pricing in the Dayworks Prices. Where rates are not contained in the said Prices, the amount shall be such as is in all the circumstances reasonable, reflecting a market price. Due account shall be taken of any over- or under- recovery of overheads by the Contractor in consequence of the variation. The Contractor shall also be entitled to be paid:

- a) The cost of any partial execution of the Works rendered useless by any such variation,
- b) The cost of making necessary alterations to Plant already manufactured or in the course of manufacture or of any work done that has to be altered in consequence of such a variation,
- c) any additional costs incurred by the Contractor by the disruption of the progress of the Works as detailed in the Programme, and
- d) the net effect of the Contractor's finance costs, including interest, caused by the variation.

The Architect shall on this basis determine the rates or prices to enable on-account payment to be included in certificates of payment.

### **13.2.3 Contractor to Proceed**

On receipt of a Variation Order, the Contractor shall forth with proceed to carry out the variation and be bound to these Conditions in so doing as if such variation was stated in the Contract. The work shall not be delayed pending the granting of an extension of the Time for Completion or an adjustment to the Contract Price under Sub-Clause 31.3.

## **13.3 Value Engineering**

- 13.3.1 The Contractor may, at anytime, submit to the Architect written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Procuring Entity of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Procuring Entity of the completed Works, or (iv) otherwise be of benefit to the Procuring Entity.
- 13.3.2 The proposal shall be prepared at the cost of the Contractor and shall include the items listed in Sub-Clause 13.3 [Variation Procedure].
- 13.2.3 If a proposal, which is approved by the Engineer, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties: a) The Contractor shall design this part,
- b) sub-paragraphs (a) to (d) of Sub-Clause 4.1 [Contractor's General Obligations] shall apply, and
  - c) if this change results in a reduction in the contract value of this part, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts:
    - i) such reduction in contract value, resulting from the change, excluding adjustments under Sub-Clause 13.8 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost], and
    - ii) the reduction (if any) in the value to the Procuring Entity of the varied works, taking account of any improvement in quality, anticipated life or operational efficiencies.
- 13.3.4 However, if the amount established in item 13.2.3 (c) (i) is less than amount established in item 13.2.3 (c) (ii), there shall not be a fee. However, if the if the amount established in item 13.2.3 (c) (i) is more than amount established in item 13.2.3 (c) (ii), it shall result in a price variation to the Procuring Entity.

#### **13.4 Variation Procedure for Value Engineering proposal**

- 13.4.1 If the Architect requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:
- a) A description of the proposed work to be performed and a programme for its execution,
  - b) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 8.3 [Programme] and to the Time for Completion, and
  - c) the Contractor's proposal for evaluation of the Variation.
- 13.4.2 The Architect shall, as soon as practicable after receiving such proposal (under Sub-Clause 13.2 [Value Project Engineering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst a waiting a response.
- 13.4.3 Each instruction to execute a Variation, with any requirements for the recording of Costs, shall be issued by the Architect to the Contractor, who shall acknowledge receipt.
- 13.4.4 Each Variation shall be evaluated in accordance with Clause 12 [Measurement and Evaluation], unless the Architect instructs or approves otherwise in accordance with this Clause.

#### **13.5 Payment in Applicable Currencies**

If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.

#### **13.6 Provisional Sums**

- 13.6.1 Each Provisional Sum shall only be used, in whole or in part, in accordance with the Architect instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Architect shall have instructed. For each Provisional Sum, the Architect May instruct:
- a) Work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause 13.3 [Variation Procedure]; and/or
  - b) Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]) or otherwise; and for which there shall be included in the Contract Price:
    - i) The actual amounts paid (or due to be paid) by the Contractor, and
    - ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in **the Special Conditions of Contract** shall be applied.
- 13.6.2 The Contractor shall, when required by the Engineer, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

### **13.7 Dayworks**

- 13.7.1 For work of a minor or incidental nature, the Architect may instruct that a Variation shall be executed on a daywork basis. The work shall then be valued in accordance with the Daywork Schedule included in the Contract, and the following procedure shall apply. If a Daywork Schedule is not included in the Contract, this SubClause shall not apply.
- 13.7.2 Before ordering Goods for the work, the Contractor shall submit quotations to the Engineer. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.
- 13.7.3 Except for any items for which the Daywork Schedule specifies that payment is not due, the Contractor shall deliver each day to the Architect accurate statements induplicate which shall include the following details of the resources used in executing the previous day's work:
- a) The names, occupations and time of Contractor's Personnel,
  - b) the identification, type and time of Contractor's Equipment and Temporary Works, and
  - c) the quantities and types of Plant and Materials used.
- 13.7.4 One copy of each statement will, if correct, or when agreed, be signed by the Architect and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Engineer, prior to their inclusion in the next Statement under Sub-Clause 14.3 [Application for Interim Payment Certificates].

### **13.8 Adjustments for Changes in Legislation**

- 13.8.1 The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of Kenya (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.
- 13.8.2 If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:
- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and



b) payment of any such Cost, which shall be included in the Contract Price.

13.8.3 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

13.8.4 Notwithstanding the foregoing, the Contractor shall not be entitled to an extension of time if the relevant delay has already been taken into account in the determination of a previous extension of time and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of Sub-Clause 13.8 [Adjustments for Changes in Cost].

### **13.9 Adjustments for Changes in Cost**

13.9.1 In this Sub-Clause, “table of adjustment data” means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this Sub-Clause shall not apply.

13.9.2 If this Sub-Clause applies, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labor, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in Costs is not covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included a mounts to cover the contingency of other rises and falls in costs.

13.9.3 The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following general type:

## Price Adjustment Formula

Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the SCC**. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type specified below applies:

$$P = A + B I_m/I_o$$

where:

**P** is the adjustment factor for the portion of the Contract Price payable.

**A** and **B** are coefficients **specified in the SCC**, representing then on adjustable and adjustable portions, respectively, of the Contract Price payable and

**I<sub>m</sub>** is the index prevailing at the end of the month being invoiced and **I<sub>o</sub>** is the index prevailing 30 days before Bid opening for inputs payable.

**NOTE:** The sum of the two coefficients A and B should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all

- 13.9.4 The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Engineer. Forth is purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table) for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.
- 13.9.5 Incases where the “currency of index” is not the relevant currency of payment, each index shall be converted into the relevant currency of payment at the selling rate, established by the Central Bank of Kenya, of this relevant currency on the above date for which the index is required to be applicable.
- 13.9.6 Until such time as each current cost index is available, the Architect shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.
- 13.9.7 If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices there after shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price, whichever is more favorable to the Procuring Entity.
- 13.9.8 The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or in applicable, as a result of Variations.

## 14. CONTRACT PRICE AND PAYMENT

### 14.1 The Contract Price

14.1.1 Unless otherwise stated in the Special Conditions:

- a) The value of the payment certificate shall be agreed or determined under Sub-Clause 12.3 [Evaluation] and be subject to adjustments in accordance with the Contract;
- b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in Sub-Clause 13.7 [Adjustments for Changes in Legislation];

- c) any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities:
  - i) of the Works which the Contractor is required to execute, or ii) for the purposes of Clause 12 [Measurement and Evaluation]; and
- d) the Contractor shall submit to the Engineer, within 30 days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules. The Architect may take account of the breakdown when preparing Payment Certificates but shall not be bound by it.

14.1.2 Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts there for, imported by the Contractor for the sole purpose of executing the Contract shall not be exempt from the payment of import duties and taxes upon importation.

## 14.2 Advance Payment

14.2.1 The Procuring Entity shall make an advance payment, as an interest-free loan for mobilization and cashflow support, when the Contractor submits a guarantee in accordance with this Clause. The total advance payment, the number and timing of instalments (if more than one), and the applicable currencies and proportions, shall be as stated in the **Special Conditions of Contract**.

14.2.2 Unless and until the Procuring Entity receives this guarantee, or if the total advance payment is not stated in the Special Conditions of Contract, this Sub-Clause shall not apply.

14.2.3 The Architect shall deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate for the advance payment or its first instalment after receiving a Statement (under Sub-Clause 14.3 [Application for Interim Payment Certificates]) and after the Procuring Entity receives (i) the Performance Security in accordance with Sub-Clause 4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment. This guarantee shall be issued by a reputable bank or financial institutions elected by the Contractor and shall be in the form annexed to the Special Conditions or in another form approved by the Procuring Entity.

14.2.4 The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid, but its amount shall be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 30 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.

14.2.5 Unless stated otherwise in the **Special Conditions of Contract**, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Architect in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates], as follows:

- a) Deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds 30 percent (30%) of the Accepted Contract Amount less Provisional Sums; and
- b) deductions shall be made at the amortization rate stated in the **Special Conditions of Contract** of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when 90 percent (90%) of the Accepted Contract Amount less Provisional Sums has been certified for payment.

14.2.6 If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 15 [Termination by Procuring Entity], Clause 16 [Suspension and Termination by Contractor] or Clause 19 [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and in case of termination under Clause 15 [Termination by Procuring Entity], except for Sub-Clause 14.2.7 [Procuring Entity's Entitlement to Termination for Convenience], payable by the Contractor to the Procuring Entity.

### 14.3 Application for Interim Payment Certificates

14.3.1 The Contractor shall submit a Statement (in number of copies indicated in the **Special Conditions of Contract**) to the Architect after the end of each month, in a form approved by the Engineer, showing in detail the amounts to which the Contractor considers itself to be entitled, together with supporting documents which shall include there port on the progress during this month in accordance with Sub-Clause 4.21 [Progress Reports].

14.3.2 The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

- a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);
- b) any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost];
- c) any amount to be deducted for retention, calculated by applying the percentage of retention stated in **the Special Conditions of Contract** to the total of the above amounts, until the amount so retained by the Procuring Entity reaches the limit of Retention Money (if any) stated in **the Special Conditions of Contract**;
- d) any amounts to be added for the advance payment and (if more than one instalment) and to be deducted for its repayments in accordance with Sub-Clause 14.2 [Advance Payment];
- e) any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause 14.5 [Plant and Materials intended for the Works];
- f) any other additions or deductions which may have become due under the Contractor otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]; and
- g) the deduction of amounts certified in all previous Payment Certificates.

### 14.4 Schedule of Payments

14.4.1 If the Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, then unless otherwise stated in this schedule:

- a) The instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates];
- b) Sub-Clause 14.5 [Plant and Materials intended for the Works] shall not apply; and
- c) If these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less or more than that on which this schedule of payments was based, then the Architect may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine revised instalments, which shall take account of the extent to which progress is less or more than that on which the instalments were previously based.

14.4.2 If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.

#### **14.5 Plant and Materials intended for the Works**

14.5.1 If this Sub-Clause applies, Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3, (i) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and (ii) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates].

14.5.2 If the lists referred to in sub-paragraphs (b)(i) or (c)(i) below are not included in the Schedules, this Sub-Clause shall not apply.

14.5.3 The Architect shall determine and certify each addition if the following conditions are satisfied: a) The Contractor has:

- i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and
- (ii) submitted statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence; and either:

b) the relevant Plant and Materials:

- i) are those listed in the Schedules for payment when shipped, ii) have been shipped to Kenya, enroute to the Site, in accordance with the Contract; and iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Architect together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form and issued by an entity approved by the Procuring Entity in amounts and currencies equal to the amount due under this Sub-Clause: this guarantee may be in a similar form to the form referred to in Sub-Clause 14.2 [Advance Payment] and shall be valid until the Plant and Materials are properly stored on Site and protected against loss, damage or deterioration; or

c) the relevant Plant and Materials:

- i) are those listed in the Schedules for payment when delivered to the Site, and
- ii) have been delivered to and are properly stored on the Site, are protected against loss, damage or deterioration and appear to be in accordance with the Contract.

14.5.4 The additional amount to be certified shall be the equivalent of eighty percent (80%) of the Architect determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials.

14.5.5 The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials.

#### **14.6 Issue of Interim Payment Certificates**

14.6.1 No amount will be certified or paid until the Procuring Entity has received and approved the Performance Security. Thereafter, the Architect shall, within 30 days after receiving a Statement and supporting documents,

deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate which shall state the amount which the Architect fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Architect on the Statement if any.

14.6.2 However, prior to issuing the Taking-Over Certificate for the Works, the Architect shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) stated **in the Special Conditions of Contract**. In this event, the Architect shall give notice to the Contractor accordingly.

14.6.3 An Interim Payment Certificate shall not be withheld for any other reason, although:

- a) if anything supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or
- b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Engineer, the value of this work or obligation may be withheld until the work or obligation has been performed.

4.6.4 The Architect may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Architect acceptance, approval, consent or satisfaction.

## **14.7 Payment**

14.7.1 The Procuring Entity shall pay to the Contractor:

- a) The advance payment shall be paid within 60 days after signing of the contract by both parties or within 60 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub- Clause 14.2 [Advance Payment], which ever is later;
- b) The amount certified in each Interim Payment Certificate within 60 days after the Architect Issues Interim Payment Certificate; and
- c) the amount certified in the Final Payment Certificate within 60 days after the Procuring Entity Issues Interim Payment Certificate; or after determination of any disputed amount shown in the Final Statement in accordance with Sub-Clause 16.2 [Termination by Contractor].

14.7.2 Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor, in the payment country (forth is currency) specified in the Contract.

## **14.8 Delayed Payment**

14.8.1 If the Contractor does not receive payment in accordance with Sub-Clause 14.7 [Payment], the Contractor shall be entitled to receive financing charges (simple interest) monthly on the amount unpaid during the period of delay. This period shall be deemed to commence on the date for payment specified in Sub-Clause 14.7 [Payment], irrespective (in the case of its sub-paragraph (b) of the date on which any Interim Payment Certificate is issued.

14.8.2 These financing charges shall be calculated at the annual rate of three percentage points above the mean rate of the Central Bank in Kenya of the currency of payment, or if not available, the inter bank offered rate, and shall be paid in such currency.

14.8.3 The Contractor shall be entitled to this payment without formal notice and certification, and without prejudice to any other right or remedy.

#### **14.9 Payment of Retention Money**

14.9.1 When the Taking-Over Certificate has been issued for the Works, the first half of the Retention Money shall be certified by the Architect for payment to the Contractor. If a Taking-Over Certificate is issued for a Section or part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.

14.9.2 Promptly after the latest of the expiry dates of the Defects Liability Periods, the outstanding balance of the Retention Money shall be certified by the Architect for payment to the Contractor. If a Taking-Over Certificate was issued for a Section, a proportion of the second half of the Retention Money shall be certified and paid promptly after the expiry date of the Defects Notification Period for the Section. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section by the estimated final Contract Price.

14.9.3 However, if any work remains to be executed under Clause 11 [Defects Liability], the Architects shall be entitled to withhold certification of the estimated cost of this work until it has been executed.

14.9.4 When calculating these proportions, no account shall be taken of any adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost].

14.9.5 Unless otherwise stated in the Special Conditions, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be entitled to substitute a Retention Money Security guarantee, in the form annexed to the Special Conditions or in another form approved by the Procuring Entity and issued by a reputable bank or financial institution selected by the Contractor, for the second half of the Retention Money.

14.9.6 The Procuring Entity shall return the Retention Money Security guarantee to the Contractor within 14 days after receiving a copy of the Completion Certificate.

#### **14.10 Statement at Completion**

14.10.1 Within 84 days after receiving the Taking-Over Certificate for the Works, the Contractor shall submit to the Architect three copies of a Statement at completion with supporting documents, in accordance with Sub-Clause 14.3 [Application for Interim Payment Certificates], showing:

- a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the Works,
- b) any further sums which the Contractor considers to be due, and
- c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.

14.10.2 The Architect shall then certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates].

#### **14.11 Application for Final Payment Certificate**

14.11.1 Within 60 days after receiving the Completion Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement with supporting documents showing in detail in a form approved by the Engineer:

- a) The value of all work done in accordance with the Contract, and
- b) Any further sums which the Contractor considers to be due to him under the Contract otherwise.

14.11.2 If the Architect disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Architect may reasonably require within 30 days from receipt of said draft and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Architect the final statement as agreed. This agreed statement is referred to in these Conditions as the "Final Statement".

14.11.3 However, if, following discussions between the Architect and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Architect shall deliver to the Procuring Entity (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under Sub-Clause 20.4 [Obtaining Dispute Board's Decision] or Sub-Clause 20.5 [Amicable Settlement], the Contractor shall then prepare and submit to the Procuring Entity (with a copy to the Engineer) a Final Statement.

#### **14.12 Discharge**

When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.

#### **14.13 Issue of Final Payment Certificate**

14.13.1 Within 30 days after receiving the Final Statement and discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Architect shall deliver, to the Procuring Entity and to the Contractor, the Final Payment Certificate which shall state: a) The amount which he fairly determines is finally due, and  
b) After giving credit to the Procuring Entity for all amounts previously paid by the Procuring Entity and for all sums to which the Procuring Entity is entitled, the balance (if any) due from the Procuring Entity to the Contractor or from the Contractor to the Procuring Entity, as the case may be.

14.13.2 If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Architect shall request the Contractor to do so. If the Contractor fails to submit an application within a period of 30 days, the Architect shall issue the Final Payment Certificate for such amount as he fairly determines to be due.

#### **14.14 Cessation of Procuring Entity's Liability**

14.14.1 The Procuring Entity shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:

- a) in the Final Statement and also,
- b) (except for matters or things arising after the issue of the Taking-Over Certificate for the Works) in the Statement at completion described in Sub-Clause 14.10 [Statement at Completion].

14.14.2 However, this Sub-Clause shall not limit the Procuring Entity's liability under his indemnification obligations, or the Procuring Entity's liability in any case of fraud, deliberate default or reckless misconduct by the Procuring Entity.



## **14.15 Currencies of Payment**

The Contract Price shall be paid in the currency or currencies named in the Schedule of Payment Currencies. If more than one currency is so named, payments shall be made as follows:

- a) If the Accepted Contract Amount was expressed in Local Currency only:
  - i) the proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Schedule of Payment Currencies, except as otherwise agreed by both Parties;
  - ii) payments and deductions under Sub-Clause 13.5 [Provisional Sums] and Sub-Clause 13.7 [Adjustments for Changes in Legislation] shall be made in the applicable currencies and proportions; and
  - iii) other payments and deductions under sub-paragraphs (a) to (d) of Sub-Clause 14.3 [Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in sub-paragraph (a) (i) above;
- b) payment of the damages specified in the Special Conditions of Contract, shall be made in the currencies and proportions specified in the Schedule of Payment Currencies;
- c) other payments to the Procuring Entity by the Contractor shall be made in the currency in which the sum was expended by the Procuring Entity, or in such currency as may be agreed by both Parties;
- d) if any amount payable by the Contractor to the Procuring Entity in a particular currency exceeds the sum payable by the Procuring Entity to the Contractor in that currency, the Procuring Entity may recover the balance of this amount from the sums otherwise payable to the Contractor in other currencies; and
- e) if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and determined by the Central Bank of Kenya.

## **15. TERMINATION BY PROCURING ENTITY**

### **15.1 Notice to correct any defects or failures**

If the Contractor fails to carry out any obligation under the Contract, the Architect may by notice require the Contractor to make good the failure and to remedy it within 30 days.

### **15.2 Termination by Procuring Entity**

15.2.1 The Procuring Entity shall be entitled to terminate the Contract if the Contractor breaches the contract based on following circumstances which shall include but not limited to:

- a) fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],
- b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,
- c) without reasonable excuse fails:
  - i) to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or ii) to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 30 days after receiving it,
- d) subcontracts the major part or whole of the Works or assigns the Contract without the consent of the Procuring Entity,
- e) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager

for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or

- f) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an induce mentor reward:
  - i) for doing or for bearing to do any action in relation to the Contract, or ii) for showing or for bearing to show favor or disfavor to any person in relation to the Contract, or iii) if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such induce mentor reward as is described in this sub-paragraph (f).

However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination, or

- g) If the contract or repeatedly fails to remedy delivers defective work,
- h) based on reasonable evidence, has engaged in Fraud and Corruption as defined in paragraph 2.2 of the Appendix B to these General Conditions, in competing for or in executing the Contract.

15.2.2 In any of these events or circumstances, the Procuring Entity may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in the case of sub-paragraph (e) or (f) or (g) or (h), the Procuring Entity may by notice terminate the Contract immediately.

15.2.3 The Procuring Entity's election to terminate the Contract shall not prejudice any other rights of the Procuring Entity, under the Contract otherwise.

15.2.4 The Contractor shall then leave the Site and deliver any required Goods, all Contractor's Documents, and other design documents made by or for him, to the Engineer. However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the notice (i) for the assignment of any subcontract, and (ii) for the protection of life or property or for the safety of the Works.

15.2.5 After termination, the Procuring Entity may complete the Works and/ or arrange for any other entities to do so. The Procuring Entity and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor.

15.2.6 The Procuring Entity shall then give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall promptly arrange their removal, at the risk and cost of the Contractor. However, if by this time the Contractor has failed to make a payment due to the Procuring Entity, these items may be sold by the Procuring Entity in order to recover this payment. Any balance of the proceeds shall then be paid to the Contractor.

### **15.3 Valuation at Date of Termination**

As soon as practicable after a notice of termination under Sub-Clause 15.2 [Termination by Procuring Entity] has taken effect, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.

### **15.4 Payment after Termination**

After a notice of termination under Sub-Clause 15.2 [Termination by Procuring Entity] has taken effect, the Procuring Entity may:

- a) Proceed in accordance with Sub-Clause 2.5 [Procuring Entity's Claims],
- b) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Procuring Entity, have been established, and/ or

- c) recover from the Contractor any losses and damages incurred by the Procuring Entity and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the Procuring Entity shall pay any balance to the Contractor.

## **15.5 Procuring Entity's Entitlement to Termination for Convenience**

The Procuring Entity shall be entitled to terminate the Contract, at any time at the Procuring Entity's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 30 days after the later of the dates on which the Contractor receives this notice or the Procuring Entity returns the Performance Security. The Procuring Entity shall not terminate the Contract under this Sub-Clause in order to execute the Works itself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Clause 16.2 [Termination by Contractor]. After this termination, the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment] and shall be paid in accordance with Sub-Clause 16.4 [Payment on Termination].

## **15.6 Fraud and Corruption**

The Contractor shall ensure compliance with the Kenya Government's Anti-Corruption Laws and its prevailing sanctions.

## **15.7 Corrupt gifts and payments of commission**

15.7.1 The Contractor shall not;

- a) Offer or give or agree to give to any person in the service of the Procuring Entity any gift or consideration of any kind as an inducement or reward for doing or for bearing to door for having done or for borne to do any act in relation to the obtaining or execution of this or any other Contract for the Procuring Entity or for showing or for bearing to show favor or disfavor to any person in relation to this or any other contract for the Procuring Entity.
- b) Enter into this or any other contract with the Procuring Entity in connection with which commission has been paid or agreed to be paid by him or on his behalf or to his knowledge, unless before the Contract is made particulars of any such commission and of the terms and conditions of any agreement for the payment there of have been disclosed in writing to the Procuring Entity.

15.7.2 Any breach of this Condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) shall be an offence under the provisions of the Public Procurement and Asset Disposal Act (2015) and the Anti-Corruption and Economic Crimes Act (2003) of the Laws of Kenya.

## **16. SUSPENSION AND TERMINATION BY CONTRACTOR**

### **16.1 Contractor's Entitlement to Suspend Work**

16.1.1 If the Architect fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or Sub-Clause 14.7 [Payment], or not receiving instructions that would enable the contractor to proceed with the works in accordance with the program, the Contractor may, after giving not less than 30 days' notice to the Procuring Entity, suspend work (or reduce the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may be and as described in the notice.

16.1.2 The Contractor's action shall not prejudice his entitlements to financing charges under Sub-Clause 14.8 [Delayed Payment] and to termination under Sub-Clause 16.2 [Termination by Contractor].

16.1.3 If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.

16.1.4 If the Contractor suffers delay and/or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

**16.2** After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

### **16.3 Termination by Contractor**

16.3.1 The Contractor shall be entitled to terminate the Contract if:

- a) the Architect fails, within 60 days after receiving a Statement and supporting documents, to issue the relevant Payment Certificate,
- b) the Contractor does not receive the amount due under an Interim Payment Certificate within 90 days after the expiry of the time stated in Sub-Clause 4.7 [Payment] within which payment is to be made (except for deductions in accordance with Sub-Clause 2.5 [Procuring Entity's Claims]),
- c) the Procuring Entity substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the economic balance of the Contract and/or the ability of the Contractor to perform the Contract,
- d) a prolonged suspension affects the whole of the Works as described in Sub-Clause 8.11 [Prolonged Suspension], or
- e) the Procuring Entity becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.
- f) the Contractor does not receive the Architect instruction recording the agreement of both Parties on the fulfilment of the conditions for the Commencement of Works under Sub-Clause 8.1 [Commencement of Works].

16.3.2 In any of these events or circumstances, the Contractor may, upon giving 14 days' notice to the Procuring Entity, terminate the Contract. However, in the case of sub-paragraph (f) or (g), the Contractor may by notice terminate the Contract immediately.

16.3.3 The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract otherwise.

### **16.4 Cessation of Work and Removal of Contractor's Equipment**

After a notice of termination under Sub-Clause 15.5 [Procuring Entity's Entitlement to Termination for Convenience], Sub-Clause 16.2 [Termination by Contractor] or Sub-Clause 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:

- a) cease all further work, except for such work as may have been instructed by the Architect for the protection of life or property or for the safety of the Works,
- b) hand over Contractor's Documents, Plant, Materials and other work, for which the Contractor has received payment, and

- c) remove all other Goods from the Site, except as necessary for safety, and leave the Site.

## **16.5 Payment on Termination**

After a notice of termination under Sub-Clause 16.2 [Termination by Contractor] has taken effect, the Procuring Entity shall promptly:

- a) Return the Performance Security to the Contractor,
- b) pay the Contractor in accordance with Sub-Clause 19.6 [Optional Termination, Payment and Release], and
- c) pay to the Contractor the amount of any loss or damage sustained by the Contractor as a result of this termination.

## **17. RISK AND RESPONSIBILITY**

### **17.1 Indemnities**

17.1.1 The Contractor shall indemnify and hold harmless the Procuring Entity, the Procuring Entity's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

- a) Bodily injury, sickness, disease or death, of any person what so ever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, willful actor breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their respective agents, and
- b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

17.1.2 The Procuring Entity shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in sub-paragraphs (d)(i), (ii) and (iii) of Sub-Clause 18.3 [Insurance Against Injury to Persons and Damage to Property], unless and to the extent that any such damage or loss is attributable to any negligence, willful actor breach of the Contract by the contractor, the contractor's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

### **17.2 Contractor's Care of the Works**

17.2.1 The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued (or is deemed to be issued under Sub-Clause 10.1 [Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Procuring Entity. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Procuring Entity.

17.2.2 After responsibility has accordingly passed to the Procuring Entity, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.

17.2.3 If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 17.3 [Procuring Entity's

Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.

- 17.2.4 The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.

### **17.3 Procuring Entity's Risks**

The risks referred to in Sub-Clause 17.4 [Consequences of Procuring Entity's Risks] below, in so far as they directly affect the execution of the Works in Kenya, are: a) War hostilities (whether war be declared or not),

- b) rebellion, riot, commotion or disorder, terrorism, sabotage by persons other than the Contractor's Personnel,
- c) explosive materials, ionizing gradiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such explosives, radiation or radio-activity,
- d) pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds,
- e) use or occupation by the Procuring Entity of any part of the Permanent Works, except as may be specified in the Contract,
- f) design of any part of the Works by the Procuring Entity's Personnel or by others for whom the Procuring Entity is responsible, and
- g) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventive precautions.

### **17.4 Consequences of Procuring Entity's Risks**

- 17.4.1 If and to the extent that any of the risks listed in Sub-Clause 17.3 above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Architect and shall rectify this loss or damage to the extent required by the Engineer.

- 17.4.2 If the Contractor suffers delay and/ or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) An extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) Payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs (e) and (g) of Sub-Clause 17.3 [Procuring Entity's Risks], Accrued Costs shall be payable.

- 17.4.3 After receiving this further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

### **17.5 Intellectual and Industrial Property Rights**

- 17.5.1 In this Sub-Clause, "infringement" shall refer to an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and "claim" shall refer to a claim (or proceedings pursuing a claim) alleging an infringement.

- 17.5.2 Whenever a Party does not give notice to the other Party of any claim within 30 days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.
- 17.5.3 The Procuring Entity shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:
- a) An un avoidable result of the Contractor's compliance with the Contract, or
  - b) A result of any Works being used by the Procuring Entity:
    - i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or ii) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.
- 17.5.4 The Contractor shall indemnify and hold the Procuring Entity harmless again stand from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.
- 17.5.5 If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.
- 17.5.6 For operation and maintenance of any plan to reequipment installed, the contractor shall grant a non-exclusive and non-transferable license to the Procuring Entity under the patent, utility models ,or other intellectual rights owned by the contractor or a third party from whom the contract or has received the rights to grant sub-licenses and shall also grant to the Procuring Entity a non-exclusive and non-transferable rights (without the rights to sub-license) to use the know how and other technical information disclosed to the contract or under the contract. Nothing contained here-in shall be construed as transferring ownership of any patent, utility model, trademark, design, copy right, know-how or other intellectual rights from the contractor or any other third party to the Procuring Entity.

## **17.6 Limitation of Liability**

- 17.6.1 Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contractor for any in director consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than as specifically provided in Sub-Clause 8.7 [Delay Damages]; Sub-Clause 11.2 [Cost of Remedying Defects]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4(b) [Consequences of Procuring Entity's Risks] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights].
- 17.6.2 The total liability of the Contractor to the Procuring Entity, under or in connection with the Contract other than under Sub-Clause 4.19 [Electricity, Water and Gas], Sub-Clause 4.20 [Procuring Entity's Equipment and Free- Issue Materials], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum resulting from the application of a multiplier (less or greater than one) to the Accepted Contract Amount, as stated in **the Special Conditions of Contract**, or (if such multiplier or other sum is not so stated) the Accepted Contract Amount.
- 17.6.3 This Sub-Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

## **17.7 Use of Procuring Entity's Accommodation/Facilities**

- 17.7.1 The Contractor shall take full responsibility for the care of the Procuring Entity provided accommodation and facilities, if any, as detailed in the Specification, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works).

17.7.2 If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Procuring Entity is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Engineer.

## 18. INSURANCE

### 18.1 General Requirements for Insurances

18.1.1 In this Clause, “insuring Party” means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.

18.1.2 Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Procuring Entity. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

18.1.3 Wherever the Procuring Entity is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

18.1.4 If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Procuring Entity shall act for Procuring Entity's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.

18.1.5 Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.

18.1.6 The relevant insuring Party shall, within the respective periods stated in **the Special Conditions of Contract** (calculated from the Commencement Date), submit to the other Party:

- a) Evidence that the insurances described in this Clause have been affected, and
- b) copies of the policies for the insurances described in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 18.3 [Insurance against Injury to Persons and Damage to Property].

18.1.7 When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Engineer.

18.1.8 Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.

18.1.9 Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or attempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.



- 18.1.10 If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contractor fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.
- 18.1.11 Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Procuring Entity, under the other terms of the Contract otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Procuring Entity.
- 18.1.12 Procuring Entity in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.
- 18.1.13 Payments by one Party to the other Party shall be subject to Sub-Clause 2.5 [Procuring Entity's Claims] or Sub-Clause 20.1 [Contractor's Claims], as applicable.
- 18.1.14 The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to Clause 18) with insurers from any eligible source country.

## **18.2 Insurance for Works and Contractor's Equipment**

- 18.2.1 The insuring Party shall insure the Works, Plant, Material and Contractor's Documents for not less than the full reinstatement cost including the costs of demolition, removal of debris and professional fees and profit. This insurance shall be effective from the date by which the evidence is to be submitted under sub-paragraph (a) of Sub-Clause 18.1 [General Requirements for Insurances], until the date of issue of the Taking-Over Certificate for the Works.
- 18.2.2 The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under Clause 11 [Defects Liability]).
- 18.2.3 The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.
- 18.2.4 Unless otherwise stated in the Special Conditions, insurances under this Sub-Clause:
- a) Shall be effected and maintained by the Contractor as insuring Party,
  - b) shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated to the Party actually bearing the costs of rectifying the loss or damage,
  - c) shall cover all loss and damage from any cause not listed in Sub-Clause 17.3 [Procuring Entity's Risks],
  - d) shall also cover, to the extent specifically required in the tendering documents of the Contract, loss or damage to a part of the Works which is attributable to the use or occupation by the Procuring Entity of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h) of Sub-Clause 17.3 [Procuring Entity's Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, with deductibles per occurrence of not more than the amount stated **in the Special Conditions** of Contract (if an amount is not so stated, this sub-paragraph (d) shall not apply), and
  - e) may however exclude loss of, damage to, and reinstatement of:

- i) a part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in sub-paragraph (ii) below),
- ii) apart of the Works which is lost or damaged in order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship,
- iii) apart of the Works which has been taken over by the Procuring Entity, except to the extent that the Contractor is liable for the loss or damage, and
- iv) Goods while they are not in Kenya, subject to Sub-Clause 14.5 [Plant and Materials intended for the Works].

18.2.5 If, more than one year after the Base Date, the cover described in sub-paragraph (d) above ceases to be available at commercially reasonable terms, the Contractor shall (as insuring Party) give notice to the Procuring Entity, with supporting particulars. The Procuring Entity shall then (i) be entitled subject to Sub-Clause 2.5 [Procuring Entity's Claims] to payment of an amount equivalent to such commercially reasonable terms as the Contractor should have expected to have paid for such cover, and (ii) be deemed, unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause 18.1 [General Requirements for Insurances].

### **18.3 Insurance against Injury to Persons and Damage to Property**

18.3.1 The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 18.4 [Insurance for Contractor's Personnel]), which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.

18.3.2 This insurance shall be for a limit per occurrence of not less than the amount stated in **the Special Conditions of Contract**, with no limit on the number of occurrences. If an amount is not stated in the **Special Conditions of Contract**, this Sub-Clause shall not apply.

18.3.3 Unless otherwise stated in the Special Conditions, the insurances specified in this Sub-Clause:

- a) Shall be effected and maintained by the Contractor as insuring Party,
- b) shall be in the joint names of the Parties,
- c) shall be extended to cover liability for all loss and damage to the Procuring Entity's property (except things insured under Sub-Clause 18.2) arising out of the Contractor's performance of the Contract, and
- d) may however exclude liability to the extent that it arises from:
  - i) the Procuring Entity's right to have the Permanent Works executed on, over, under, in or ii) through any land, and to occupy this land for the Permanent Works,
  - iii) damage which is an unavoidable result of the Contractor's obligations to execute the iv) Works and remedy any defects, and
  - v) a cause listed in Sub-Clause 17.3 [Procuring Entity's Risks], except to the extent that cover is available at commercially reasonable terms.

### **18.4 Insurance for Contractor's Personnel**

18.4.1 The Contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.

18.4.2 The insurance shall cover the Procuring Entity and the Architect against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person

employed by the Contractor or any other of the Contractor's Personnel, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Procuring Entity or of the Procuring Entity's Personnel.

- 18.4.3 The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Clause.

## **19. FORCE MAJEURE**

### **19.1 Definition of Force Majeure**

19.1.1 In this Clause, "Force Majeure" means an exceptional event or circumstance:

- a) Which is beyond a Party's control,
- b) Which such Party could not reasonably have provided against before entering into the Contract,
- c) which, having arisen, such Party could not reasonably have avoided or overcome, and
- d) which is not substantially attributable to the other Party.

19.1.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

- a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
- c) riot, commotion, disorder, strike or lock out by persons other than the Contractor's Personnel,
- d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and
- e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

### **19.2 Notice of Force Majeure**

19.2.1 If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

19.2.2 The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

19.2.3 Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

### **19.3 Duty to Minimize Delay**

Each Party shall at all times use all reasonable endeavors to minimize any delay in the performance of the Contract as a result of Force Majeure. A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

### **19.4 Consequences of Force Majeure**

19.4.1 If the Contractor is prevented from performing his substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], and suffers delay and/ or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

- b) if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of Sub-Clause 19.1 [Definition of Force Majeure] and, in sub-paragraphs (ii) to (iv), occurs in Kenya, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment].

19.4.2 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

### **19.5 Force Majeure Affecting Subcontractor**

If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.

### **19.6 Optional Termination, Payment and Release**

19.6.1 If the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment].

19.6.2 Upon such termination, the Architect shall determine the value of the work done and issue a Payment Certificate which shall include:

- a) the amounts payable for any work carried out for which a price is stated in the Contract;
- b) the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Procuring Entity when paid for by the Procuring Entity, and the Contractor shall place the same at the Procuring Entity's disposal;
- c) other Cost or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;
- d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost); and
- e) the Cost of repatriation of the Contractor's staff and lab or employed wholly in connection with the Works at the date of termination.

### **19.7 Release from Performance**

Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:

- a) The Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and
- b) The sum payable by the Procuring Entity to the Contractor shall be the same as would have been payable under Sub-Clause 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub-Clause 19.6.

## 20. SETTLEMENT OF CLAIMS AND DISPUTES

### 20.1 Contractor's Claims

- 20.1.1 If the Contractor considers itself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give Notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 30 days after the Contractor became aware, or should have become aware, of the event or circumstance.
- 20.1.2 If the Contractor fails to give notice of a claim within such period of 30 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.
- 20.1.3 The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.
- 20.1.4 The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at an other location acceptable to the Engineer. Without admitting the Procuring Entity's liability, the Architect may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Architect to inspect all these records and shall (if instructed) submit copies to the Engineer.
- 20.1.5 Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Architect fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/ or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect: a) This fully detailed claim shall be considered as interim;
- b) The Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/ or amount claimed, and such further particulars as the Architect may reasonably require; and
  - c) The Contractor shall send a final claim within 30 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.
- 20.1.6 Within 42 days after receiving a Notice of a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Architect and approved by the Contractor, the Architect shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars but shall nevertheless give his response on the principles of the claim within the above defined time period.
- 20.1.7 Within the above defined period of 42 days, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.
- 20.1.8 Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

20.1.9 If the Architect does not respond within the time frame defined in this Clause, either Party may consider that the claim is rejected by the Architect and any of the Parties may refer the dispute for amicable settlement in accordance with Clause 20.3.

20.1.10 The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/ or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause 20.3.

## **20.2 Procuring Entity's Claims**

20.2.1 If the Procuring Entity considers itself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the Procuring Entity or the Architect shall give notice and particulars to the Contractor. However, notice is not required for payments due under Sub-Clause 4.19 [Electricity, Water and Gas], under Sub-Clause 4.20 [Procuring Entity's Equipment and Free-Issue Materials], or for other services requested by the Contractor.

20.2.2 The notice shall be given as soon as practicable and no longer than 30 days after the Procuring Entity became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given before the expiry of such period.

20.2.3 The particulars shall specify the Clause or other basis of the claim and shall include substantiation of the amount and/or extension to which the Procuring Entity considers itself to be entitled in connection with the Contract. The Architect shall then proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the amount (if any) which the Procuring Entity is entitled to be paid by the Contractor, and/ or (ii) the extension (if any) of the Defects Notification Period in accordance with Sub-Clause 11.3 [Extension of Defects Notification Period].

20.2.4 This amount may be included as a deduction in the Contract Price and Payment Certificates. The Procuring Entity shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.

## **20.3 Amicable Settlement**

Where a notice of a claim has been given, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, the Party giving a notice of a claim in accordance with Sub-Clause 20.1 above should move to commence arbitration after 60 days from the day on which a notice of a claim was given, even if no attempt at an amicable settlement has been made.

## **20.4 Matters that may be referred to arbitration**

Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the Works or abandonment of the Works or termination of the Contract by either party:

- a) Whether or not the issue of an instruction by the Architect is empowered by these Conditions.
- b) Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.
- c) Any dispute arising in respect risks arising from matters referred to in Clause 17.3 and Clause 19.
- e) All other matters shall only be referred to arbitration after the completion or alleged completion of the Works or termination or alleged termination of the Contract, unless the Procuring Entity and the Contractor agree otherwise in writing.

## **20.5 Arbitration**

- 20.5.1 Any claim or dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 20.3 shall be finally settled by arbitration.
- 20.5.2 No arbitration proceedings shall be commenced on any claim or dispute where notice of a claim or dispute has not been given by the applying party within ninety days of the occurrence or discovery of the matter or issue giving rise to the dispute.
- 20.5.3 Notwithstanding the issue of a notice as stated above, the arbitration of such a claim or dispute shall not commence unless an attempt has in the first instance been made by the parties to settle such claim or dispute amicably with or without the assistance of third parties. Proof of such attempt shall be required.
- 20.5.4 The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject of or included in any certificate.
- 20.5.5 The Arbitrator shall, without prejudice to the generality of his powers, have powers to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision requirement or notice had been given.
- 20.5.6 The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Architect from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.
- 20.5.7 Neither Party shall be limited in the proceedings before the arbitrators to the evidence, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction.
- 20.5.7 Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, and the Architect shall not be altered by reason of any arbitration being conducted during the progress of the Works.
- 20.5.8 The terms of the remuneration of each or all the members of Arbitration shall be mutually agreed upon by the Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.

## **20.6 Arbitration with National Contractors**

- 20.6.1 If the Contract is with national contractors, arbitration proceedings will be conducted in accordance with the Arbitration Laws of Kenya. In case of any claim or dispute, such claim or dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within thirty days of the notice. The dispute shall be referred to the arbitration and final decision of a person to be agreed between the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointed, on the request of the applying party, by the Chairman or Vice Chairman of any of the following professional institutions; i) Architectural Association of Kenya ii) Institute of Quantity Surveyors of Kenya iii) Association of Consulting Engineers of Kenya iv) Chartered Institute of Arbitrators (Kenya Branch) v) Institution of Engineers of Kenya
- 20.6.2 The institution written to first by the aggrieved party shall take precedence over all other institutions.

## **20.7 Arbitration with Foreign Contractors**

20.7.1 Arbitration with foreign contractors shall be conducted in accordance with the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL); or with proceedings administered by the International Chamber of Commerce (ICC) and conducted under the ICC Rules of Arbitration; by one or more arbitrators appointed in accordance with said arbitration rules.

20.7.2 The place of arbitration shall be a location specified in the SCC; and the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [Law and Language].

## **20.8 Alternative Arbitration Proceedings**

Alternatively, the Parties may refer the matter to the Nairobi Centre for International Arbitration (NCIA) which offers a neutral venue for the conduct of national and international arbitration with commitment to providing institutional support to the arbitral process.

## **20.9 Failure to Comply with Arbitrator's Decision**

20.9.1 The award of such Arbitrator shall be final and binding up on the parties.

20.9.2 In the event that a Party fails to comply with a final and binding Arbitrator's decision, then the other Party may, without prejudice to any other rights it may have, refer the matter to a competent court of law.



## **20.10 Contract operations to continue**

Notwithstanding any reference to arbitration herein,

- 1.1.1 the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
- 1.1.2 the Procuring Entity shall pay the Contractor any monies due the Contractor.

## SECTION IX - SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions shall supplement the GCC. Whenever there is a conflict, the provisions here in shall prevail over those in the GCC.

### Part A - Contract Data

Conditions	Sub Clause	Data
Procuring Entity's name and address	Heading	State Department for Medical Services
Name and Reference No. of the Contract	Heading and 3.1.1	
Engineer's Name and Address	Heading and 3.1.1	The Works Secretary, State Department for Public Works of P.O Box 30743-00100 Nairobi
Contractor's Representative Name	4.3.1	To be agreed with the Engineer
Key Personnel names	16.9.1	To be agreed with the Engineer
Time for completion	1.1	<b>78 Weeks</b>
Defects Notification Period	1.1	180 Days
Time for parties to enter into a contract agreement	1.6	Within 30 Days
Commencement date	8.1.1	To be agreed with the Engineer
Time for access to the site	2.1	To be agreed with the Engineer
Architect Duties and Responsibilities	3.1.6 (b) (ii)	Any Variations resulting in an increase of the accepted contract Amount in excess of 0% shall require approval from the procurement entity
Performance Security	4.2.1	The performance security will be in the form of a performance bond in the amount of 5% of the accepted Amount in the same currency(ies) of the accepted contract amount
Normal Working Hours	6.5	To be agreed with the Engineer

Delay damages for the Works	8.7 & 14.15 (b)	0.005 % of the Contract price per day
Maximum amount for Delay Damages	8.7	5% of the final contract price

Conditions	Sub Clause	Data
Provisional Sums	13.6. 1(b)(ii)	25%
Adjustments for Changes in Cost	13.8	Period "n" applicable to the adjustment multiplier "Po": <i>12 months</i>
Total advance payment	14.2.1	<b>N / A</b>
Repayment amortization rate of advance payment	14.2.5 (b)	<b>N / A</b>
Percentage of Retention	14.3.2 (c)	10%
Limit of Retention Money	14.3.2 (c)	<u>10</u> % of the Accepted Contract Amount
Plant and Materials	14.5(b)(i) 14.5(C)(i)	Not applicable Not applicable
Minimum Amount of Interim Payment Certificates	14.6	Not applicable
Publishing source of commercial interest rates for financial charges in case of delayed payment	14.8	Annual rate of three percentage points above the mean lending rate of the Central Bank in Kenya of the currency of payment
Maximum total liability of the Contractor to the Procuring Entity	17.6	As per applicable laws
Periods for submission of insurance: a. evidence of insurance. b. Relevant policies	18.1	14 days <u>14</u> days
Maximum amount of deductibles for insurance of the Procuring Entity's risks	18.2.4 (d)	<i>As per applicable laws</i>
Minimum amount of third-party insurance	18.3	<i>As per applicable laws</i>
The place of arbitration	20.7.2	<i>Nairobi County, Kenya</i>

## **SECTION X - CONTRACT FORMS**

FORM No. 1 - NOTIFICATION OF INTENTION TO AWARD

FORM No. 2 – REQUEST FOR REVIEW

FORM No. 3 – LETTER OF AWARD

FORM No. 4 - CONTRACT AGREEMENT

FORM No. 5 - PERFORMANCE SECURITY [Option 1 - Unconditional Demand Bank Guarantee]

FORM No. 6- PERFORMANCE SECURITY [Option 2– Performance Bond]

FORM No. 7 - ADVANCE PAYMENT SECURITY

FORM No. 8 - RETENTION MONEY SECURITY

FORM No. 9 – BENEFICIAL OWNERSHIP DISCLOSURE FORM

## **FORM No 1: NOTIFICATION OF INTENTION TO AWARD OF CONTRACT**

This Notification of Award shall be sent to each Tenderer that submitted a Tender and was not successful. Send this Notification to the Tenderer's Authorized Representative named in the Tender Information Form on the format below.

### **FORMAT**

1. For the attention of Tenderer's Authorized Representative

i) Name: *[insert Authorized Representative's name]* ii) Address: *[insert Authorized Representative's Address]* iii) Telephone: *[insert Authorized Representative's telephone/fax numbers]* iv) Email Address: *[insert Authorized Representative's email address]*

*[IMPORTANT: insert the date that this Notification is transmitted to Tenderers. The Notification must be sent to all Tenderers simultaneously. This means on the same date and as close to the same time as possible.]*

2. Date of transmission: *[email]* on *[date]* (local time)

This Notification is sent by (*Name and designation*) \_\_\_\_\_

3. Notification of Award

i) Procuring Entity: *[insert the name of the Procuring Entity]* ii) Project: *[insert name of project]* iii) Contract title: *[insert the name of the contract]* iv) ITT No: *[insert ITT reference number from Procurement Plan]*

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

4. Request a debriefing in relation to the evaluation of your tender by submitting a Procurement-related Complaint in relation to the decision to award the contracts.

a) The successful tenderers

i) Name of successful Tender\_\_

ii) Address of the successful Tender \_\_\_\_

iii) Contract price of the successful Tender Kenya Shillings \_\_\_\_\_  
(in words \_\_\_\_\_)

b) The reasons for your tender being unsuccessful are as follows:

c) Other Tenderers

Names of all Tenderers that submitted a Tender. If the Tender's price was evaluated include the evaluated price as well as the Tender price as read out.

		Tender Price as read out	Tender's evaluated price (Note a)	One Reason Why Not Evaluated
1				
2				
3				
4				
5				

Name of Tender

(Note a) State NE if not evaluated

5. How to request a debriefing

- a) DEADLINE: The dead line to request a debriefing expires at midnight on [insert date] (local time).
- b) You may request a debriefing in relation to the results of the evaluation of your Tender. If you decide to request a debriefing your written request must be made within three (5) Business Days of receipt of this Notification of Intention to Award.
- c) Provide the contract name, reference number, name of the Tenderer, contact details; and address the request for debriefing as follows:
  - i) Attention: [insert full name of person, if applicable] ii) Title/position: [insert title/position] iii) Agency: [insert name of Procuring Entity] iv) Email address: [insert email address]
- d) If your request for a debriefing is received within the 3 Days deadline, we will provide the debriefing within five (3) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (3) Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.
- e) The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.
- f) If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Days from the date of publication of the Contract Award Notice.

6. How to make a complaint?

- a) Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [insert date] (local time).

- b) Provide the contract name, reference number, name of the Tenderer, contact details; and address the Procurement-related Complaint as follows:
  - i) Attention: *[insert full name of person, if applicable]* ii) Title/position: *[insert title/ position]* iii) Agency: *[insert name of Procuring Entity]* iv) Email address: *[insert email address]*
- c) At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.
- d) Further information: For more information refer to the Public Procurement and Disposals Act 2015 and its Regulations available from the Website [www.ppra.go.ke](http://www.ppra.go.ke).

You should read these documents before preparing and submitting your complaint.

- e) There are four essential requirements:
  - i) You must be an 'interested party'. In this case, that means a Tenderer who submitted a Tender in this tendering process and is the recipient of a Notification of Intention to Award.
  - ii) The complaint can only challenge the decision to award the contract. iii) You must submit the complaint within the period stated above.
  - iv) You must include, in your complaint, all of the information required to support your complaint.

7. Standstill Period

- i) DEADLINE: The Standstill Period is due to end at midnight on [*insert date*] (local time).
- ii) The Standstill Period lasts ten (14) Days after the date of transmission of this Notification of Intention to Award.
- iii) The Standstill Period may be extended as stated in paragraph Section 5(d) above.

If you have any questions regarding this Notification please do not hesitate to contact us.  
On behalf of the Procuring Entity:

**Signature:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Title/position:** \_\_\_\_\_

\_\_\_\_\_

**Telephone:** \_\_\_\_\_





**FORM NO 2: REQUEST FOR REVIEW**

**FORM FOR REVIEW (r.203(1))**

**PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD**

**APPLICATION NO..... OF.....20..... BETWEEN**

.....

**APPLICANT AND**

.....**RESPONDENT (Procuring Entity)**

Request for review of the decision of the..... (Name of the Procuring Entity of .....dated the...day of .....20.....in the matter of Tender No.....of .....20..... for ..... (Tender description).

**REQUEST FOR REVIEW**

I/We.....,the above named Applicant(s), of address: Physical address.....P. O. Box No.....  
Tel. No.....Email ....., hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds , namely:

- 1.
- 2.

By this memorandum, the Applicant requests the Board for an order/orders that:

- 1.
- 2.

SIGNED .....(Applicant) Dated on.....day of ...../...20.....

---

FOR OFFICIAL USE ONLY Lodged with the Secretary Public Procurement Administrative Review Board on... ..... day of

.....20.....

**SIGNED**

**Board Secretary**

**FORM NO 3: LETTER OF AWARD**

*[letterhead paper of the Procuring Entity]*

*[date]*

To: *[name and address of the Contractor]*

This is to notify you that your Tender dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Accepted Contract Amount *[amount in numbers and words]* *[name of currency]*, as corrected and modified in accordance with the Instructions to Tenderers, is here by accepted by ..... *(name of Procuring Entity)*.

You are requested to furnish the Performance Security within in accordance with the Conditions of Contract, using, for that purpose, one of the Performance Security Forms included in Section VIII, Contract Forms, of the Tender Document.

Authorized Signature: .....

Name and Title of Signatory: .....

Name of Procuring Entity: .....

Attachment: *Contract Agreement*: .....

**FORM**

**NO 4: CONTRACT AGREEMENT**

THIS AGREEMENT made the day of..... 20....., between.....  
.....of ..... (hereinafter “the Procuring Entity”), of the one part, and.....of..... (hereinafter “the Contractor”), of the other part:

WHEREAS the Procuring Entity desires that the Works known as should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Works and the remedying of any defects there in,

The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
  - a) The Notification of Award
  - b) the Form of Tender
  - c) the addenda Nos \_\_\_\_\_(if any)
  - d) the Special Conditions of Contract
  - e) the General Conditions of Contract;
  - f) the Specifications
  - g) the Drawings; and
  - h) the completed Schedules and any other documents forming part of the contract.
3. In consideration of the payments to be made by the Procuring Entity to the Contractor as specified in this Agreement, the Contractor here by covenants with the Procuring Entity to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Procuring Entity here by covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects there in, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

INWITNESS where of the parties here to have caused this Agreement to be executed in accordance with the Laws of Kenya on the day, month and year specified above.

Signed and sealed by \_\_\_\_\_(for the Procuring Entity)

Signed and sealed by \_\_\_\_\_(for the Contractor).

**NO. 5 - PERFORMANCE SECURITY**

**[Option 1 - Unconditional Demand Bank Guarantee]**

**FORM**

*[Guarantor letterhead]*

**Beneficiary:** *[insert name and Address of Procuring Entity]*

**Date:** \_\_\_\_\_ *[Insert date of issue]*

**Guarantor:** *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that\_(hereinafter called "the Contractor") has entered into Contract No.\_dated\_with (*name of Procuring Entity*)\_(the Procuring Entity as the Beneficiary), for the execution of \_\_\_(hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.
3. At the request of the Contractor, we as Guarantor, here by irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of\_(*in words* ),<sup>7</sup>such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand it self or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.
4. This guarantee shall expire, no later than the.....Day of.....,2 .....<sup>8</sup>, and any demand for payment under it must be received by us at the office indicated above on or before that date.
5. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [*six months*] [*one year*], in response tot he Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.” .....

*[Name of Authorized Official, signature(s) and seals/stamps]*

**Note:** *All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.*

<sup>7</sup> *The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency of the Contract or a freely convertible currency acceptable to the Beneficiary.*

<sup>8</sup> *Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

**FORM**

**No. 6- PERFORMANCE SECURITY**

**[Option 2– Performance Bond]**

*[Note: Procuring Entities are advised to use Performance Security – Unconditional demand Bank Guarantee in stead of Performance Bond due to difficulties involved in calling Bond holder to action]*

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** *[insert name and Address of Procuring*

Entity] **Date:** \_\_\_\_\_

\_\_\_\_\_ *[Insert date of issue]* **PERFORMANCE BOND No.:**

\_\_\_\_\_

**Guarantor:** *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. By this Bond \_\_\_\_\_ as Principal (hereinafter called “the Contractor”) and \_\_\_\_\_] as Surety (hereinafter called “the Surety”), are held and firmly bound unto \_\_\_\_\_] as Obligee (hereinafter called “the Procuring Entity”) in the amount of \_\_\_\_\_ for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.
2. WHEREAS the Contractor has entered into a written Agreement with the Procuring Entity dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for \_\_\_\_\_ in accordance with the documents, plans, specifications, and amendments there to, which to the extent here in provided for, are by reference made part here of and are here in after referred to as the Contract.
3. NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Procuring Entity to be, in default under the Contract, the Procuring Entity having performed the Procuring Entity's obligations there under, the Surety may promptly remedy the default, or shall promptly:
  - a) Complete the Contract in accordance with its terms and conditions; or
  - b) Obtain a tender or tenders from qualified tenderers for submission to the Procuring Entity for completing the Contract in accordance with its terms and conditions, and upon determination by the Procuring Entity and the Surety of the lowest responsive Tenderers, arrange for a Contract between such Tenderer, and Procuring Entity and make a vailable as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Procuring Entity to Contractor under the Contract, less the amount properly paid by Procuring Entity to Contractor; or
  - c) Pay the Procuring Entity the amount required by Procuring Entity to complete the Contract in accordance with its terms and conditions upto a total not exceeding the amount of this Bond.

## FORM

4. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.
5. Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Procuring Entity named here in or the heirs, executors, administrators, successors, and assigns of the Procuring Entity.
6. In testimony whereof, the Contractor has here unto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly at tested by the signature of his legal representative, this day \_\_\_\_\_ of \_\_\_\_\_ 20 \_\_\_\_.

SIGNED ON \_\_\_\_\_ on behalf of \_\_\_\_\_

By \_\_\_\_\_ in the capacity of \_\_\_\_\_

In the presence of \_\_\_\_\_

SIGNED ON \_\_\_\_\_ on behalf of \_\_\_\_\_

By \_\_\_\_\_ in the capacity of \_\_\_\_\_

In the presence of \_\_\_\_\_



## FORM NO. 7 - ADVANCE PAYMENT SECURITY

### [Demand Bank Guarantee]

[Guarantor letterhead]

**Beneficiary:** \_\_\_\_\_ [Insert name and Address of Procuring Entity]

**Date:** \_\_\_\_\_ [Insert date of issue]

**ADVANCE PAYMENT GUARANTEE No.:** [Insert guarantee reference number]

**Guarantor:** [Insert name and address of place of issue, unless indicated in the letterhead]

1. We have been informed that \_\_\_\_\_ (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ dated \_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_ (hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum \_\_\_\_\_ (in words \_\_\_\_\_) is to be made against an advance payment guarantee.
3. At the request of the Contractor, we as Guarantor, here by irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_ (in words) upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:
  - a) Has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or
  - b) Has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.
4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Contractor on its account number at \_\_\_\_\_.
5. The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, or on the day of \_\_\_\_\_, <sup>10</sup> whichever is earlier.  
Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.
6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

---

[Name of Authorized Official, signature(s) and seals/stamps]

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<sup>9</sup> The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency of the advance payment as specified in the Contract.

<sup>10</sup> Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

*Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.*

## **FORM NO. 8 – RETENTION MONEY SECURITY**

### **[Demand Bank Guarantee]**

*[Guarantor letterhead]*

**Beneficiary:** \_\_\_\_\_ *[Insert name and Address of Procuring Entity]*

**Date:** \_\_\_\_\_ *[Insert date of issue]*

**Advance payment guarantee no.** *[Insert guarantee reference number]* **Guarantor:**

*[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that \_\_\_\_\_ *[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ *[insert reference number of the contract]* dated \_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_ *[insert name of contract and brief description of Works]* (hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, the Beneficiary retains moneys up to the limit set forth in the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, and payment of *[insert the second half of the Retention Money]* is to be made against a Retention Money guarantee.
3. At the request of the Contractor, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* \_\_\_\_\_ *[insert amount in words \_\_\_\_\_]* upon receipt by us of the Beneficiary's complying demands supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or showgrounds for your demand or the sum specified there in.
4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the second half of the Retention Money as referred to above has been credited to the Contractor on its account number \_\_\_\_\_ at \_\_\_\_\_ *[insert name and address of Applicant's bank]*.
5. This guarantee shall expire no later than the.....Day of.....<sup>2</sup>, and any demand for payment under it must be received by us at the office indicated above on or before that date.
6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months]* *[one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

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*[Name of Authorized Official, signature(s) and seals/stamps]*

**Note:** *All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.*

<sup>1</sup>*The Guarantor shall insert an amount representing the amount of the second half of the Retention Money.*

<sup>2</sup>*Insert a date that is twenty-eight days after the expiry of retention period after the actual completion date of the contract. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee*

## **FORM NO. 9 BENEFICIAL OWNERSHIP DISCLOSURE FORM**

**(Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)**

**INSTRUCTIONS TO TENDERERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM**

*This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful tenderer pursuant to Regulation 13 (2A) and 13 (6) of the Companies (Beneficial Ownership Information) Regulations, 2020. In case of joint venture, the tenderer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.*

*For the purposes of this Form, a Beneficial Owner of a Tenderer is any natural person who ultimately owns or controls the legal person (tenderer) or arrangements or a natural person on whose behalf a transaction is conducted, and includes those persons who exercise ultimate effective control over a legal person (Tenderer) or arrangement.*

Tender Reference No.: \_\_\_\_\_ *[insert identification no]*

Name of the Tender Title/Description: \_\_\_\_\_ *[insert name of the assignment]* to:

\_\_\_\_\_ *[insert complete name of Procuring Entity]*

In response to the requirement in your notification of award dated *[insert date of notification of award]* to furnish additional information on beneficial ownership: *[select one option as applicable and delete the options that are not applicable]*

I) We here by provide the following beneficial ownership information.

**Details of Beneficial ownership**

Details of all Beneficial Owners

% of shares

% of voting

Whether a person directly governing body of the Tenderer (Yes / No)

Whether a person

Details of all Beneficial Owners		% of shares	% of voting	Whether a person directly governing body of the Tenderer (Yes / No)	Whether a person
		a person holds in the company	rights a person holds in the company	or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent	directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes/ No)
		Directly or indirectly			
Full Name		Directly----- ----- %	Directly..... .....% of voting	1. Having the right to appoint a majority of	1. Exercises significant influence or control
1.	National identity card number or	of shares	rights	the board of the directors or an equivalent governing body of the Tenderer: Yes ----No----	over the Company body of the Company (tenderer)  Yes ----No----
	Passport number				
	Personal Identification Number (where applicable)				
	Nationality				
	Date of birth [dd/mm/yyyy]				
	Postal address				
	Residential address				
	Telephone number				
	Email address				
	Occupation or profession				
		Indirectly---- ----- % of shares	Indirectly----- % of voting rights	2. Is this right held directly or indirectly?:  Direct..... ...  Indirect..... ...	2. Is this influence or control exercised directly or indirectly?  Direct.....  Indirect.....



Details of all Beneficial Owners		% of shares a person holds in the company Directly or indirectly	% of voting rights a person holds in the company	Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer (Yes / No)	Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)
2.	Full Name	Directly----- ----- % of shares  Indirectly---- ----- % of shares	Directly..... .....% of voting rights  Indirectly----- - % of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes ----No---- 2. Is this right held directly or indirectly?:  Direct..... ...  Indirect..... ...	1. Exercises significant influence or control over the Company body of the Company (tenderer) Yes ----No----  2. Is this influence or control exercised directly or indirectly?  Direct.....  Indirect.....
	National identity card number or Passport number				
	Personal Identification Number (where applicable)				
	Nationality(ies)				
	Date of birth [dd/mm/yyyy]				
	Postal address				
	Residential address				
	Telephone number				
	Email address				
	Occupation or profession				
3.					
e.t					
.c					

II) Am fully aware that beneficial ownership information above shall be reported to the Public Procurement Regulatory Authority together with other details in relation to contract awards and shall be maintained in the Government Portal, published and made publicly available pursuant to Regulation 13(5) of the Companies (Beneficial Ownership Information) Regulations, 2020. (Notwithstanding this paragraph Personally Identifiable Information in line with the Data Protection Act shall not be published or made public). *Note that Personally Identifiable Information (PII) is defined as any information that can be used to distinguish one person from another and can be used to deanonymize previously anonymous data. This information includes National identity card number or Passport number, Personal Identification Number, Date of birth, Residential address, email address and Telephone number.*

III) In determining who meets the threshold of who a beneficial owner is, the Tenderer must consider a natural person who in relation to the company:

- (a) holds at least ten percent of the issued shares in the company either directly or indirectly;
- (b) exercises at least ten percent of the voting rights in the company either directly or indirectly;
- (c) holds a right, directly or indirectly, to appoint or remove a director of the company; or
- (d) exercises significant influence or control, directly or indirectly, over the company.

IV) What is stated to herein above is true to the best of my knowledge, information and belief.

Name of the Tenderer: \*[insert complete name of the Tenderer] \_\_\_\_\_

Name of the person duly authorized to sign the Tender on behalf of the Tenderer: \*\* [insert complete name of person duly authorized to sign the Tender]

Designation of the person signing the Tender: ..... [insert complete title of the person signing the Tender]

Signature of the person named above: ..... [insert signature of person whose name and capacity are shown

above]

Date this ..... [insert date of signing] day of ..... [Insert month], [insert year]

Bidder Official Stamp



**FORM NO. 10 MANUFACTURER'S AUTHORIZATION FORM**

**To:**

The Principal Secretary,  
State Department for Medical Services,  
P.O Box 30016 - 00100, Nairobi.

WHEREAS ..... [Name of the manufacturer]  
who are established and reputable manufacturers of ..... [Name and/or  
**description of the goods**] having factories at ..... [Location and address  
**of factory**] do hereby authorize... ..... [Name and address of

**Bidder**] to submit a tender, and

Subsequently negotiate and sign the Contract with you against tender

No. .... [Reference of the Tender] for the above goods

manufactured by us.

We hereby extend our full guarantee and warranty as per the General Conditions of Contract  
for the goods offered for supply by the above firm against this Invitation for Tenders.

.....

**[Signature for and on behalf of manufacturer]**

Note: This letter of authority **MUST** be on the letterhead of the Manufacturer and  
**MUST** be signed by a person authorized.

