



**COUNTY ASSEMBLY OF BUNGOMA**

**TENDER DOCUMENT  
FOR**

**PROPOSED CONSTRUCTION OF DEBATING CHAMBER FOR  
COUNTY ASSEMBLY OF BUNGOMA**

**TENDER NO: CA/BGM/OT/03-2023/2024**

**NEGOTIATION NO.1373359, 1-2023/2024**

**ISSUE DATE: 23<sup>RD</sup> NOVEMBER, 2023**

**SUBMISSION DEADLINE: 14<sup>TH</sup> DECEMBER, 2023**

**TIME: 11.30A.M**

**NOVEMBER, 2023**

**PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY DEBATING CHAMBERS****TENDER NO. CA/BGM/OT/03-2023/2024, NEGOTIATION NO.1373359, 1-2023/2024****Consisting**

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NAME AND CONTACT ADDRESSES OF PROCURING ENTITY

Name: **COUNTY ASSEMBLY OF BUNGOMA**

Address: **P.O BOX 1886 – 50200, BUNGOMA**

Email address.....

- 1) Invitation to Tender (ITT) No: **CA/BGM/OT/03-2023/2024**
- 2) Negotiation No: **1373359, 1-2023/2024**
- 3) Tender Name: **PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY DEBATING CHAMBERS.**

## **INVITATION TO TENDER**

**PROCURING ENTITY: COUNTY ASSEMBLY OF BUNGOMA**

### **CONTRACT NAME AND DESCRIPTION: PROPOSED CONSTRUCTION OF DEBATING CHAMBER FOR COUNTY ASSEMBLY OF BUNGOMA**

**The County Assembly of Bungoma** invites eligible tenderers to bid for the Proposed *Construction of Bungoma County Assembly Chambers*.

1. Tendering will be conducted under open competitive method **National** using a standardized tender document. Tendering is open to **all qualified and interested NCA 2 and above Tenderers**.
2. 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.
3. A complete set of tender documents may be obtained electronically from the Website(s) **Public Procurement Information Portal** or [www.bungomaassembly.go.ke](http://www.bungomaassembly.go.ke). Tender documents obtained electronically will be free of charge.

The tender is a **single contract package** comprised of the **of the following Six (6) categories of requirements;-**

<b>Item</b>	<b>Requirement Category</b>
1	Builder's Works
2	Interior Works: Signage & Furniture
3	Civil Works
4	Landscaping Works
5	Electrical Works
6	Mechanical Works

The Contractor will be the Main Tenderer and may invite eligible joint venture partners participating through Category two (2) to six (6) 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.

4. Tender documents may be viewed and downloaded for free from the website(s) **Public Procurement Information Portal** or [www.bungomaassembly.go.ke](http://www.bungomaassembly.go.ke). Tenderers who download the tender document must forward their particulars immediately to (*insert email, telephone and postal address*) to facilitate any further clarification or addendum.
5. Tenders shall be quoted in Kenya Shillings and shall include all taxes. Tenders shall remain valid for 182 days from the date of opening of tenders.
7. All Tenders must be accompanied by a **Tender Security of Kenya Shillings 9,000, 000.00**
8. The Tenderer shall chronologically serialize all pages of the tender documents submitted.
9. Completed tenders must be delivered to the address below on or before [*As per tender advertisement*]. Manual Tenders **will not be** permitted.

10. Tenders will be opened immediately after the deadline as specified above or any dead line date and times specified later. Tenders will be publicly opened in the presence of the Tenderers' designated representatives who choose to attend at the address below.
11. Late tenders will be rejected.
12. The addresses referred to above are:

**A. Address for obtaining further information and for purchasing tender documents**

- (1) Name of Procuring Entity: COUNTY ASSEMBLY OF BUNGOMA
- (2) Physical address for hand Courier Delivery to an office or Tender Box (City, Street Name, Building, Floor Number and Room) [As per tender advertisement].
- (3) Postal Address: P.O. Box 1886 – 50200, BUNGOMA
- (4) Insert name, telephone number and e-mail address of the officer to be contacted [*As per tender advertisement*].

**B. Address for Submission of Tenders.**

- 1) Name of Procuring Entity: COUNTY ASSEMBLY OF BUNGOMA
- 2) Postal Address: P. O Box 1886 – 50200, BUNGOMA
- 3) Physical address for hand Courier Delivery to an office or Tender Box (City, Street Name, Building, Floor Number and Room) [As per tender advertisement].

**The CLERK  
COUNTY ASSEMBLY OF BUNGOMA**

Name \_\_\_\_\_  
(Official of the Procuring Entity issuing the invitation)

Designation \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

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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 agree mentor with the intent to enter in to 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 an other tenderer;
  - b) Receives or has received any director indirect subsidy from another tenderer;
  - c) Has the same legal representative as an other tenderer;
  - d) Has a relationship with an other tenderer, directly or through common third parties, that puts it in a position to influence the tender of an other 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 all 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 tenderer 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 same time.
- 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 break down 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 owner ship 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 aside depending on 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 a nenvelope 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 there after 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 withdrawal 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 shall 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 attendance list. The omission of a Tenderer's signature on the attendance list shall not invalidate the contents and effect of the attendance. 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 prices 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 based on a 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 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 an abnormally 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. Incase 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 hererin 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 BUNGOMA COUNTY ASSEMBLY CHAMBERS.</b></p> <p>The reference number of the contract is:</p> <p>The number and identification of Lots (contracts) comprising this tender are: <i>Not applicable</i></p> <p>Lot 1 Name: _____</p> <p>Lot 2 Name: _____</p> <p>Lot...Name: _____</p>
<b>ITT 2.3</b>	<p>The information made available on competing firms is as follows:</p> <p>1. The Bids are to be submitted Eletronically</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>
<b>ITT 3.1</b>	<p>The maximum number of members in a Joint Venture (JV) shall be: <i>Two (2)</i></p>



<b>B. Contents of Tender Document</b>	
<b>ITT 7.1</b>	<p>(i) The Tenderer will submit any request for clarifications in writing at the Address: <b><i>As indicated in the tender advertisement</i></b></p> <p>To reach the Procuring Entity not later than <b><i>as indicated in the tender advertisement</i></b></p> <p>(ii) The Procuring Entity shall publish its response at the website <b><i>as indicated in the tender advertisement</i></b></p>
<b>ITT 7.2</b>	<p>(A) A pre-arranged pretender site visit [insert "shall" or "shall not"] take place at the following date, time and place: <b><i>As indicated in the tender advertisement</i></b></p> <p>Date: <u>Wednesday, 29<sup>th</sup> November, 2023</u></p> <p>Time: <u>9:0AM -3PM</u></p> <p>Place: <u>N/A</u></p> <p>(B) Pre-Tender meeting [insert "shall" or "shall not"] take place at the following date, time and place: <b><i>As indicated in the tender advertisement NA</i></b></p> <p>Date:</p> <p>Time:</p> <p>Place: AT County Assembly of Bungoma</p>
<b>ITT 7.3</b>	The Tenderer will submit any questions in writing, to reach the Procuring Entity not later than <b>Monday 4<sup>th</sup> December, 2023.</b>
<b>ITT 7.5</b>	The Procuring Entity's website where Minutes of the pre-Tender meeting and the pre- arranged pretender will be published is: <b><i>as indicated in the tender advertisement NA</i></b>
<b>ITT 9.1</b>	<p>For Clarification of Tender purposes, for obtaining further information and for purchasing tender documents, the Procuring Entity's address is:</p> <p>Name of Procuring Entity: <b>COUNTY ASSEMBLY OF BUNGOMA</b></p> <p>(1) Physical address for hand Courier Delivery to an office or Tender Box (City, Street, Building, Floor Number and Room) <b><i>As indicated in the tender advertisement</i></b></p> <p>(2) Postal Address <b>P.O. Box 1886 – 50200, BUNGOMA</b></p> <p>(3) Insert name, telephone number and e-mail address of the officer to be contacted: <b><i>As indicated in the tender advertisement</i></b></p>
<b>C. Preparation of Tenders</b>	
<b>ITT 11.1</b> (h)	<p>The Tenderer shall submit the following additional documents in its Tender:</p> <p><b><i>The list of additional documents is as per the evaluation criteria.</i></b></p>
<b>ITT 13.1</b>	Alternative Tenders <b>shall not</b> be considered.
<b>ITT 13.2</b>	Alternative times for completion <b>shall not be</b> permitted.
<b>ITT 13.4</b>	Alternative technical solutions shall be permitted for the following parts of the Works: <b><i>Not applicable</i></b>
<b>ITT 14.5</b>	The prices quoted by the Tenderer shall be: <b><i>Fixed</i></b>
<b>ITT 15.2</b> (a)	Foreign currency requirements <b><i>not allowed.</i></b>

ITT 18.1	The Tender validity period shall be <b><i>One Hundred and eighty Two (182)</i></b> days.
ITT 18.3	<p>(a) The Number of days beyond the expiry of the initial tender validity period will be <b>Thirty (30)</b> days.</p> <p>(b) The Tender price shall be adjusted by the following percentages of the tender price:</p> <p>(i) By <u>Not applicable %</u> the local currency portion of the Contract price adjusted to reflect local inflation during the period of extension, and</p> <p>(ii) By <u>Not applicable %</u> the foreign currency portion of the Contract price adjusted to reflect the international inflation during the period of extension.</p>
ITT 19.1	<p>Tender shall provide a Tender Security. The type of Tender security shall be <i>Bank guarantee</i> in the amount of <b><i>Kenya shillings Nine Million Shillings only (Ksh 9,000,000.00)</i></b> in the prescribed format <b>valid for 182 days</b> from the tender opening date.</p> <p>Bidders will be required to submit an original tender security together with the tender document.</p>
ITT 20.1	In addition to the original of the Tender, the number of copies is: <b><i>One (1) Copy</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 <u>Tender submission purposes</u> only, the Procuring Entity's address is:</p> <p>(1) Name of Procuring Entity: <b><i>COUNTY ASSEMBLY OF BUNGOMA</i></b></p> <p>(2) Postal Address: <b><i>P.O. Box 1886 – 50200, BUNGOMA</i></b></p> <p>(3) Physical address for hand Courier Delivery to an office or Tender Box (City, Street, Building, Floor Number and Room) <b><i>As indicated in tender advertisement</i></b></p> <p>(4) Date and time for submission of Tenders: <b><i>As indicated in tender advertisement</i></b></p> <p>(5) Tenders shall <b>shall be submitted</b> t electronically. <b>(NO MANUAL SUBMISSION)</b></p>
ITT 25.1	<p>The Tender opening shall take place at the time and the address for Opening of Tenders Provided below: <b><i>As indicated in the tender advertisement</i></b></p> <p>(1) Name of Procuring Entity P.o Box 1886-50200, Bungoma</p> <p>(2) Physical address for the location (City, Street, Building, Floor Number and Room) at New Adminstration Block, 2<sup>nd</sup> Committee Room 3</p> <p>(3) State date and time of tender opening.</p>
ITT 25.1	If Tenderers are allowed to submit Tenders electronically, they shall follow the electronic tender submission procedures specified below <i>[insert a description of the electronic Tender opening procedures]</i> : <b><i>Online submission as per IFMIS portal</i></b>
<b>E. Evaluation, and Comparison of Tenders</b>	
ITT 30.3	The adjustment shall be based on the <b><i>"average"</i></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.

<b>ITT 31.2</b>	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 1%</b> of the Quoted Sum.
<b>ITT 32.0</b>	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
<b>ITT 33.2</b>	A margin of preference <i>shall not</i> apply.
<b>ITT 33.4</b>	The invitation to tender is extended to the following group that qualify for Reservations <i>Not applicable</i>
<b>ITT 34.1</b>	At this time, the Procuring Entity <i>does not intend</i> to execute certain specific parts of the Works by subcontractors selected in advance.

<b>ITT 34.2</b>	Contractor's may propose subcontracting: Maximum percentage of subcontracting permitted is: 0 % <i>of the total contract amount.</i> Tenderers planning to subcontract more than 0% 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.
<b>ITT 34.3</b>	The parts of the Works for which the Procuring Entity permits Tenderers to propose Specialized Subcontractors are designated as follows:  <i>N / A</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.
<b>ITT 35.2</b>	Additional requirements apply. These are detailed in the evaluation criteria in Section III, Evaluation and Qualification Criteria.
<b>ITT 48.1</b>	Other documents required in addition to the Performance Security are: 1. All the requisite Insurances Program of Works / Progress Chart
<b>ITT 48.2</b>	Additional requirements are: <b>Not applicable</b>
<b>ITT 49.1</b>	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 email <a href="mailto:complaints@ppra.go.ke">complaints@ppra.go.ke</a> .  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: <b><u>As indicated in the tender advertisement</u></b>  For the attention: <i>[insert full name of person receiving complaints]</i> Title/position: <i>[insert title/position]</i> Procuring Entity: <i>[insert name of Procuring Entity]</i> Email address: <i>[insert email address]</i> In summary, a Procurement-related Complaint may challenge any of the following (among others): <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>

## **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 5 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>YES/NO</b>
1	Attach a copy of company Registration/Incorporation certificate or partnership deed to show that the applicant is a registered company and legally authorized to do business in Kenya.	
2	Provide a valid copy of Tax compliance certificate	
3	Copy of valid registration certificate issued by the National Construction Authority (NCA) as follows;- Main & Civil Works – NCA 2 and above Electrical Works – NCA 4 and above Mechanical Works – NCA 4 and above The registration certificates Must be accompanied by Valid NCA practicing licenses.	
4.	Provide Tender Security amounting to <b>Ksh.9, 000, 000 from Bank or Insurance Firms approved by PPRA, must be valid for 182 days from the date of tender opening date.</b>	
5.	Provide proof of power of Attorney (of tender signatory if not director of the company/ partner, signed and stamped by Commissioner of Oaths).	
6.	Provide a copy of joint venture(sub-contract) agreement between parties if applicable	
7.	Must submit a copy of CR12 for Limited companies, accompanied by copies of IDs or passport for the Directors and for business name <b>Must</b> also attach copies of IDs for the Directors.	
8.	Attach a valid copy of Single Business Permit with License Number from any County Government	
9.	The tenderer to prepare form of tender with the Company letterhead signed by the power of Attorney	
10.	Duly filled, signed and stamped self-declaration form that the person/tenderer/firm is not debarred in the matter of the Public Procurement and Asset Disposal Act 2015	
11.	Duly filled, signed and stamped self-declaration form that the person/tenderer/firm will not engage in any corrupt or fraudulent practice	
12.	Dully filled, signed and stamped confidential Business Questionnaire form' 'in prescribed form''	
13	Attach duly filled, signed and stamped proposal/Price schedule	
14	Duly filled, signed and stamped Declaration and Commitment to the Code of Ethics	
15.	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). <b>(The agreement should be signed by both parties for it to be valid)</b>	
16	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.	
17	The tender document and all attachments Must be serialized i.e. 1,2,3(in the format provided)	

**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

S/No	Requirement	Max score 100
1	<p>Copies of the following documents as proof of access to liquid assets of not less than <b>Kshs.50 Million</b> or capacity to have a minimum cash flow of <b>Kshs 50 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. (4marks)</li> <li>2. Overdraft facility from a commercial bank specifically for this project and indicating the amount to be availed. (4marks)</li> <li>3. Current bank statement for the last six months (2marks)</li> </ol>	10
2	<p>Average annual turnover of not less than <b>Kshs.600 Million</b> for the last three consecutive years as demonstrated by the submitted Audited Accounts for the years (2020, 2021 and 2022). <b>(15marks)</b></p>	15
3	<p><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 <b>(5marks)</b></p>	5
4	<p><b>Company past works experience in the last 5 years</b></p> <p>Proof of <b>at least Three (3) similar</b> works in general building works, costing not less than Kshs. <b>300 million (Kenya Shillings Three Hundred Million)</b> on average previously undertaken in the last <b>Five</b> years (2018 to date) Bidder shall attach copies of the following: <b>(5marks each)</b></p> <ol style="list-style-type: none"> <li>1. Letters of Award</li> <li>2. Signed Contract and Completion Certificate for the respective projects. or</li> </ol> <p>If project is ongoing, it must be at least 70% complete. Bidder to attach copies of interim payment certificates.</p>	15

5	<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 <b>(1mark)</b></li> <li>• Copies of professional certificates <b>(1mark)</b></li> <li>• Copies of current practicing license <b>(1mark)</b></li> <li>• Curriculum vitae signed by the nominee <b>(1mark)</b></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 Clerk – County Assembly of Bungoma</b> and must be specific to this tender <b>(1mark)</b></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. <b>(3marks)</b></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 (2marks)</b></li> <li>3. General Experience – Minimum <b>Seven (7)</b> years. <b>(2marks)</b></li> <li>4. Specific experience on Construction of building AND CIVIL works – <b>5 years. (2marks)</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. <b>(3marks)</b></li> <li>2. General Experience – Minimum <b>Five (5)</b> years. <b>(2marks)</b></li> <li>3. Specific experience on Construction of building works – <b>3 years. (2marks)</b></li> </ol> <p><b>Site Foreman</b></p> <ol style="list-style-type: none"> <li>1. Diploma in Construction/Building Management. <b>(2marks)</b></li> <li>2. Experience – Minimum Seven <b>(7)</b> years <b>(3marks)</b></li> </ol>	25
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S/No	Requirement	Comment
6	<p><b>Equipment and Machinery</b> 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 – Three (3) 2marks</li> <li>2. Concrete Poker Vibrator – Two (2) 2marks</li> <li>3. Lorries – Three (3) (2marks)</li> <li>4. Tippers – Three (3) (2marks)</li> <li>5. Pick Ups – Three (3)(2marks)</li> <li>6. Backhoe Loader – Two (2) (1mark)</li> <li>7. Grader – One (1) (1mark)</li> <li>8. Excavator – One (1) (1mark)</li> <li>9. 2 No. Water Bowser - (<math>\geq 8,000</math> Lts) (1mark)</li> <li>10. Proof of access to established plant nursery (s) (1mark)</li> </ol> <p><b>Notes</b></p> <ul style="list-style-type: none"> <li>• If the equipment is owned, must provide <b>CLEAR</b> copies of log book or proof of ownership;</li> <li>• If equipment is hired or leased Provide a commitment letter from the lessor of the equipment addressed to the <b>Clerk, County Assembly of Bungoma</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 and their corresponding copies of log books or proof of ownership by lessor;</li> <li>• The equipment listed shall be available on site when required</li> </ul>	15
7	<p>Compliance with Mechanical &amp; Electrical Key Technical Specifications 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: (3marks each)</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;</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. (2marks)</p>	15
<b>TOTAL</b>		<b>100</b>

**NB: BIDDERS SHALL BE REQUIRED TO OBTAIN A MINIMUM OF 70% OF THE MARKS AT THE TECHNICAL STAGE TO PROCEED TO FINANCIAL EVALUATION. BIDDERS WHO SCORE BELOW 70% OF THE MARKS WILL BE ELIMINATED AT THIS STAGE AND WILL NOT BE CONSIDERED FURTHER.**



## 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

### 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**.

**Note: Bidders are hereby notified that due diligence shall be carried out on information provided by the bidder. Any false information provided will lead to automatic disqualification irrespective at any stage of the procurement process or contract execution.**

### 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) Incase 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 **50,000,000.00**.

ii) Minimum average annual construction turnover of Kenya Shillings **600,000,000.00**, 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 **300,000,000.00** 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 Non-performance 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 on going under its execution over the years 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 2013.</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	

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)
10	Litigation History	No consistent history of court/arbitral award decisions against the tenderer since <b>1<sup>st</sup> January 2013</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>50,000,000.00</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>600,000,000.00</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> , starting <b>1<sup>st</sup> January 2018</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 between <b>1<sup>st</sup> January 2018</b> and tender submission deadline i.e.</p> <p>.. .. (number) contracts, each of minimum value Kenya shillings <b>300,000,000.00</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 K.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				
3				
4				
5				
6				
	<b>TOTAL COST OF LOCAL CONTENT</b>			
	<b>PERCENTAGE OF CONTRACT PRICE</b>			

## 2. 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	<table border="1"> <tr> <td>Name of manufacturer</td> <td>Model and power rating</td> </tr> <tr> <td>Capacity</td> <td>Year of manufacture</td> </tr> </table>	Name of manufacturer	Model and power rating	Capacity	Year of manufacture
	Name of manufacturer	Model and power rating			
Capacity	Year of manufacture				
Current	Current location				
	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured				
	Omit the following information for equipment owned by				
Owner	Name of owner				
	Address of owner				
	<table border="1"> <tr> <td>Telephone</td> <td>Contact name and title</td> </tr> <tr> <td>Fax</td> <td>Telex</td> </tr> </table>	Telephone	Contact name and title	Fax	Telex
	Telephone	Contact name and title			
Fax	Telex				
Agreements	Details of rental / lease / manufacture agreements specific to the project				

## 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.

### 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>

**4. FORM PER - 2:**

Resume and Declaration - Contractor's Representative and Key Personnel.

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

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

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

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

## 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:
<p>JV member's authorized representative information</p> <p>Name: _____</p> <p>Address: _____</p> <p>Telephone/Fax numbers: _____</p> <p>E-mail address: _____</p>
<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 registration documents of the legal entity named above, in accordance with ITT 3.6.</p> <p><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.</p> <p>2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.</p>



### 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			
<input type="checkbox"/> Contract non-performance did not occur since 1 <sup>st</sup> January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1.			
<input type="checkbox"/> Contract(s) not performed since 1 <sup>st</sup> January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, requirement 2.1			
<input type="checkbox"/> Contract(s) withdrawn since 1 <sup>st</sup> January <i>[insert year]</i> 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			
<input type="checkbox"/> No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3.			
<input type="checkbox"/> 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			
<input type="checkbox"/> No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4. <input type="checkbox"/> 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: <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> 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.

## 5.4 FORM FIN – 3.1:

### 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 e				
	Year1	Year2	Year 3	Year4	Year 5
Statement of Financial Position (Information from Ba					
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

### 5.4.2 Sources of Finance

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:

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

## 5.5 FORM FIN – 3.2:

### Average Annual Construction Turnover

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

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

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


<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 *			
--	--	--	--

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		

## 5.7 FORMFIN-3.4:

### 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 [Current Kenya Shilling /month Equivalent]</b>	<b>Estimated Completion Date</b>	<b>Average Monthly Invoicing Over Last Six Months  [Kenya Shilling /month)]</b>
1					
2					
3					
4					
5					

## 5.8 FORM EXP -4.1

### General Construction Experience

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

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

<b>Starting Year</b>	<b>Ending Year</b>	<b>Contract Identification</b>	<b>Role of Tenderer</b>
		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: _____	
--	--	--	--

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

## 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>	
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.

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>1</sup> of Kenya Shillings *[[Amount in figures]* \_\_\_\_\_ Kenya Shillings *[amount in words]* \_\_\_\_\_

The above amount includes foreign currency<sup>2</sup> amount (s) of *[state figure or a percentage and currency]* *[figures]* \_\_\_\_\_ *[words]* \_\_\_\_\_

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.

<sup>1</sup> *This sum should be carried forward from the Summary of the Bills of Quantities.*

<sup>2</sup> *The percentage quoted above should not include provisional sums, and not more than two foreign currencies are allowed.*

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;

- 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
- Option 2, 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 ITT 3.8]*;
- 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 there of 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 here by 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]

Dated 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.

	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 OR NO	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 theafore said Bidder, its servants and/oragents/subcontractorswillnotengageinanycorruptorfraudulent  
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 Procurementand 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>1</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>2</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.

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

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

**Request for Tenders No:**

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

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

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

<sup>1</sup> For the avoidance of doubt, a party's in eligibility to be awarded a contract shall include, 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>2</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.

1. We have been informed that\_(here inafter called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here inafter 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 on or before that date.

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

### 3. 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 withdrawn its Tender during the period of Tender validity set forth in the Principal's Letter of Tender ("the Tender Validity Period"), or any extension thereof 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 thereof 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 hereby agrees that its obligation will remain in full force and effect up to 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 thereof 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.

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

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

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

#### 4. 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 I am /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 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

#### 5. 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 a repetition 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.

Unit	Abbreviation	Unit	Abbreviation
cubic meter	m <sup>3</sup> or cu m	millimetre	mm

- 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 be 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 to 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 workyards, 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 town 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, messrooms, 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 site areas 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 temporaryf encing, 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 in clement weather, all finished work and unfixed materials, including that of Sub-Contractors, etc., to the satisfaction of the Architect until the completion ofthe 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 toleavecleanallfloors and windows and tore move all paint and cement all rubbish hand dirt as it accumulates. The Contractor is to find his own dump and shall pay all charges in connection there with.
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 Contractors hall 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 procedurf or 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 Contractors 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 in terim payments exceeding Kshs ..... for work done in respect of building or civil works. The contractor shall allow for any costs arising resulting there from 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 over see 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 attention is drawn to Finance Bill of 1993 where VAT was introduced in all contracts for construction services. The tenderer is also drawn to VATAct Cap 476 clause 19(9). The tenderer must allow for VAT1.19 as instructed else where.

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	[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.	
3	Provide a signboard notless 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.	
4	Add others (if any)	
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.____)					



### 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**

<i>Itemno.</i>	<i>Description</i>	<i>Unit</i>	<i>Nominal quantity</i>	<i>Rate</i>	<i>Extended amount</i>



**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 theTenderer.

**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>		

TOTAL TENDER PRICE Carried forward to Form of Tender		
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(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.



## **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 a ref actual and interpretative about the surface and sub-surface condition sat 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.

**“Testson Completion”** means the tests which are specified in the Contractor 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 addressf or 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 addressfromwhichtherequestwasissued.

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 ofthe 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 formannexed 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 as sign 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 or 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 interpreter 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 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 cause sthe 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 or 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 outside 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 a vailability 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 [NominatedSubcontractors]),
- 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 adjacent land.

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, directly 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 super intendence 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 there of 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, 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 sin 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 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 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 conditions have 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 16.2 [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 14 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 Tests 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 11.4 [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 Contract or 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 his 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 agreed by the Contractor, 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 (fairwear 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 defect 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 defector 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:
- The work is instructed under Clause 13 [Variations and Adjustments],
  - no rate or price is specified in the Contract for this item, and
  - 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: (*corrected tender price – tender price*) / *tender price* X 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:

- 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;
- The omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and
- 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 Work 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 financial 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 (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 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 in duplicate 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:

$$P = A + B \frac{I_m}{I_o}$$

where:

**P** is the adjustment factor for the portion of the Contract Price payable.

**A** and **B** are recoefficients **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 currencies, since coefficient A, for the non adjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other nonadjustable components. The sum of the adjustments for each currency are added to the Contract Price.

- 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 break down 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 thereon 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 subparagraphs (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], whichever 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 (or its 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 Contractor 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, incompetently 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 Contractor 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 TimeforCompletion], 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 unavoidable 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 against and 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 plant or equipment 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 contractor 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 contractor 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 indirect 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 effected, 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 maybe 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 42days 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 require mentor 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	County Assembly of Bungoma
Name and Reference No. of the Contract	Heading and 3.1.1	W.P ITEM NO. D103 WE/BUN/2202 JOB NO. 11194A
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>104 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)	0.0025 % of the Contract price per day
Maximum amount for Delay Damages	8.7	5% of the final contract price

Page 148 of 733 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	10%
Repayment amortization rate of advance payment	14.2.5 (b)	12.5% - Amount to be Fully Recovered at 80% Contract Value
Percentage of Retention	14.3.2 (c)	10%
Limit of Retention Money	14.3.2 (c)	<u>5</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 ProcuringEntity]* ii)

Project: *[insert name of project]* iii) Contract title: *[insert the name of the contract]*

iv) ITT No: *[insert ITT reference number from ProcurementPlan]*

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.

SNo	Name of Tender	Tender Price as read out	Tender's evaluated price (Note a)	One Reason Why Not Evaluated
1				
2				
3				
4				
5				

(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 hereby 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 Worksknownas\_should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Worksand 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) theNotification 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).

**FORM****NO. 5 - PERFORMANCE SECURITY****[Option 1 - Unconditional Demand Bank Guarantee]***[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>1</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 itself 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.....<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.
5. 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]***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 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>2</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.

## **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 Oblige (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 available 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



**FORM**

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.
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\_\_\_\_\_

Inthepresenceof\_\_\_\_\_

SIGNED ON\_\_\_\_\_on behalf of\_\_\_\_\_

By\_\_\_\_\_in the capacity of\_\_\_\_\_

Inthepresence 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)]*<sup>1</sup> 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 \_\_\_\_\_, 2,<sup>2</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]*

---

<sup>1</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>2</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 upto 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 upported 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 show grounds 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 ..... 20.....<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.

---

*[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 hereby provide the following beneficial ownership information.

**Details of Beneficial ownership**

Details of all Beneficial Owners

% of shares

% of voting

Whether a person directly

Whether a person

governing body of the  
Tenderer (Yes / No)

		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)
	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          Indirectly---- ----- % of shares	rights     Indirectly----- % of voting rights	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..... ...	over the Company body of the Company (tenderer)  Yes -----No---- 2. Is this influence or control exercised directly or indirectly?  Direct.....  Indirect.....
	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					



	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)
<b>2.</b>	Full Name		Directly----- ----- % of shares	Directly..... .....% 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		Indirectly---- ----- % of shares	Indirectly----- - % of voting rights		
	Personal Identification Number (where applicable)					
	Nationality(ies)					
	Date of birth [dd/mm/yyyy]					
	Postal address					
	Residential address					
	Telephone number					
	Email address					
	Occupation or profession					
<b>3. e.t .c</b>						

- 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 Clerk,  
County Assembly of Bungoma,  
P.O Box 1886- 50200,  
Bungoma.

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.

# 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.

#### **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

# GENERAL SPECIFICATIONS

## **GENERAL SPECIFICATIONS**

### **GENERALLY**

All work to be carried out in accordance with the Ministry of Public Works General Specifications for Building Works or in accordance with applicable manufactures' instructions.

#### **A. MATERIAL GENERALLY**

All materials used on the works shall be new and of the qualities and kinds specified herein and equal to approved samples. Deliveries shall be made sufficiently in advance to enable samples to be taken and tested if required. No materials shall be used until approved and all materials which are not approved or which are damaged, contaminated or have deteriorated in any way or do not comply in any way with the requirements of this specification shall be immediately removed from the site at the Contractor's expense.

#### **B. MATERIALS FOR WHICH THERE IS A KENYA BUREAU OF STANDARDS SPECIFICATION**

All materials used in the works for which a Kenya Bureau of Standard Specification has been published shall conform with the latest edition thereof in every way. The Architect reserves the right to demand that the Contractor shall obtain at his own expense a certificate in respect of any material to state that it is in accordance with the Kenya Bureau of Standard Specifications.

#### **C. MATERIALS FOR WHICH THERE IS NO KENYA BUREAU OF STANDARDS SPECIFICATION**

All materials used in the works for which no Kenya Bureau of Standard Specification has been published shall conform with the British Standard Specifications for such material. If there are no published standard as specified for any materials, the quality of such materials shall be generally of a Standard equal to those for which there is a Kenya Bureau of Standard or British Standard Specification.

#### **D. ALTERNATIVES TO PROPRIETARY BRANDS**

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

Where materials are specified by their proprietary names or where fittings are specified by catalogue numbers, or descriptions, the contractor may offer material or fittings of alternative manufacture which are of equal quality. Such alternatives must be approved before being used in the works and the Contractor shall allow for this, but prior to tendering he may submit to the Architect for approval the names of any suppliers or manufacturers whose products he intends to use, together with catalogue numbers and descriptions and/or samples but the decision of the Architect will be final.

#### **E. SAMPLES**

The Contractor shall furnish for approval, with reasonable promptness all samples of material and workmanship required by the Architect. The Architect shall check and approve such for conformance with the design concept of the works and for compliance with the information given in the Contract Documents. The work shall be in accordance with approved samples.

- All material samples shall be delivered to the Architect's Office with all charges in connection therewith paid by the Contractor.
- Duplicate final approved samples, in addition to any required for the Contractor's use, shall be furnished to the Architect, one for office use and one for the site.
- Samples shall be furnished so as not to delay fabrication, allowing the Architect reasonable time for consideration of the sample submitted.
- Each sample shall be properly labelled with the name and quality of the material, manufacturer's name, name of project, the Contractor's name and the date of submission and the specification number to which the sample refers.

## **PART ONE : GENERAL SPECIFICATIONS**

### **A MEASUREMENT AND TESTING EQUIPMENT**

The Contractor shall provide the following equipment for carrying out measuring and control tests on the site and maintain in full working order:

- (a) Straight edges 2 metres and 4 metres long for testing the accuracy of the finished concrete.
- (b) A glass graduated cylinder for use in the silt test of organic impurities in the sand.
- (c) Slump test apparatus
- (d) 150 mm steel cube moulds with base plates and tamping rod to BS 1881.
- (e) Two 30 metre steel tapes
- (f) One dumpy or quickset level and staff.
- (g) Micrometer.

### **B SAFETY**

The Contractor shall practice high safety standards in execution of the works and shall comply with:

- (a) SHE laws that include but may not be limited to:
  - i Work Injury Benefit Act (WIBA) 2007
  - ii Occupational Safety and Health Act 2007
  - iii Environmental Management & Coordination Act 1999 and its subsidiary legislations
- (b) The building code/building bylaws
- (c) Any other laws, regulations or practices as may be required by the employer



## **PART TWO: DEMOLITIONS & ALTERATIONS SPECIFICATIONS**

### **DEMOLITIONS AND ALTERATIONS**

#### **A. DEMOLITIONS**

Demolitions, taking out and cutting away shall be carefully performed and every precaution shall be taken to ensure the safety of the work. If damage should occur in the carrying out the demolitions or alterations the contractor shall reinstate and make good the same at his own expense.

#### **B. PROTECTION**

Supply, erect and maintain during the cutting of openings etc., all necessary protection to the existing premises against damage by weather or other cases.

#### **C. LAYING THE DUST**

Allow for laying the dust as far as possible during the alteration by watering with a hose or other means

#### **D. MAKING GOOD**

All making good of blockwork, building up of opening etc., shall be solid blockwork unless otherwise described, in cement mortar (1:4) properly cut, toothed and bonded and pinned up to existing work and pointed where necessary.

#### **E. CREDIT FOR MATERIALS**

Unless otherwise specified materials arising from the demolitions and alterations will become the property of the contractor. If the Contractor wishes to allow a credit for any such materials the appropriate allowance should be included in the credit column of the Bills of Quantities. In the event that the Employer wishes to take possession of any such materials the contractor will only be entitled to receive compensation to the amount of credit indicated.

#### **F. DEFINITIONS OF TERMS**

The following definitions explain and simplify the terms indicated in the description of the works.

##### ***Removal shall include:***

Dismantling/pulling down/taking out/taking up/stripping etc., at the site of the works, getting from the site of the works to the outside of building by whatever means is necessary and disposal.

##### ***Disposal shall include:***

handling on site to store or to pick up point for loading into skips or lorries transporting away from site to yard, store or tip payment of all tip charges.

## **PART THREE: EXCAVATIONS & EARTHWORKS SPECIFICATIONS**

### **EXCAVATION AND EARTHWORKS**

#### **A. CODES OF PRACTICE**

The contractor shall comply with the following codes of practice:

Site Investigations C.P 2001

Earthworks C.P 2003

Foundations C.P 2004

Protection of building against water from the ground C.P 102

#### **B. INSPECTION OF SITE**

The contractor is deemed to have visited the site and to have ascertained the nature of the soil and sub-soils to be excavated.

No claim will be allowed on account of these being of a different nature from that for which he had allowed in his prices.

#### **C. PROCEDURE**

The excavations and fillings shall be carried out in such a manner and order as the Architect may direct.

#### **D. EXISTING TREES SHRUBS AND GRUBBING UP ROOTS**

##### ***(a) Directions***

Cut down and remove shrubs and trees as directed. No shrubs, trees, plants etc., shall be removed except as directed by the Architect and the contractor shall be held responsible for any damage caused by the building operations to those shrubs, trees etc., not so directed to be removed.

##### ***(b) Grubbing up roots***

Grubbing up roots etc. shall include the following and disposal shall be described under the foregoing clause:

- (1) Stumps and roots of large trees shall be completely removed.
- (2) Stumps and roots of small trees, bushes or other vegetation shall be completely removed to a depth of at least 600mm below formation.
- (3) Smaller stumps and roots of vegetation up to 25mm thick shall be completely removed to a depth of 230mm below formation.
- (4) Fine roots shall be removed to as great depth as is practicable by hand. Except where the area of grubbing is to be excavated, all resulting holes shall be filled up solid with approved material compacted to the same relative density as the surrounding.

#### **E. SITE CLEARANCE**

All grass, vegetable matter etc., must be removed from or burned on site at the commencement of the contract over areas as directed by the Architect.

#### **F. WHITE ANT-INSECTICIDE TREATMENT**

The Contractor must destroy any white ant's nests found within the perimeter of the buildings and within a distance of 20 metres from the buildings externally and take out and destroy queen ants, impregnate holes and tunnels with approved insecticides and back-fill with hard materials well rammed and consolidated.

## **G. EXCAVATION**

- (a) The excavations are to be executed to the widths shown on the Drawings, and to the depth below existing ground levels as directed by the Architect in order to obtain satisfactory foundations. If the contractor excavates to any widths or depths greater than those shown on the drawings or as instructed by the Architect he shall at his own expense fill in such widths or depths of excavation beyond that instructed or shown with concrete to the satisfaction to the Architect.
- (b) Level and ram bottoms of all excavations to receive concrete, form steppings if necessary or directed to allow for sloping ground, and well water excavations before pouring concrete.
- (c) The contractor shall report to the Architect when secure bottoms to the excavations have been obtained. Any concrete of other work executed before the excavations have been inspected and approved shall, if so directed, be removed and new work substituted after the excavations have been approved all at the contractor's expense.
- (d) Excavations made below required levels shall be filled with mass concrete (1:4:8) at the contractor's expense.

## **H. ROCK**

### **(a) Definition**

Rock is defined as any material met within the excavations which is of such size or position that it can only be removed by means of wedges, compressed air plant, or other special plant and the Architects opinion shall be final.

### **(b) Other materials to be taken with normal excavations**

Excavations in any material such as compacted murrum, soft tuff, stiff clay or similar materials which in the opinion of the Architect can reasonably, be removed by pick, traxcavator or similar, means will be deemed to be included in the prices of normal excavation.

## **I. HARDCORE FILLING**

Hardcore for filling under floors etc., shall be good hard stone, ballast or quarry waste (not magadi or similar soft stone) to the approval of the Architect broken to pass not greater than a 150mm ring or to be 75% of the finished thickness of the layers being compacted whichever is the lesser and graded to contain sufficient smaller pieces to fill all voids so that it can be thoroughly compacted. The filling is to be laid in layers each of a consolidated thickness not exceeding 225mm and well watered and compacted by hand or mechanical tampers. The top surface of the hardcore shall be levelled or graded to falls as required and blinded with a 75 mm layer of similar material finely crushed and well rolled and watered immediately before concrete is laid.

## **L. FILLING OBTAINED FROM THE EXCAVATIONS**

Filling obtained from surplus excavated materials is to be free from all weeds, roots, vegetable or other unsuitable materials and is to be filled in layers each of not more than 225 mm finished thickness. Each layer to be well watered and consolidated before the subsequent layer is filled in.

## **M. MATERIALS FOUND IN THE EXCAVATIONS**

No sand, aggregate or other materials found in the excavations is to be used in the works without the written permission of the Architect.

## **N. INSECTICIDE / ANTI-TERMITE TREATMENT**

The top surface of all filling shall be treated with an approved chemical treatment, applied in accordance with the manufacturers printed instructions. The approved specialist treatment shall include a ten year guarantee against termites.

**O. PROTECTION OF PIPES, CABLES ETC.**

Before commencing works which include excavations or ground levelling by manual or mechanical excavation the contractor shall at his expense ascertain in writing from the Post Office, K.P. & L. Co. Ltd., Engineer's Department (water & sewers section) and all other public bodies, companies and persons who may be affected, the positions and depths of their respective ducts, cables mains or pipes and appurtenances. He shall thereupon search for and locate such services.

The contractor shall at his own expense effectually prop, protect, underpin, alter, divert, restore and make good as may be necessary all pipes, cables or ducts, poles or wires and their appurtenance disturbed or damaged during the progress of the works, or in consequence thereof.

Except that such services as required to be removed or altered by virtue of the layout of the permanent work and not the manner in which the work is carried out, shall be so removed or altered at the expense of the Employer. The contractor shall be liable for the cost of repairs to any services damaged as a result of carrying out the works and shall further be liable for any damage which may be shown during the period of maintenance, to have arisen through the execution of these works.

The rates for excavation, including excavation in rock, must include for trimming, levelling and preparing bottoms and all faces to receive concrete, etc., and for and extra excavation required for planking and strutting. Prices shall include for excavating in any material encountered unless specifically otherwise described, handling, etc., of extra bulk after excavating, or before consolidating, any extra excavation required for formwork or planking and strutting, circular work, grubbing up any old drains, roots, etc., that may be encountered, for trimming sides and levelling and ramming bottoms, forming steppings and trimming excavation or filling of embankments and batters as required.

In his price for the item, keep excavations free from all water, the contractor shall allow and make provision for keeping the whole of the work thoroughly drained and clear of water below the lowest level of any part of them so long as may be required and if considered necessary by the Architect, continuously day and night by petrol or hand pumps or other mechanical appliances, pipes, chutes, dams, manholes, sumps, diversions or any other means necessary for the purpose. Water pumped from the trenches shall be allowed to run down the road channels but shall be conveyed to the nearest surface water sewer, ditch or river through troughs, chutes or pipes.

**P. RATES OF DISPOSAL**

Rates of disposal of excavated material are to include for the selection of spoil as it arises and for all double handling and re-excavation from spoil heaps not specifically ordered by the Architect.

**Q. POLYTHENE SHEETING**

Polythene sheeting shall be 1000 gauge or as described obtained from an approved manufacturer. Joints in sheeting shall be treble folded with 150 mm fold and taped at 300 mm intervals with 50 mm wide black plastic adhesive tape as manufactured by sellotape limited. The sheeting shall not be laid loose with sufficient wrinkles to permit shrinkage up to 15%.

**R. GRASSED AREAS**

Areas to be grassed shall be cleared of all debris and roots and dug up to a depth of 300 mm. Where outcrops of rock or murrum occur, these will be covered with suitable soil to a depth of 150 mm.

## **PART FOUR : CONCRETE WORK SPECIFICATIONS**

### **CONCRETE WORK**

#### **A. BENDING SCHEDULES**

The Engineer will issue bar bending schedules in accordance with BS 4466. The Contractor should check these against the drawings before any cutting bending or construction involving the schedule is started. Any discrepancy should be reported to the Engineer immediately for his clarification. The contractor shall be responsible for any delays or additional work caused solely by his failure to check the schedules.

#### **B. APPROVALS**

Well before construction commences the Contractor shall supply to the Engineer for his approval details of his proposed layouts of concreting plant and on site workshop; details of formwork systems and the construction devices, e.g., cranes, chutes, scaffolding, which he proposes to use for the structural work. The information is to be sufficiently detailed to enable the Engineer to approve or otherwise.

The Contractor should note that further approvals are required by the Specification before construction starts. The contractor is wholly responsible for obtaining these approvals and no claim for delays will be entertained due to the contractors failure to obtain such approvals in adequate time.

### **MATERIALS**

#### **C. CEMENT**

Cement, unless otherwise specified, shall be ordinary Portland Cement complying with BS12. The contractor shall obtain a manufacturer's certificate of test in accordance with the appropriate standard for each consignment of cement delivered to the site and shall immediately forward copies of the same to the Engineer for his retention.

Notwithstanding the manufacturer's certificate the Engineer may require that any cement delivered to the site be sampled and tested. Any batch so tested which fails to comply with this specification will be rejected.

All cement shall be delivered to the site in the original sealed bags of the manufacturer or in approved bulk containers.

Cement, unless delivered in bulk, shall be stored in a weatherproof shed, the floor of which shall be raised at least 150 mm above the ground to allow free air circulation. Cement delivered in bulk shall be stored in a weatherproof silo. All cement shall at all times be protected from deterioration.

Each consignment of cement shall be kept separate, identified and used in order of delivery. No two types of cement shall be used in combination.

Any cement which upon inspection is considered by the Engineer to have deteriorated in any way will be rejected.

#### **D. AGGREGATES OF CONCRETE**

Aggregates for concrete shall, unless otherwise specified, be aggregates from natural sources complying with BS 882. Additionally, the flakiness index when determined by the sieve method described in BS 812 shall not exceed 35 for any size of concrete aggregate. Fine aggregate within or finer than zone 4 of BS 882 shall not be used.

When tested for soundness in accordance with ASTM Test C 88 -73 the loss of weight after 5 cycles shall not exceed 5 percent for any aggregate.

Aggregate which is potentially reactive when tested in accordance with ASTM Test C289-71 for the alkali aggregate reaction shall not be used. The standard for acceptance being that test shall plot to the left of the solid which is shown in figure 2 of the test standard.

Well before any concreting work, the Contractor shall forward to the Engineer for approval details of his proposed source of supply of aggregate giving the aggregate group classification and typical physical properties as required by BS 882.

The Contractor shall provide the Engineer with a certificate for his retention showing that all aggregate regularly comply with the requirements of his Specification.

The Engineer may require that any aggregate be tested for soundness in accordance with ASTM Test C88 - 73 before giving approval to any proposed source of supply. The Engineer may require that any aggregate be tested for potential reactivity in accordance with ASTM Test C28971.

Notwithstanding any certificate of compliance, the Engineer may at any time require that any aggregate delivered to the site be sampled and tested. Any aggregate so tested which fails to comply with this specification will be rejected.

Coarse aggregate shall be delivered ready screened or screened on site separate nominal single sizes within the limits given in BS 882.

Aggregates of different sizes of types shall be stored in different hoppers or different stockpiles or approved well drained paved areas which shall be separated from each other.

Stockpiles shall be protected against contamination from any source.

Any aggregate which has become contaminated or which does not conform with the above requirements may be rejected by the Engineer.

#### **E. WATER FOR USE WITH CEMENT**

Water for use in mixing with cement or for curing concrete shall be from any approved source, clean, fresh and free from organic and other deleterious matter.

The Engineer may require that any water be sampled and tested by the method given in BS 3148. Water failing the criteria given in the appendix to BS 3148 will be rejected.

Water for use in mixing with cement shall neither be hotter than 25 degrees centigrade (77 degrees fahrenheit) nor colder than 5 degrees centigrade (41 degrees Fahrenheit) at the time of mixing.

#### **F. STEEL ROD REINFORCEMENT**

Steel rod reinforcement shall consist of:

- a) Mild steel bar complying with BS 4449 or KS 02-22
- b) Hot rolled high yield bars complying with BS 4449.
- c) Cold worked high yield bars complying with BS 4461 as described in the drawing.

Where cold worked high yield bars are to be used these shall be thermal mechanically twisted and **NOT** square twisted bars formed by a torsion controlled process.

The contractor shall obtain a manufacturer's certificate of test in accordance with the appropriate standard for each steel batch relating to reinforcement delivered to site and shall immediately forward copies of the same to the Engineer for his retention.

Where hot rolled high yield deformed bar are to be used the results of bond tests to ASTM 23471, using concrete of the same quality as that to be used in the works, shall be forwarded to the Engineer.

Notwithstanding the manufacturer's certificate, the Engineer may require that any reinforcement delivered to the site be sampled and tested. Any reinforcement so sampled and tested which fails to comply with this specification will be rejected.

All reinforcement shall be stored in clean conditions in an orderly manner to the satisfaction of the Engineer such that the batch to which each piece belongs can be readily identified.

#### **G STEEL FABRIC REINFORCEMENT**

Steel fabric reinforcement shall be electrically cross welded steel mesh reinforcement complying with BS 4483 and of the size and weight specified and made of wire to B.S. 4482.

#### **H TYING WIRE**

Tying wire for fixing reinforcement shall be either:

- a) No. 16 gauge soft annealed iron wire, or
- b) No. 18 gauge stainless steel wire.

#### **I SPACERS**

Spacers block required for ensuring that the reinforcement is correctly positioned shall be as small as possible consistent with their purpose, of a shape acceptance to the Engineer, and designed so that they will not overturn when the concrete is placed. Unless otherwise approved they shall be made of concrete with 10 mm maximum aggregate size and mix proportions to produce the same strength as the adjacent concrete.

Wire shall be cast in the block for the purpose of tying it to the reinforcement. Spacer block of concrete shall not be used until at least 7 days old.

#### **J ADMIXTURES**

No admixtures or cements containing additives shall be used in concrete unless specified or approved by the engineer. Such approval will not be given unless in the Engineer's opinion specific benefit to the density or quality of the concrete will result.

#### **K WALL TIES**

Wall Ties between concrete and adjoining block or block walling shall be "Abbey" slots and anchors as supplied by Abbey Building supplies Ltd or similar approved.

#### **L JOINT FILLERS**

Joint fillers unless otherwise stated shall be "flexcell" as manufactured by Expandite Ltd, or similar approved and placed in accordance with the manufacturer's instructions.

#### **M JOINT SEALANTS**

Joint sealants shall be as described in the drawings and approved by the Engineer. Sealant shall be used strictly in accordance with the manufacturer's instructions.

#### **N HOLLOW CLAY POTS**

Pots shall be burnt clay blocks conforming to BS 3921 or similar approved. They shall be true to shape and free from cracks or distortion.

#### **O WATER STOPS**

Water stops unless otherwise stated shall be. Sika waterbar. As manufactured by Sika International or similar approved and placed and jointed in accordance with the manufacturer's instructions.

## WORKMANSHIP

### P      **FIXING STEEL REINFORCEMENT**

Reinforcement shall be bent accurately in accordance with BS 4466 to the shape and dimensions shown in the schedules. All reinforcement shall be bent at temperatures in the range of 5 and 100 degrees centigrade.

Cold worked or any high yield bars shall not be straightened or bent again once having been bent. When it is necessary to bend mild steel reinforcement already cast in the concrete the internal diameter of such bends shall be not less than twice the diameter of the bar.

No welding of reinforcement shall be carried out without the approval of the Engineer. All reinforcement shall at the time of concreting be free from mud, oil mortar droppings, loose rust, paint grease, mill scale or other deleterious still "blue" from the mill shall not be used.

All reinforcement shall be fixed in the position shown on the Drawings by the adequate use of spacers, tying wires, chairs, stools etc., and shall be so maintained during the concreting operations.

Laps in reinforcement shall be where indicated on the Drawings or approved by the Engineer. Unless otherwise indicated the minimum lap length for rod reinforcement shall be 40 diameters and for mesh reinforcement two complete meshes.

A steel fixer shall be in attendance at all times when concreting is in progress to correct any errors, omissions or movement in the reinforcement.

In severe test conditions reinforcement shall be shaded from direct sunlight and hosed down with clean water prior to concreting to keep the reinforcement below 25 degrees centigrade (77 degrees Fahrenheit).

#### (a)      Nominal Concrete Cover to Reinforcement

Unless otherwise directed the nominal concrete cover to steel reinforcing bars (including links and distribution) in any face shall be:-

Foundations against earth face	75mm
Foundation against blinding	50mm
Columns (main bars)	40mm
Slabs and stairs	20mm
Wall (main bars)	20mm

The tolerance on placing of bars achieve nominal cover ! 5mm

### Q      **FORMWORK**

Formwork shall include all temporary or permanent forms required for forming the concrete, together with all temporary construction required for their support.

All formwork shall be so constructed that there shall be no loss of material from the concrete. After hardening the concrete shall be in the position and of the sample, dimensions, and surface finish described in this specification or on the Drawings.

#### *General Specifications*

Where internal metal ties are permitted they or their removable parts shall be extracted without damage to the concrete and the remaining holes filled with mortar. No permanently embedded metal part shall have less cover than that indicated for adjacent steel reinforcement.

When holes are to be provided in formwork for weep holes and the like they shall be neatly trimmed to fit the pipe and caulked with the approved material to form a grout tight joint.



When concrete is to be deposited to a steeper slope than 15 degrees to the horizontal top forms shall be used to enable the concrete to be properly compacted. The Engineer may require details and/or calculations of any proposed formwork to be submitted for approval prior to work starting. Such approval if given shall not in any way relieve the contractor of his responsibilities for the safety or adequacy of such for its purposes.

The inside surfaces of forms, except for permanent formwork, or unless agreed by the Engineer, shall be coated with an approved material to prevent adhesion of the concrete. Such approved material shall be applied strictly and shall not come into contact with reinforcement or other castin items.

Immediately before concreting all forms shall be thoroughly cleaned out. In the case of deep sections an opening shall be left at the base to enable such cleaning to be adequately completed.

In the case of beams, slabs of like members the formwork shall be so arranged that the sides or edges may be removed without disturbance to the soffit or propping system. The erection, easing and striking of the formwork shall be done under the personal supervision of a competent foreman.

Formwork shall be struck at such a time and in such a manner as to cause no damage to the structure. The contractor shall inform the Engineer before he intends to strike any formwork. The time at which the formwork is struck shall be the contractor's responsibility but the minimum periods between the completion of any concreting bay and the removal of forms shall be as follows:

Vertical formwork	24 hours
Soffits to beams	21 days
Soffits to slabs	14 days
Cantilevers	28 days

The periods given above are based on the removal of all props and formwork using ordinary portland cement under average weather conditions or different cement may cause the above periods to be increased. Should the contractor wish to make use of reduced striking times then he must satisfy the engineer that the strength of the concrete at such time and the structural system is adequate to withstand the dead and imposed loads applied to it. Before making use of reduced striking times the Engineer's agreement must be obtained in writing.

Where the structure is of multi storey construction props with head trees and braces shall be provided to distribute the imposed load below the floor being cast. This will normally be 2 storey height below the floor being cast unless otherwise stated.

Where sawn formwork finish is specified or in all cases where no alternative finish is specified the surface of the concrete shall be not worse then that obtained by the use of properly designed moulds of closed jointed sawn boards. Small surface blemishes caused by entrapped air will be permitted but the surface should be free of voids, honeycombs or other defects.

Where "fair faced" finish is specified the irregularities of the finish shall be no greater than those obtained from the use of wrought thickened square edge boards arranged in a uniform pattern. The concrete surface shall be smooth, free from fins, lippings, board marks or other irregularities, and even with sharp true arises. Only very minor blemishes or voids shall occur and there shall be no staining or discolouration.

## **R. CONSTRUCTION, CONTRACTION AND EXPANSION JOINTS**

Construction joints will be permitted only at the positions shown on the Drawings and as instructed on the site by the engineer.

These joints will in general be spaced to allow a maximum plan area for any bay of 100 sq.m. of maximum length of 12 m in any one dimension.

Vertical construction joints shall be properly made to form a vertical grout tight joint. Where reinforcement passes through the face of the joint the stopping off board shall be drilled so that the bars pass through, or the board shall be made in sections with half round indentation in the joint faces for each bar. Under no circumstances shall concrete when being deposited be allowed to, tail off. Construction joints formed with expanded metal or similar will not be permitted for reinforced concrete work.

#### **S. CONCRETE MIXES - DESIGNS MIX**

Mixes for each class of concrete specified or shown on the drawings shall be designed by the contractor to achieve the specified minimum cube strength combined with high density and adequate workability for the purpose. In order to allow for unavoidable variation the design strength should exceed the specified works cube strength by twice the expected standard deviation. In the absence of previous information a standard deviation of 7MN/M2 should be assumed.

Details of any proposed mix design shall be forwarded to the Engineer not less than 60 days before that class of concrete is required to be used on the work for his approval in principle. The details shall include at least the following information:-

- a) Source nature and grading of coarse and fine aggregate.
- b) Source of cement
- c) Nominal maximum size of aggregate
- d) Cement content
- e) Aggregate/Cement ratio
- f) Water/Cement ratio
- g) Design density
- h) Design slump or compacting factor
- i) Design strength

Classes of concrete will be referred to by the minimum 28 days work cube strength and the maximum size of aggregate. Classes of concrete shall meet the criteria shown in Table I. The maximum water/cement ratio is herein defined as the ratio of the weight of the “free” water to the weight of the cement. The “free” water is that quality of water available for cement. Any water required to be absorbed by aggregate is excluded.

The workability of the concrete shall be the minimum consistent with producing a dense, well compacted mass. Due regard shall be paid to size and shape of the section together with any congestion of reinforcement.

After the Engineer has approved a design mix in principle the contractor shall prepare a trial mix on site using the plant and materials intended for the works. Each batch of concrete shall be sampled and the following prepared, in accordance with BS1881:

- a) Nine 150 mm cubes, three for test at 7 days, three for test at 14 days and three for test at 28 days; and
- b) Three slump tests or where the design slump is less than 25 mm then
- c) Three compacting factor tests.

No structural concrete shall be placed in the works until the Engineer has approved the preliminary tests. Thereafter, the approved mix proportions shall be adhered to throughout the work and may only be varied with the prior approval of the Engineer.

#### **T. CONCRETE MIXES - NOMINAL MIXES**

Mixes for each class of concrete specified or shown on the Drawings shall be used by the contractor. They shall be mixed to achieve high density combined with adequate workability for the purpose.

Details of any proposed mix shall be forwarded to the Engineer not less than 5 days before that class of the concrete is required to be used on the works for his approval in principle.

Classes of concrete will be referred to by their nominal mix proportions. Classes of concrete shall meet the criteria show in Table II.

The workability of the concrete shall be the minimum consistent with producing a dense, well compacted mass. Due regard shall be paid to the size and shape of the section together with any congestion of reinforcement. The Engineer may at his discretion require preliminary tests of concrete quality for nominal mixes unless satisfactory evidence of strength is produced from reliable sources. Where required, these tests shall be in accordance with BS 1881.

#### **U. CONCRETE MIXES - GENERAL**

The standard of acceptance of any preliminary tests will be similar to the standard for normal works cubes, slump or compacting factor, except that the minimum cube strengths required shall be those given “minimum Preliminary cube strength at 28 days” in Table I or II.

For all structural concrete the following representative samples shall be taken and tested in accordance with BS 1881.

One each day on which less than 50 cu.m of concrete is being poured:

- a) six 150mm cubes - three for test at 7 days and three for test at 28 days; and
- b) two slump tests; or
- c) two compacting factor tests

On any day when greater quantities of concrete are being poured then six additional cube tests and two additional slump or compacting factor tests shall be carried out for each 50 cu.m or part thereof.

All cubes shall be marked with the date of casting and a reference number. For each cube a record shall be kept of the position in which the batch of concrete from which it was sampled was placed. All cubes shall be tested by an approved testing authority.

The concrete cubes tested at 7 days are intended to be indicative only and the target works strengths at 7 days given in Table I are not normally mandatory. It should be noted however, that it is unlikely that cubes failing the 7 days target will subsequently pass the 28 days cube strength. The concrete cubes tested 28 days shall be taken to represent the concrete placed in the works. The standard of acceptance for cube strength tests shall be as follows:

The cube strength shall be calculated from the maximum load sustained by the cube at failure.

The appropriate strength requirements as given in Table I, shall be considered to be satisfied if

- (a) None of the strength of the three cubes is below the specified cube strength, or if
- (b) The average strength of the three cubes is not less than the specified cube strength and the difference between the greatest and the least strengths is not more than 20 percent of that average

#### **V. READY MIXED CONCRETE**

Ready mixed concrete shall be used only with the approval of the Engineer. When such approval is given it shall be supplied in accordance with BS 1926 except where this conflicts with this specification shall prevail.

#### **X. PLACING AND COMPACTING CONCRETE**

All concrete shall be vibrated unless otherwise specified. The vibration shall be carried out by experienced operators and with immersion type vibrators to the Engineer's satisfaction.

Placing of concrete shall be carried out in layers not exceeding 60mm deep and in sequence from one end of the form to the other. Concrete in foundation and other underground work shall be protected from contamination with fallen earth or rock during and after placing.

Any concrete which shows signs of initial setting before or during placing shall not be used, it shall be removed at the contractor's expense. Sufficient vibrators shall be provided to correspond with the rate of deposition of concrete. The vibration shall be continuous throughout the placing of the concrete. Standby vibrators shall be on site during all concrete placing.

Vibration must not be allowed to disturb any recently placed concrete that has begun to set. Any water accumulating on the surface of newly placed concrete shall be removed by approved means and no further concrete shall be placed thereon until such water is removed.

Suitable means shall be provided to ensure that the temperature of the concrete on placing does not exceed 30 degrees centigrade (86 degrees Fahrenheit). Concrete shall not be placed around reinforcement or against surfaces which are at temperatures above 30 degrees centigrade (86 degrees Fahrenheit). All surfaces shall be thoroughly damped immediately prior to placing fresh concrete to prevent excessive absorption of water.

#### **Y UNFORMED FINISHES FOR CONCRETE**

Where a concrete surface is specified for receiving a further applied finish or in all cases where no other finish is specified the concrete shall be uniformly levelled and screeded to produce a ridged surface. No further work shall be applied to the surface.

Where a concrete surface is specified as exposed with no further applied finish the concrete shall be uniformly levelled and screeded to produce a plain surface. After the concrete has hardened sufficiently, the surface shall be hand or machine floated sufficiently only to produce a uniform surface free from screed marks.

#### **Z CURING AND PROTECTING CONCRETE**

Immediately after compacting and for 7 days thereafter concrete shall be protected against harmful effects of weather including rain, rapid temperatures changes, and from drying out. The methods of protection used shall be subject to the approval of the Engineer. The method of curing used shall prevent loss of moisture from the concrete.

During the curing period horizontal surfaces shall be protected by the following or other approved means:

- a) Covering with damp hessian canvas sacks or similar absorbent materials kept constantly damp and wholly covering the exposed concrete surface.
- b) Covering with an impermeable material raised approximately 50mm over the surface so to prevent loss of moisture
- c) An approved membrane curing compound. During the curing period other surfaces shall be protected by the following or other approved means:
- d) Formwork in close contact with the concrete must be kept cool at all times.
- e) Direct and continuous application of water preferably in the form of mist so as not to damage the surface.
- f) Covering as (a) to (c) above

All concrete faces or edges, particularly those which are exposed without rendering in the final structure, shall be adequately protected from damage and discolouration at all times.

Concrete structures shall not be loaded until the concrete is at least 21 days old or 28 days in the case of cantilevers. With the prior approval of the Engineer the structure may be loaded after this time but in no case will loading greater than the final design loading be permitted.

#### **AA. PRECAST CONCRETE**

The materials for precast work shall be similar to the materials for in situ work. The workmanship for precast work shall comply with CP 116 except where this conflicts with this specification when the specification shall prevail.

The contractor shall prepare, for each type of precast unit, a drawing indicating his proposed formwork construction, casting methods, de-moulding and handling procedure for the Engineer's approval.

Moulds and formwork shall be so constructed that the dimensions of the finished concrete members are within the specified permissible tolerance given clause 407 of CP 116: part 2:1969.

Where precast concrete is described as "fair faced" the mould shall be of metal, or are to have metal or hardboard linings, or are to be other approved moulds which will produce a smooth, dense fair face to the finished concrete and free from all shutter marks, holes, pittings, etc.

The method of lifting, position of lifting points and curing time before lifting shall be agreed with the Engineer before casting of any units.

Extreme care should be taken when handling precast units and any units damaged during the transporting and/or positioning shall be replaced at the contractor's expense.

#### **AB. CONCRETE FOR WATER RETAINING STRUCTURES**

Concrete and its constituents for water retaining structures, in addition to the general and particular provisions in this specification shall comply with the following requirements in this section. In addition to the requirements of clause 4.5 aggregates for concrete in water retaining structures shall have a low drying shrinkage and absorption, as measured in accordance with BS 812 not greater than 3 percent. The Engineer may before approval is given to an aggregate or at any time thereafter require that the aggregate be tested for absorption in accordance with BS 812. Any aggregate failing to comply with this specification will be rejected.

In addition to the requirements of clause 4.20 concrete for the water retaining structures shall have a maximum cement content of 400 kg/m<sup>3</sup>.

Blinding concrete under water retaining structures shall be a maximum of 75 mm thick and shall be in class 15/40 concrete.

Class 15/40 concrete shall comply with the following requirements: -

Minimum works cube strength at	28 days	15MN/M <sup>2</sup>
Maximum size of aggregate	40mm	
Mix proportions	1 cement:2.5 fine aggregate: 5 coarse aggregate	

This is a nominal mix and no cubes will be required to be taken.

For water retaining structures the provisions of clause 4.19 paragraph are modified. The construction joints will in general be spaced to allow a maximum plan area for any bay of 40 sq.m or maximum lengths of 7.5m in any one dimension.

For water retaining structures the provisions of clause 4.19 paragraph five are modified. At least 96 hours shall be left between completion of concreting one bay and the start of concreting any adjacent bay.

A kicker of minimum height 150mm shall be cast integrally with the base slab for all water retaining structures.

#### **a) Precast Concrete General**

Unless otherwise approved by the Engineer, all precast concrete construction shall be carried out on the Site and shall conform to requirements given elsewhere in these preambles.

The maximum size of coarse aggregate concrete shall not exceed 20mm except for thickness less than 75mm where it shall not exceed 10mm.

The compacting of precast concrete shall conform with requirements given elsewhere in these preambles except for thin slabs where use of immersion type vibrators is not practicable. The

Concrete in these slabs may be consolidating on a vibrating table or by any other methods approved by the Engineer.

#### **b) Precast Concrete Cladding Units**

These shall be cast to the general details shown on the drawings. The Contractor shall submit working/shop drawings for each type of the cladding panels to the Engineer for approval before he commences casting operations

The panels shall be cast in special yards and shall be cured adequately before being hoisted into position in the structure, taking care that no parts are broken in the process. The units shall then be joined together with insitu concrete and flexibility connected to the top and bottom beams to allow for limited movement of the combined unit.

## **PART FIVE : WALLING SPECIFICATIONS**

### **MATERIALS**

#### **A. CEMENT**

Cement used for making mortar shall be as described in concrete work.

## **B. LIME**

The lime for making mortar shall be obtained from an approved source and shall comply with BS 890 Class A for non-hydraulic lime.

The lime to be run to putty in an approved lined pit or container. The water to be first run into the pit or container and the lime to be added until it is completely submerged, stirred vigorously until all lumps are disintegrated and shall be kept constantly covered with water and regularly stirred for at least four weeks. The resulting milk-lime then to be through a fine sieve and run into a pit or other container and kept clean and moist for not less than two weeks before being used in the works and moist for not less than two weeks before being used in the works.

## **C. SAND**

Sand used for making mortar shall be clean well graded siliceous sand of good sharp hard quality equal to samples which shall be deposited with and approved by the Architect. It shall be free from lumps of stone, earth, loam, dust, salt, organic matter and other deleterious substances, passed through a fine sieve and washed with clean water if so directed by the Architect.

## **D. WATER**

The Contractor shall supply all water, make all arrangements and pay all charges in respect of such supply. Where water can be obtained from a public water supply it shall be used.

Where water cannot be obtained from a public supply it shall be tested in accordance with BS 3148 and if necessary shall be treated to assure compliance therewith.

## **H. STONE**

All stone shall comply with the requirements of CP121.202 for masonry and rubble walls respectively except where amended or extended by the following clauses.

Unless otherwise noted, all masonry walls shall be course squared rubble walling with mortar joints. The size of stones for rubble walling shall be such that the length of stone does not exceed three times its height. For coursed squared rubble walls block shall not exceed 300 mm in height and shall be not less than 150 mm in height.

Where snecked rubble walls are specified; the snecks shall not be less than 100mm square on the exposed face. Stone for masonry shall have a minimum compressive strength of 10 N/mm<sup>2</sup>. (stone shall not be required to be tested to failure). The density of stone for masonry shall be not less than 230 kg/m<sup>3</sup>. The drying shrinkage of stone shall not exceed 0.05%.

Samples of stone provided for testing shall be tested for the following in accordance with the methods given in Bs 2028, 1364 and the test results shall comply with the requirements of this specification.

- a) Compressive strength
- b) Density
- c) Drying shrinkage

The colour and texture of stone shall be uniform and consistent. Prior to delivering any stone to site the contractor shall supply the Architect with a sample of stone in order that he may approve the colour and texture. The contractor shall ensure that sufficient suitable stone is available for the whole of the project prior to ordering the stone.

Where cast stone including described as artificial stone, reconstructed stone, etc., is specified the stone shall comply with the requirements of BS 1217. Masonry shall be of stone, having no irregular faces and only the back face if not visible shall be left as from the saw.

Prior to ordering dry stone the contractor shall demonstrate that the stone is durable. This may be done by supplying details of building constructed with stone from the same quarry and which has been exposed to the same environment condition for at least ten years. The maximum projection from the face of stone for rubble walls shall be 20mm beyond the specified face of the wall.

The contractor shall provide six samples of stone measuring 150mm x 150mm for testing prior to delivering any stone to site. As work proceeds the contractor shall provide six samples 150 x150 x 150mm for testing from every 300m<sup>2</sup> of work. All stone shall be stacked on prepared dry areas free of clinker, ashes and sulphate bearing strata.

#### **I. WALL REINFORCEMENT**

Where described walls and partitions shall be reinforced with a 25mm wide strip of No.20S.W.G hoop iron built into alternate horizontal joints in the wall centre. The reinforcement shall be lapped and hooked at running joints, angles and intersections and carried at least 115mm into abutting walls at junctions.

#### **J. WALL TIES**

To be 3mm diameter galvanized mild steel wire twisted butterfly wall ties

#### **K. DAMP - PROOF COURSES**

The bituminous felt sheeting for damp-proof courses shall be hessian based bituminous felt complying with BS743 TYPE 4A weighing not less than 3.85 Kgs per square metre. The sheeting is to be lapped 150mm at running joints and the full width of walls at angles.

### **WORKMANSHIP**

#### **L. CEMENT MORTAR**

Mortar described as cement mortar 1:4 shall be composed of 1 cubic metre (1498 Kgs) of Portland Cement and 4 cubic metres of sand. Other mixes such as 1:3, 1:5 etc. shall be similarly construed.

#### **M. MIXING MORTAR**

The constituent materials shall be measured separately when dry in specially prepared gauge boxes of sizes to give the proportions specified without consolidation of the contents by ramming and shaking. The mortar shall be mixed in an approved power driven mixer for not less than two minutes per batch and using the minimum quantity of water necessary to obtain a working consistency.

The mixer shall be used as close as practicable to the works and mortar shall be used within 30 minutes of mixing. No partially or wholly set mortar will be allowed to be used or re-mixed.

#### **N. GENERAL CONSTRUCTION**

##### ***a) Setting out***

The contractor shall provide proper setting out rods and set out all work on same for course, openings, heights etc., and shall build the walls, piers etc., to the widths, depths and heights indicated on the Drawings and as directed by the Architect.

##### ***b) Building in Wood Frames***

Openings for doors, ventilators etc., are to be set out and left unbuilt until the wooden frames have been fixed in position.



**c) *Building in Metal windows and doors***

Openings for metal frames to be wide enough for the frames to fit without being forced into position. Build the lugs into the joints of the walling and fill into the space between the walling and frames with cement mortar well tamped into the channel of the frames and point all round externally.

All frames must be set plumb and level and free from twist.

**d) *Walls to Receive Plaster & Similar Finishes***

All faces of walls to be plastered etc., to have all projections dressed off and joints raked out as key.

**O. BUILDING WALLING**

**a) *Laying and Jointing***

All blocks shall be well wetted before being laid and the top of walling where left off shall be well wetted before commencing. Walls to be kept wet three days after building. All walls throughout the works shall be carried up evenly in 200mm courses except where courses of less depth are required to bring walling up to level of floors, windows and the like and where otherwise described, no part being allowed to be carried up more than one metre higher at one time than any other part and in such cases the joining shall be made in long steps so as to prevent cracks arising and all walls shall be levelled round at each stage. Not more than 3 metres height of wall shall be laid in any one day.

**b) *Bonding***

The blocks shall be properly bonded together and in such a manner that no vertical joint in any one course shall be within 115mm of a similar in the courses immediately above or below. All walling of 300mm thickness or less shall be built in single thickness of blocks. Walling exceeding 300mm in thickness shall be built with through bonders not more than 1070mm apart in each course as directed by the Architect.

Alternate courses of walling at all angles and intersections shall be carried through the full thickness of the adjoining wall.

All perpend, reveals and other angles of the walling shall be built strictly true and square.

**c) *Tolerances***

All courses of walls shall be level with a maximum deviation of  $\pm 3$ mm in any one metre length and a maximum overall deviation of 10mm for lengths of wall exceeding 3 metres. Walls shall be plumb with a maximum deviation of  $\pm 3$ mm in any metre height of wall with a maximum deviation of  $\pm 10$  mm in the total height of the wall or any storey.

All corners of walls which are shown as being at right angles shall be square with a maximum deviation of 3 in 1000. All walls should be straight with a maximum deviation of  $\pm 3$ mm in any one metre length and a maximum overall deviation of 10mm in any length exceeding 3 metres.

All bed and vertical joints shall be an average of 10mm thick with a maximum deviation of  $\pm 3$ mm of blockwork, and stone rubble walls. Joints for stone masonry walls shall be 6mm  $\pm 1$  mm thick.

**d) *Curing***

All walls shall be maintained in a damp condition for at least 24 hours after laying. Walls under construction shall be dampened by applying water with a brush and no hosing directly on to the wall shall be permitted. When work ceases on any section of wall polythene or hessian shall be draped over the wall, for at least 24 hours. If hessian is used, it shall be maintained continuously wet.

***e) Cavities***

Cavity walls shall be of the overall thickness shown on the drawings.

Cavities above ground level between leaves of block or masonry shall be free of mortar droppings or other debris. The Contractor shall take proper precautions to prevent mortar or debris entering the cavity.

Cavity below ground level shall be filled with mortar for cavities up to 75mm wide and for cavities over 75mm wide filling shall be concrete mix 1:3:6. Cavities shall be filled such that there is maximum of three times the thickness of the thinner leaf of the wall filled with wet mortar or concrete unless the wall is continuously supported for the depth.

***f) Backfilling***

Earth backfilling against walls shall be carried out such that the level of the backfill is always equal on each side of the wall. When a wall has filling material on one side only to a fill width of more than three times the wall thickness, the wall shall be continuously supported during backfilling.

Backfilling shall not be carried out until at least seven days have elapsed since the laying of the blocks or stone.

**P. POINTING**

Pointing of walls shall be carried out as the work proceeds wherever possible. When coloured mortar is specified for pointing only the pointing shall be carried out after work has been completed.

Existing walls shall be prepared for pointing by raking out all loose friable material to a minimum depth of 15mm to form a square recess. The joints shall then be wetted and new mortar shall be forced into joints and finished as directed.

## **PART SIX : ROOFING & RAIN WATER PIPES SPECIFICATIONS**

### **A. GALVANIZED CORRUGATED IRON SHEETS**

Galvanized or pre-painted corrugated mild steel sheets for roofing and cladding shall be of the gauge and profile required, and obtained from an approved manufacturer. They shall be fixed with approved crook bolts, washers, etc., to 'Z' purlins.

### **B. TIMBER ROOF TRUSSES**

All timber to be used shall be as described in carpentry and Joinery hereafter.

Roof construction is to include for all necessary timbers, dragon ties, ridges, hips, purlins, valleys, eaves, timbers, etc., and for any eaves soffits, fascias, gangboards as specified or shown on the Drawings. Generally trusses are to be set vertical and level, spiked to wall plates and secured with the wall ties.

No timbers used for ties, rafters or purlins shall be over 5.0 metres in length. All joints shall be scarfed and bound with continuous 20 mm hoop iron binding, pitched at 35mm centres scarfs in purlins shall occur at trusses but in ties and rafters they shall occur approximately central between joints. The prices for roof trusses shall include for all the foregoing and nails, bolts, etc., necessary to make the required joints.

### **C. ALUMINIUM FLASHINGS**

Aluminium flashings shall be formed out of 22 gauge super purity aluminium with natural mill finish to BS 1470. Where flashings are built into joints or tucked into grooves the minimum depth is to be 25mm and they are to be secured by folded aluminium wedges at 450mm centres and pointed in cement mortar (1:3).

### **D. PVC RAINWATER PIPES**

PVC rainwater pipes and fittings are to comply with BS 4576 with solvent welded or rubber ring seal joints.

Pipes are to be case into concrete or to be fixed to the structure with PVC holderbats builtin or plugged and screwed at maximum 2 metre centres.

Bends, swan necks, discharge chutes and fittings generally are to be fixed where necessary to facilitate the flow of water.

Rainwater outlets shall be PVC suitable for the roof finish in which they occur with domical PVC grating.

### **E. PROTECTION**

The contractor is to take all necessary precautions to protect the finished work and must ensure no damage occurs to the roofing until completion of the works.

### **F. COMPLETION OF THE WORKS**

On completion of the works, the contractor shall clear away, ensure that rainwater outlets are clear and generally leave the roof areas in a clean and watertight conditions to the satisfaction of the Architect.

## **PART SEVEN: CARPENTRY & JOINERY SPECIFICATIONS**

### **CARPENTRY & JOINERY**

#### **A. GENERALLY**

All woodwork shall be carried out in accordance with the drawing and the principals of first class joinery construction. Unless specifically stated otherwise, sizes shown on drawings are finished sizes and the contractor must allow for wrot faces.

### **MATERIALS**

#### **B. QUALITIES OF TIMBER**

- a) The qualities of timber stated hereinafter are in accordance with the latest Kenya Government Grading Rules.
- b) All timber described as prime Grade is to be first Grade (Grade 1)
- c) All timber described as selected Grade is to be second Grade (Grade 11)
- d) All hardwood is to be prime Grade (Grade 1)
- e) All timber for permanent use in the building shall before use be approved for quality in accordance with the foregoing specification for its respective grade. Any timber not so approved by the Architect shall be removed from the site forthwith.

#### **C. INSECT DAMAGE**

All timber, whether graded or ungraded, and including shuttering, scaffolding and the like shall be free of live borer beetle or other insect attached when brought upon the site. The contractor shall be responsible up to the end of the maintenance period for executing at his own cost all work necessary to eradicate insect attack of timber which becomes evident including the replacement of timbers attacked, or suspected of being attacked, notwithstanding that the timber concerned may have been inspected and passed as fit for use.

#### **D. SEASONING OF TIMBER**

All carpentry timbers are timbers are to be seasoned to an average moisture content of not more 20%. All joinery timbers are to be seasoned to an average moisture content of not more than 15%. The contractor is to make available on site a metre of testing moisture content of all timber delivered.

#### **E. PREPARATION AND PROTECTION OF TIMBER**

- i. All timber necessary for the works is to be purchased immediately the contract is signed, and when delivered is to be openstacked for such further seasoning as may be necessary. Preparation of the timber is to be commenced simultaneously with the commencement of the works generally.
- ii. All timber and assembled woodwork is to be protected from the weather and stored in such a way as to prevent attack by decay fungi, termites or other insects.

#### **F. PRESSURE IMPREGNATED TIMBER**

All timber described as pressure impregnated shall be impregnated under vacuum and pressure with celcure or Tanalith. Wood preservative with an average absorption of not less than 6.7kgs. of dry salt per cubic metre. In case of resistant species where this retention cannot be obtained the timber shall be treated to refusal point. All treated timber shall not be exposed to wet conditions for at least 14 days after treatment has been carried out.

All cut ends, drilling or fabrications on the site producing new surfaces shall be thoroughly brushed or soaked with celcure B. salts applied in accordance with the manufacturer's instructions.

Any other method of timber impregnations will only be allowed at the Architect's approval.

## **G. HARDWOOD**

All hardwood will comply with the requirement of BS 1186 part 1 BS 4047. It shall show a straight and regular grain throughout.

Hardwood shall be free from wooly texture, soft heart, sap wood, splits, shakes, all evidence of insect or fungi attack and rot and all

faults caused by compression failure. There shall be no waney edges. Hardwood shall be free from knots on exposed faces. Any hardwood showing visible imperfections will be rejected.

Preservatives shall not be used without the Architect's permission. Where indicated on the drawings, internal hardwoods will be treated with clear sealants as specified elsewhere.

## **H. SOFTWOOD**

Softwood timber for carcassing work shall be either podocarpus or cypress to the approval of the Architect and shall be dimensions specified on the drawings.

Timber shall be accordance with the Groups listed in this clause.

All softwood shall comply with the requirements of BS1186 part 1. Timber shall be free from wooly texture, soft heart, sap wood, splits, shakes, pith showing on the surface, sloping grain exceeding one in eight checks, knots exceeding 25mm of diameter, loose knot or knot holes and any evidence of insect or fungi attack. There shall be no waney edges.

Where indicated on the drawings , the softwood will be treated with clear sealer or painted with gloss paint. All softwood is to be pressure impregnated against insect attack before delivery to site. Any ends cut after treatment shall be given two liberal coats of preservative.

## **J. PLYWOOD**

All plywood shall comply with the requirements of BS 1455, be obtained from a manufacturer to be approved by the Architect and be of the thickness shown on the drawings. Plywood shall be Exterior Grade except where otherwise stated. Plies shall be bonded together with adhesives complying with the requirements of BS 1203 grade WBP. Plywood shall be free from end joints (including joints in veneers) overlaps in core veneers, dead knots, patches and plugs, open defects, depressions due to defects in cure, insect attack (except isolated pinworm holes through face veneers only), fungal attack and from discolouration differing from that normally associated with species.

Face veneers shall be hard and durable and shall be capable of being finished to a smooth surface. Face veneers shall closely match the general joinery timber supplied.

## **K. CHIPBOARD**

Chipboard shall be medium density wood particle board complying with BS 2604 part 2, produced in factories by an approved process.

## **L. BLOCKBOARD**

Blockboard shall be of approved local or imported manufacture to BS 3444 glued throughout and softwood or hardwood faced as hereinafter specified and equal to a sample to be deposited with the Architect for approval and which when so approved shall form the standard for the works.

## **M. TIMBER DOORS**

Generally, the requirement for flush doors is that they have a minimum thickness of 40mm. They shall be faced both sides and there shall be hardwood lippings to all edges. Hollow core and semi-solid types shall contain adequate provision within the core for ironmongery (e.g. lock blocks etc).

All hollow and semi-solid doors shall be faced with WBP bonded Exterior grade plywood. Except where indicated doors shall have hardwood veneered faces.

Vision panels where required shall be 150mm wide 900mm deep.

Flush doors shall be obtained from a supplier to be approved by the Architect. Flush doors shall comply with the requirements of BS 459 parts 1,2 and 3. All edges shall be lipped with hardwood tongued into edge of the door.

Fire resistant flush doors are to be constructed in accordance with BS 459 part 3.

The core of solid core flush doors shall be constructed of longitudinal laminations of precision planed timber, butt joined and glued with resin based adhesive under hydraulic pressure, the whole forming a rigid fire resistant raft.

Where doors are indicated as fire resistant they shall be constructed so as to exceed the requirements stated when tested in accordance with BS 476 part (1972) section 7.

## **N. HARDWOOD VENEERS**

- a) Veneer facings shall be selected to the approval of the Architect.
- b) No glass or synthetic fibre stitching will be permitted for jointing veneer leaves together.
- c) Veneer shall be free from splits, dote, glue, stains insect or fungi attack and rot.
- d) Filling or inlaying of any kind will not be accepted.
- e) All wood veneers shall be bonded to the core material in such a way that no lifting and blistering shall occur.

## **P CARPENTRY WORK**

- a) All carpentry shall be executed with workmanship of the best quality. Scantlings and board shall be accurately sawn and shall be uniform in width and thickness throughout and shall be as long as possible and practicable in order to eliminate joints
- b) All work shall be left with a swan surface except where specified to be wrot.
- c) All work shall be accurately set out and in strict accordance with the drawings, and shall be framed together and securely fixed in the best possible manner with properly made joints. Provide all braids, nails, screws etc., as necessary and as directed and approved.
- d) Actual dimensions of scantling for carpentry shall not vary from the specified dimensions by more than +3mm or -1mm. Sizes and thickness of wrot carpentry timber are nominal, that is to say a variation of 3mm from the specified sizes will be allowed from each wrot surface unless the thickness or size is described as finished in which case no variation from the stated thickness or size will be permitted.

## **Q. JOINERY WORK**

- a) All joinery work shall be wrot unless otherwise described.
- b) Sizes and thickness of joinery are nominal that is to say a variation of 3mm from the specified sizes will be allowed from each wrot surface unless the thickness or size is described as finished in which case no variation from the stated thickness or size will be permitted.
- c) No joinery to be put in hand until the details have been supplied or approved by the Architect and in all cases the details are to be worked to.
- d) All joinery shall be executed with workmanship of the best quality in strict accordance with the detailed drawings, moulding shall be accurately and truly run on the solid and all work planed, sandpapered and finished to the approval of the Architect. All arrises to be slightly rounded. All framed work shall be cut out, and framed together as soon after the commencement of the building as is practicable but should not be wedged up until the building is ready for fixing the same and any portions that warp, get in winding, develop shakes or other defects shall be replaced with new. In-door frames etc., the heart face of the timber shall be fixed away from the wall. As soon as required for fixing in the building the framing shall be glued together with glue as described and properly wedged or pinned etc., as directed.
- e) All beads, fillets and small members shall be fixed with round or oval braids or nails well punched in and stopped. All larger members shall be fixed with screws, the screws let in and pelleted over with wood pellets to match the grain.
- f) Cups and screws for fixing beads and fillets shall be spaced 150mm apart and 25mm from angles.
- g) All joinery immediately upon delivery to the site is to be sorted and protected from the weather.
- h) All joinery is to be primed before fixing but no work is to be primed until it has been approved by the Architect.
- i) All fixed joinery which is liable to become bruised or damaged in any way, shall be properly cased and protected by the contractor until completion of the work.
- j) When natural finish is specified, the timber in adjacent pieces shall be matched and uniform or symmetrical in colour and grain.

## **R. SOFTWOOD**

Fixing shall be by means of non-rusting screws with counter sunk heads to proprietary plugs or ground. Nails will not be permitted.

Sections shall be neatly and accurately cut so as to avoid splitting of the wood.

## **S. HARDWOODS**

Hardwoods are as described.

In jointed panels each piece shall be of the same species. Joinery for oiling shall have all surfaces of the same species and same character of grain.

Fixing shall be by means of brass screws with countersunk heads to proprietary plugs or grounds. Where work is face screwed heads of screws shall finish not less than 6mm below the surface and be covered with round teak pellets of appropriate thickness.

Pellets shall be chosen and fixed so as to match colour and pattern of grain so far as is practical. Nailing will not be permitted.

Sections shall be neatly and accurately cut with fine toothed saws.

#### **T. PLYWOOD**

Plywood of the required thickness shall be used. The Contractor will not be allowed to make up thickness by gluing together sheets of thinner plywood.

Where cutting is required it shall be neatly and accurately performed with fine toothed saws so as to avoid splitting the face veneers and intermediate plies.

#### **U. CHIPBOARD**

Where cutting is necessary it shall be neatly and accurately performed with fine toothed saws so as to avoid splitting the face veneers. Where raw edges arise from cutting these shall be faced with a matching hardwood fillet cut pinned and glued to match factory produced edges.

#### **V. BLOCKBOARD**

Where cutting is necessary it shall be neatly and accurately performed with fine toothed saws so as to avoid splitting the face veneers. Where raw edges arise from cutting these shall be faced with a matching hardwood cut pinned and glued to match factory produced edges.

#### **W. LAMINATED PLASTIC VENEER**

Laminated plastic veneers are to be fixed with an approved adhesive, care being taken to eliminate all air from beneath the laminate on fixing. The laminate is to be free from chipped or cracked portions and work so disfigured is to be moved and replaced. When the adhesive is set the laminate is to be neatly beveled off along all rises with a plane.

Where plastic laminate is fixed to doors or shelves etc., without a laminate to the outer edge, a raised lipping is to be provided and the laminate finished flush against the lipping.

#### **X. FIXING DOORS AND FRAMES**

Doors shall be properly fitted to give a uniform clearance of not more than 3mm all round and the hinges shall be let into doors.

Doors frames shall be properly framed at angles. Door stops shall be housed into grooves in frames. Architraves shall be provided to conceal finishes. Frames shall be fixed to grounds or plugs. Fixing shall be by means of non-rusting screws with countersunk heads. For hardwood frames screw heads shall be finished not less than 6mm below surface of the wood and shall be covered with matching round hardwood pellets of appropriate thickness. Pellets shall be chosen and fixed so as to match colours and pattern of grain so far as is practical. Nailing will not be permitted.

Except where indicated doors shall be kept clean for clear polyurethane varnish.

Door frames shall be treated to match doors.

Glazing shall be wired glass 6mm thick with edges wrapped in washleather and secured with hardwood glazing bead size 10mm x 15mm mitred at angles secured with brass screws and cups.



## **Y. CONSTRUCTION OF DOORS**

- a) Flush doors specified as solid construction shall have a 100% solid core of vertical laminate Cedar or equal and approved.
- b) Flush doors specified as semi-solid construction shall be constructed with timber stiles and rails, infilled with horizontal intermediate rails spaced equally apart and tenoned into stiles.
- c) Unless otherwise specified, doors scheduled to receive a clear or veneered finish shall be lipped on all edges.
- d) Where panels over doors are specified, such panels shall be constructed in the same way and with the same materials as the doors above in which they are situated, and the panels shall match the doors in every respect.
- e) For doors specified as plywood faced, the plywood shall not be less than 3mm thick, complying with the requirements of BS 1455, WBP type. Face veneers shall be Grade 1 for painted doors in every respect.
- f) All doors shall be provided with lock blocks of minimum size 300mm x 75mm.
- g) Glass beading strips shall be approved washleather self adhesive tape turned up over both sides of the glass and glazing surfaces and turned to the straight line.
- h) All screws shall be countersunk, and screwed and pelleted in un-painted work.
- i) Timber pellets shall be glued and tapped into the hole, making sure the grains line up, and are carefully trimmed back flush with joinery to give a clear, smooth overall surface.

## **Z. FITTINGS AND FIXTURES**

The fittings, etc., are to be accurately constructed in accordance with the detailed drawings. The doors, drawers, etc., are all to fit and open and close smoothly and all work next to walls, floors and ceilings is to be soundly fixed and scribed to fit snugly against same.

## **AA. COMPLETION OF WORKS**

Protection of all joinery and ironmongery must be maintained until completion of the contract as a whole. All joinery and glass is to be thoroughly cleaned before the building is handed over.

## **AB. DEFECTIVE WORK**

All work judged to be defective must be removed and replaced as directed by the Architect.

## **IRONMONGERY**

### **AC. GENERALLY**

- a) Ironmongery shall be fixed with suitable screws to match and prices shall include for this
- b) All locks and ironmongery shall be fixed before the woodwork is painted, handles shall be removed before the painting commences carefully stored and refixed after completion of painting.
- c) All locks, springs and other items of ironmongery with moveable parts shall be Properly tested, cleaned and adjusted where necessary to ensure proper working order at the completion of the works and left in perfect working order by the contractor.
- d) The keys of all locks shall have labels attached with door references marked on before handing to the Architect.
- e) All locks shall be provided with a master key system and prices shall include for this as required by the client, and as instructed by the Architect. The client's requirements are to be obtained by the contractor before ordering.

## **PART EIGHT: STRUCTURAL STEELWORK AND OTHER METAL**

### **WORK SPECIFICATIONS**

#### **A. STEEL QUALITY**

Structural steel shall comply with the requirements of B.S.4360 and shall be new and unused. It shall be free of imperfections, distortion, rust, scales of other deterioration or contamination by grease, paint and similar items.

#### **B. TESTING**

The Engineer may, where he so desires call manufacturer's work test certificates in respect of all steel, which tests shall have been performed in accordance with B.S.18. The Engineer may also carry out such further tests as he may consider necessary.

#### **C. SECTIONS**

The dimensions and properties of hot rolled structural steel sections and hollow sections shall be in accordance with B.S.2, part 1 and 2, or B.S.4848 for metric sized sections.

#### **D. MINIMUM THICKNESS**

All steelwork sections other than gauge metal sections, including cleats, gusset plates, etc. shall be not less than 8mm thick unless specifically indicated on the Drawings.

#### **E. FORGING**

All steel for forging and all forgings shall comply with the requirements of B. S. 29, and shall be subject to inspection and approval of the Engineer.

#### **F. CASTING**

All material used in the manufacture of castings and all castings shall comply with the requirements of B.S. 309, 1452 and 3100 and shall be subject to inspection and approval of the Engineer.

#### **G. GAUGE METAL SECTIONS**

Sections shall be manufactured from continuously hot dipped galvanised steel coil to B.S.2989 using steel to B.S.1449, part 1A and 1B, classification CR4 with a guaranteed minimum yield stress of 280 N/mm<sup>2</sup>.

The sections shall be cold formed to the basic shapes given in B.S 2994 with the design and details conforming to Addendum No. 1 to B.S.449 (PD4064).

Section shall be sawn and holes may be punched so as to produce a neat round hole with no distortion. Holes and cut ends shall be painted with zinc rich paint as soon as possible after cutting.

#### **H. "Z" PURLINS**

"Z" purlins shall be fabricated in the longest practicable lengths with staggered joints. All connections shall have a minimum of four bolts. Sag rods and apex ties shall be provided where indicated.

## **STRUCTURAL STEELWORK AND OTHER METAL WORK SPECIFICATIONS**

### **I. TUBULAR SECTIONS**

For tubular construction, due allowance is to be made for sealing the ends of all tubes and hollow square or rectangular sections with welding or welded plates. Where end make connections to other members, they shall be welded on true and square.

Shop joints required in tubular members shall be full penetration but welds on to split backing rings.

### **J. STORAGE**

Steel shall be stored at least 150mm above the ground and protected against rust and corrosion.

### **K. FABRICATION**

Structural steelwork shall be fabricated in accordance with B.S.449.

### **L. SHOP DRAWINGS**

The contractor shall prepare fully detailed working drawings of the structural steelwork and obtain the Engineer's approval before commencing any fabrication. The drawing to be submitted at least one week before it is planned to start fabrication.

### **M. EDGE PREPARATION**

The longitudinal edges of all plates and cover plates forming plate girders or builtup girders and columns and all edges of gusset plates over 12mm thick shall be machined. Edges which are subsequently wholly incorporated in weld may be machine flame cut. The abutting ends of the parts of all compression members including the caps and bases of stanchions, built-up columns and stiffeners transmitting load through direct contact shall be machined after the members have been fabricated so that all the parts shall be in close contact when the joint is made. The edges of the other members may be machine flame cut, sawn, sheared or cropped but hand flame cutting will not be permitted. All burrs shall be removed by grinding, and sheared and cropped edges shall be dressed.

### **N. STRAIGHTENING**

All plates, bars and rolled sections shall be carefully trued, straightened and taken out of winding by pressure before they are drilled. Heating or hammering rolled sections and plates will not be permitted.

### **O. TEMPLATES**

The templates throughout the work shall be mild steel. In cases where actual members have been used as templates for drilling similar pieces, the engineer will decide whether they are fit to be used in the finished structure.

### **P. HOLES**

All holes in the steelwork shall be drilled out and not punched. Whenever holes are drilled in one operation through two or more separate parts the parts shall be separated after drilling and the burrs removed by grinding. All slotted holes shall be finished with sides of the holes straight and parallel.

### **Q. JOINTS**

No joints shall be made in any plate, bar or rolled sections except where shown on the Drawings or described in the specification.

## **R. ASSEMBLING AND MARKING**

All steelwork shall be inspected in the fabricator's yard by the Engineer and where directed the steelwork shall be assembled to check the accuracy and interchangeability of the work. Before despatch from the fabricator's yard all steelwork shall be cleaned down and clearly marked in paint or stencilled and stamped to facilitate sorting at the site. The markings shall be in conformity with the approved working and erection drawings.

## **S. WELDING GENERALLY**

No welds will be permitted in any part of the permanent work except where shown or described on the approved working Drawings.

All welding of steel shall be executed in accordance with the provisions of B.S.5135 and the workmanship shall be of the highest quality in all respects throughout. All welds shall be of the appropriate dimensions, they shall be sound, free from porosity, slag inclusion, undercutting and other defects, and shall be of clean and regular appearance throughout, and the execution shall be such as to ensure that the parts connected are properly aligned and positioned, free from distortion and so fixed together as to produce a homogeneous section of the correct dimensions. As much of the welding as is practicable shall be executed by means of automatic or semi-automatic processes and manual welding shall be kept to a minimum.

All welders shall have completed the tests described in part 6 or B.S.449 and may be required to carry out any of those tests in the presence of the Engineer.

## **T. ELECTRODES**

All covered electrodes for the manual metal arc welding of grades of steel to B.S.4360 shall comply with the requirements of B.S.639 and B.S.1719: part 1. All electrode wires and fluxes for the submerged arc welding of grades of steel to B.S.4360 shall comply with the requirements of B.S. 4164.

All electrodes shall be of a type, size and quality appropriate to the class of work for which they are intended and shall be supplied by approved manufacturers and shall be of the heaviest gauge consistent with obtaining adequate penetration. Each batch of electrodes shall be accompanied by the manufacturer's certificates stating the date of manufacture, together with certificates giving the results of the initial test and of the most recent periodic check tests.

All electrodes shall be stored in their original unbroken bundles or packages in a warm dry and well ventilated place to which the Engineer shall have access.

All electrodes for welding shall be used strictly in accordance with manufacturer's instructions and shall be so chosen that the properties of the deposited metal are in no way inferior to those of the parent metal. Under no circumstances shall electrodes be used in a damp condition and any electrodes which have parts of the flux covering broken away or damaged in any respect whatsoever shall be discarded.

## **U. WELDING TRIALS**

Whenever so directed by the Engineer and prior to the commencement of fabrication, welding and flame cutting procedure trials shall be carried out on typical examples of the various types and categories of welded members and joints using representative samples of the materials to be employed in the work. These trials shall demonstrate to the satisfaction of the Engineer the suitability and adequacy of the methods and procedures to be adopted in the fabrication.

The samples of material to be used in the aforesaid trials shall be selected and marked by the Engineer when the materials are inspected at the rolling mills and the various types and categories of members and joints shall be welded in a manner simulating the most unfavourable conditions that will be experienced during fabrication or

assembly. After completion of welding the various examples shall be sectioned for subsequent examination and testing.

Any approval by the Engineer of the welding methods and procedures shall in no way limit or restrict the right and authority of the Engineer to subsequently reject any welds or welded joints that in his opinion fall below the standard appropriate to the class of work.

## **V. WELD TESTING**

The contractor, his subcontractor and/or his fabricator shall be responsible for the preparation of all welded test pieces as and when required by the Engineer and for the provision, maintenance and efficiency of all apparatus and equipment necessary to the conducting of such tests in accordance with the procedure laid down in B.S.709.

Non-destructive testing of welds on completed member and joints shall be carried out by the Engineer during the course of fabrication as required and any length of weld or any welded joints exhibiting any defects shall be rejected and all such defects shall be cut out and replaced with sound work. The entire cost of making good or replacing any such rejection shall be borne by the contractor.

The contractor, his sub-contractor and/or his fabricator, shall be responsible for all preparations necessary for the carrying out of non-destructive testing of welds on completed members and completed members and joints to the satisfaction of the Engineer and shall provide all assistance required for conducting such tests

## **W. WELDING PLANT**

All plant used for shop and site welding shall be capable of maintaining at the fusion face the voltage and current specified by the manufacturer of the electrodes and the contractor, his sub-contractor and/or his fabricator shall provide the necessary instruments for measuring the voltage and current as and when required by the engineer.

## **X. BOLTS**

Black bolts and nuts shall be in accordance with B.S. 4190 and shall have their bearing faces machined. Close tolerance bolts and nuts shall be in accordance with B.S.3692 and shall have their bearing faces machined, be turned on the shank and shall be screwed with unified coarse threads to B.S.1580. Flat and taper steel washers shall be in accordance with B.S.4320. Washers shall be provided under the nuts of all black bolts and close tolerance bolts so that the nut, when screwed up tight, does not bear on the shank of the bolt.

Taper washers of correct angle of taper shall be provided under all bolt-heads and nuts that are required to bear on bevelled surfaces.

## **Y. HIGH STRENGTH FRICTION GRIP BOLTS**

High strength friction grip (H.S.F.) bolts, nuts and washers shall be of either high strength load indicating bolts and nuts of an approved pattern or shall be provided with load indicators of an approved pattern under the heads of the bolts. The dimension of high strength friction grip bolts and nuts shall be in accordance with B.S.4395 except only for the dimensions of the load indicating washers shall be supplied by manufacturers approved by the Engineer.

Non load indicating bolts or washers may be used with prior approval of the Engineer. The part-turn method of tightening shall be used with these bolts.

All bolts shall have clear distinctive marks to identify them. The bolts and washers shall be electro-zinc plated or zinc coated sheradizing and the nuts cadmium plated by the manufacturer to ensure that the nuts do not cease under tension.

## **USE OF HIGH STRENGTH FRICTION GRIP BOLTS**

The use of high Strength friction Grip Bolts shall be in accordance with B.S.4604.

### **A. SURFACES**

Surfaces of plates in joints shall be free of paint or any other applied finish (except galvanising), oil, dirt, rust, loose scale, burrs or other defects which would prevent solid seating of the parts or would interfere with the development of friction between them.

### **B. MINIMUM PLY THICKNESS**

General Grade Bolts - no outer ply, and wherever possible no inner ply, shall be smaller in thickness than half the bolt diameter or 10mm whichever is the less.

High Grade Bolts - no outer ply, and wherever possible no inner ply, shall be less than 10mm.

### **C. SPACING OF BOLTS**

This shall be as shown on the Drawings or otherwise in accordance with B.S.449. The tool to be used for tightening should be taken into account when arranging the disposition of bolts in a joint.

### **D. ASSEMBLY OF JOINT**

Holes shall be lined up with draft pins until bolts in the remaining holes are fully tightened. Driving of bolts will not be permitted. The ends of the bolts and nuts shall be clear and lightly lubricated. No lubricant shall come into contact with the ply faces. Each bolt and nut shall have a flat round washer and taper washer as necessary. Load indicating washers shall be fitted with the protrusions against the bolt head or against a special nut face washer when fitted at the nut end.

### **E. TIGHTENING**

Tightening shall be in a staggered pattern agreed with the Engineer before hand, working from the centre of joint outwards. Each bolt tightening operation shall be carried out speedily until the required gap under the load indicating washer is reached. This shall be measured using a feeler gauge.

Appropriate allowance shall be made in the gap for the location of the indicating washer relative to the bolt. Tightening may be carried out using manual or power wrenches but not torque wrenches and must be carried out until the bolt reaches the minimum specified tension.

Full details must be obtained from the manufacturer regarding details of the installation, tightening and use of load indicating washer to confirm the correct tension has been developed in the bolts.

### **F. BOLT FAILURE**

If after final tightening a nut or bolt is slackened off for any reason, or becomes slack, the nut, bolt and washer must be discarded and not used again.

### **G. PAINTING**

The gap under the load indicating device shall be filled with paint.

### **H. PART TURN TIGHTENING**

In certain circumstances the part turn method may be permitted. The sequence tightenin bolts in a group shall be agreed before hand with the Engineer. The bolts shall be tightened initially with a standard podger spanner to bring the joint surfaces into close contact. This must be checked before the tightening process is completed.

A permanent mark shall be cut on the nut and protruding end of the bolt using a cold chisel and the nut finally tightened with an impact wrench to turn it relative to the bolt and specified amount to produce the required minimum tension.

#### **I. SHOULDERED BOLTS AND NUTS**

Shouldered bolts and nuts shall be black bolts and nuts in accordance with B.S.2078 and shall be screwed with unified coarse threads to B.S. 1580 and shall be of the dimensions shown on the Drawings. Shouldered bolts shall be provided at all expansion and other sliding joints and shall be supplied with all necessary washers.

#### **J. ANCHOR BOLTS AND NUTS**

Anchor bolts and nuts for setting in concrete shall be as shown on the Drawings or as approved by the Engineer and shall be fixed in accordance with the manufacturer's technical information sheets giving full particulars of the bolts including the mechanical properties of the bolts, the safe working loads and methods of fixing and usage.

#### **K. PACKING FOR SHIPMENT**

All cleats, gussets, stiffeners, brackets and other projecting material arising out of fabrication shall be protected from damage while being transported in such a manner as to prevent distortion. All machine surfaces shall be suitably protected. All straight bars, except small pieces, shall be shipped in bundles of convenient size and shall be temporarily bolted together or bound with annealed steel wire.

All bolts, nuts, washers, screws, small pieces and other small articles shall be adequately packed in crate or other suitable containers. Each piece, packing, bundle and crate shall be clearly marked with its weight and with the appropriate shipping marks before despatch from the fabricator's yard.

#### **L. ERECTION OF STRUCTURAL STEELWORK**

The erection of all structural steelwork at the site shall be in accordance with the provision of B.S.449. When lifting and fitting steelwork into position care shall be taken that the members are not twisted, bent or damaged.

Suitable slings, blocks, tackles, shear legs, derrick, cranes and other types of lifting appliances and equipment shall be provided and every care and precaution shall be taken to ensure the safety of all persons engaged in such work.

The erection of the steelwork shall be carried out in such a manner as not to subject any of the members to overstressing, or reversal of loading, which the members are not designed to support. During erection the steelwork shall be securely braced, propped or otherwise temporarily supported until such time as the steelwork is lined, levelled and braced and bolted in its final position.

#### **M. BEDDING OF BASE PLATES**

Steel stanchions with base plates shall be supported on steel shims or wedges to obtain the correct line and level of the stanchions and the holding down bolts tightened by hand. Prior to bedding the base plates, the space under the plates shall be cleaned out.

The base plates shall be bedded using cement/sand 1:2 mortar with sufficient water to make the mortar flow under pressure or by vibration or by rodding until the whole space under the base is completely filled. The steel shims or wedges shall be left in. After hardening of the mortar the holding down bolt shall be tightened by spanner as required.

#### **N. CONCRETING IN OF MEMBERS**

Where any portion of a steel member is designed to be cast into concrete, the surfaces in contact with concrete shall be thoroughly cleaned of paint or other adherent matter.

When members are to be concrete in, whether supplied with temporary positioning bolts or otherwise, they shall be lined and levelled and plumbed and firmly supported before concreting in.

If base plates are shown on the drawings, these shall be grouted in as above prior to concreting.



**P. NAILS, SCREWS AND BOLTS**

Nails, screws and bolts shall be of best quality mild steel of lengths and weights approved by the Architect. Nails shall be to B.S.1202 and bolts to B.S.916.

Bolts shall project at least two threads through nuts and all bolts passing through timber shall have washers under heads and nuts.

**Q. FIXING METAL WINDOWS, DOORS, ETC**

The contractor's prices for fixing metal windows, doors, etc., shall include for assembling and fixing, including screwing to wood frames and cutting mortices for lugs in concrete or walling and running with cement mortar (1:4), bedding frames in similar mortar and pointing in mastic, bedding sills, transomes, mullions in mastic, making good plaster around both sides, and fixing , oiling and adjusting all fittings and frames.

**R. METAL WINDOWS**

Metal windows shall be steel standard section windows supplied and installed by the contractor or an approved specialist, sub-contractor. In the case of a specialist subcontractor, the contractor shall provide any general or special attendance as may be required by the sub-contractor.

## **PART NINE: FINISHES SPECIFICATIONS**

### **GENERAL**

#### **A. OTHER SPECIFICATIONS**

All other specifications of this contract where applicable are deemed to apply equally to the finishings specifications.

#### **B SAMPLES**

The contractor shall prepare at his own cost sample areas of the paving, plastering and rendering as directed until the quality, texture and finish required is obtained and approved by the Architect after which all work executed shall conform with the respective approved samples.

#### **C FINISHED THICKNESSES**

The thicknesses of floor finishes quoted in this section of the specification shall be the minimum requirements.

Suspended floors shall have a constant structural thickness and have level top surfaces. The finished floor surface will equally have constant level and any adjustment needed to achieve this effect with the varying floor finish materials is to be made in the screeds beneath the same.

Slabs bearing on the ground may be cast to varying levels, and be of constant thickness with varying formation levels, or have varying thicknesses at the option of the contractor. This stipulation in no way relieves the contractor of the requirements of the specifications for the structural work.

#### **D MATERIALS GENERALLY**

All materials shall be of high quality, obtained from manufacturer's to be approved by the Architect. Cement, sand and water shall be as described under concrete work and Blockwork.

#### **E BONDING**

Bonding compounds, etc., for use in applying plaster and similar finishes direct to surfaces without the use of backings or screeds are only to be used if approved by the architect and are to be used strictly in accordance with the manufacturer's printed instructions.

#### **F. CHASES, OPENINGS AND HOLES**

All chases, holes and the like which were not formed in the concrete or walling shall be cut, and all service pipes shall be fixed and all holes and chases filled with mortar before paving and plaster work is commenced. In no circumstances will the contractor be permitted to cut chases, holes and the like in finishes pavings or plasterwork..

### **INSITU FINISHINGS**

#### **G GENERALLY**

The term plastering refers to the operation internally and rendering to the same operation externally but for ease of reference the term plastering has generally been used in this specification to describe both operations.

#### **H MIXES**

The methods of measuring and mixing plaster shall be as laid down under concrete work and the proportions and minimum thickness of finished plaster shall be in accordance with the following:-

Item of work	Mix	Minimum Thickness and finish
Internal Plaster	1 part cement  ¼ part lime wood float finish unless otherwise specified 4 parts sand.	16mm finish to walls and ceilings.
External Render	1 part cement 4 parts sand	12mm finish in two coats
Tyrolean finish	Ditto	6mm finished thickness in two coats on 10mm plastered backing

To obtain greater plasticity a small quantity of lime may be added to the mixes for external plastering at the Architect's discretion but in any case this is not to exceed ¼ part lime to 1 part cement.

With regard to the lime mortars gauged with cement, of the cement to small quantities of the lime/sand mix shall preferably take place in a mechanical mixer and mixing shall continue for such time as will ensure uniform distribution of materials and uniform colour and consistency. It is important to note that the quality of water used shall be carefully controlled. Plaster may be mixed either in a mechanical mixing machine or by hand.

Hand mixed plaster shall first be mixed in the dry state being turned over at least three times. The required amount of water should then be added and the mix again turned over three times or until such time as the mass is uniform in colour and homogeneous.

The plaster shall be completely used within thirty minutes of mixing and hardened plaster shall not be remixed but removed from the site.

## **I PREPARATION OF SURFACES FOR PLASTER ETC.**

Irregularities in the surfaces to be plastered or rendered shall be filled with mortar, without lime, twenty four hours before plastering is commenced. Joints in blockwork etc., are to be well raked out before plastering to form a good key. Smooth concrete surfaces to be plastered shall be treated with an approved proprietary bonding agent or hacked to provide an adequate key for the plaster.

All surfaces to be plastered or rendered shall be clean and free from dust, loose mortar and all traces of salts. All surfaces shall be thoroughly sprayed with water and all free water allowed to disappear before plaster is applied.

As far as practical plastering shall not be commenced until all mechanical and electrical services, conduits, pipes and fixtures have been installed.

Before plastering is commenced all junctions between differing materials shall be reinforced. This shall apply where walls join columns and beams, particularly where flush and similar situations where cracks are likely to develop and as directed by the Architect. The reinforcement shall consist of a strip of galvanised wire mesh. Expanse or equal approved 15cm wide which shall be plugged, nailed or stapled as required at intervals not exceeding 45mm at both edges. The surfaces to which such mesh shall be applied shall be painted with one coat bituminous paint prior to fixing the mesh.

## **J APPLICATION OF PLASTER AND RENDER**

After preparation of the surfaces a key coat of cement slurry shall be applied to the wetted surface to be plastered. When this coat is dry the plaster coat shall be applied, by means of a trowel between screeds laid, ruled and plumbed as necessary. This coat which shall be to the required thickness shall be allowed to be so hard and then cured as described. Surfaces are to be finished with a wood or steel float to a smooth flat surface free from all marks.

Tyrolean finish shall be applied with an approved machine to give a finish of even texture and thickness. The sprayed finish shall be applied in two separate coats allowing time for drying between coats.

Application in one continuous operation to build up a thick layer will not be permitted. The total finished thickness of the two sprayed coats shall be not less than 6mm.. the sprayed finish shall not be applied until all repairs and making good to the undercoat are completed. any plaster which adheres to pipes, doors, windows and the like shall be carefully removed before it has set. Curing shall take place after the application of the second coat. The pressed finish as directed by the Architect. Where coloured tyrolean is required this shall be obtained by the addition to the mix of any approved colour pigment.

All plastering and rendering shall be executed in a neat workman like manner. All faces except circular work shall be true and flat and angles shall be straight and level or plumb. Plastering shall be neatly made good around pipes or fittings. Angles shall be rounded to 6 mm radius.

All tools, implements, vessels and surfaces shall be at all times kept scrupulously clean and strict precautions shall be taken to prevent the plaster or other materials from being contaminated by pieces of partially set material which would tend to retard or accelerate the setting time.

## **K CURING OF PLASTER**

Each coat of plaster is to be maintained in a moist condition for at least three days after it has developed enough strength not to be damaged by water.

They shall be securely plugged, nailed or stapled as required at intervals not exceeding 450mm at both edges.

## **C ANGLE BEADS**

Where required by the Architect, salient external angles of plastered walls shall be protected with galvanised mild steel angle beads complying with BS 1246 Fig.7 profile C3.

They shall be securely plugged, nailed or stapled as required at intervals not exceeding 450mm at both edges.

#### **A PLASTER STOPS**

Where shown on details, plasterwork shall be stopped against “expamet” galvanized steel plaster stop reference 565 which shall be securely nailed to wall in the positions indicated on the drawings.

#### **B CEMENT AND SAND SCREEDS**

Screed shall be mixed and formed as described.

#### **C GRANOLITHIC PAVING**

The granolithic paving shall be laid by a specialist floor layer and constructed as follows:-

Curing compounds if specified or approved by the Architect shall be used in strict accordance with the manufacturer's instructions.

Surface hardening solutions of sodium silicate if purchased as liquid shall be of the grade sold for this purpose. Fourteen days after curing the surface shall be sprayed with three coats of sodium silicate solution and spread evenly with a mop or soft brush.

Unabsorbed silicate left on the surface after the last application is to be washed off.

Solution is to 1:4 by volume for first coat, 1:3 for second, 1:2 for third, applied at 24 hour intervals.

The base concrete structural floor shall be finished with a tamped surface. Shortly before the granolithic topping is to be laid the surface of the base concrete is to be thoroughly prepared to provide a good bond. The base concrete shall be hacked by hand or mechanically so that its laitance is completely removed to expose clean coarse aggregate. All traces of dust formed as a result of hacking etc., shall be removed. The base concrete shall be thoroughly wetted prior to laying. Any excess water shall be removed prior to the grouting.

The prepared surface of the base concrete shall be covered with a grout consisting of one part cement and one part sand mixed to the consistency of thick cream and it shall be scrubbed into the surface with a stiff broom.

The granolithic topping shall be mixed in the following proportions by weight:-

1 part cement, 1 part fine aggregate and 2 parts coarse aggregate.

The water content of the granolithic topping shall be kept as low as possible consistent with obtaining full compaction of the topping with the plant available in order to avoid segregation of excessive laitance and in no circumstances must water/cement ratio exceed 0.42 by weight.

The granolithic topping shall be mixed for a period of not less than 1½ minutes after all the materials have been placed in the mixer drum. No concrete shall be removed from the drum so that some water will enter the drum before the cement and aggregates.

Each batch shall be discharged completely before the next batch is introduced. No extra water or other material shall be added to the mix after it has left the mixer.

If electrical conduit, trunking or any other items are required to be buried within the granolithic topping and the thickness is reduced at any point the contractor is to ensure that steps are taken to eliminate the possibility of cracking in the granolithic topping by means of galvanised wire mesh reinforcement in the flooring or other approved method. The extent of buried conduits, etc., should be ascertained prior to tendering and allowance for complying with this requirement will be deemed to be included in the rates for granolithic flooring.

The granolithic topping shall be laid in areas not exceeding 14M<sup>2</sup>. The length of any bay should not exceed 1½ times the width of that bay. Joints shall be made in the granolithic topping over all joints in the base concrete and over all supporting beams for suspended floors.

## **D INSITU TERRAZZO WORK**

The terrazzo pavings and screeds under are to be laid and polished complete by an approved specialist firm.

Where the screed is to be bonded to the concrete structural sub-floor, the latter shall be finished with a tamped surface and left clean and free from dust and grease.

Before laying the screed the surface shall be covered with a grout of one part sand and one part cement brushed in with stiff broom. The screed is to be laid before the grout has set.

All screeds under in-situ and precast terrazzo paving are to be laid by the approved specialist firm. The screeds shall consist of one part ordinary Portland cement to three parts sharp washed sand. This mix may be varied by agreement on the responsibility of the approved specialist firm.

The screed is to be reinforced with 22 gauge galvanised steel wire netting with mesh not exceeding 1" laid direct on the sub-floor of bays exceeding 1 square metre.

The screed backing in-situ skirtings is to be such as to adhere firmly to the various materials of the walls.

The thickness of in-situ terrazzo finishes are minimal and they may be increased if the specialist considers it necessary with corresponding reductions to the screed thicknesses providing the overall thickness of the finished flooring is maintained and without adjustment to the price quoted. The following thicknesses are assumed in measuring the terrazzo:-

Finish	Bedding Screed		Total
In-situ paving	25	-	40
In-situ margins	25	-	40
In-situ skirtings	8	-	12

If electrical conduit, trunking or other items are required to be buried within the depth of the screed and flooring and the total thickness is reduced at any point the flooring specialist is to ensure that steps are taken to eliminate the possibility of cracking in the screed and consequent damage to floor finish by means of galvanised wire mesh reinforcement in the screed and flooring or other approved method. The extent of buried conduit, etc., should be ascertained prior to tendering and allowance for complying with this requirement will be deemed to be included in the rates for terrazzo pavings and screeds under.

The in-situ terrazzo paving is to consist of two parts of white marble chippings to one part of white Portland Cement to B.S.1014.

The marble chippings to be fine (graded 3mm to 6mm in equal proportions) rounded granular clean and free from dust and impurities.

In-situ terrazzo paving should be laid on the screed as soon as practicable and not more than three days after the laying of the screed. After laying the surfaces are to be kept moist until ready for polishing.

The in-situ terrazzo paving should be laid in panels separated by dividing strips in the positions shown on the drawings. Dividing strips are to be white plastic the full depth of the paving and screed and bedded into the screed with the top edges truly levelled with the finish polished floor level. The thickness of the dividing strips is to be 5mm.

Polishing of in-situ terrazzo paving is to be carried out by a mechanical polisher with graded abrasives and any necessary water.

Making good of any defects during polishing is to be done with cement grout matching in colour that used in the terrazzo paving.

The finish of in-situ terrazzo pavings is to be smooth and imperforable and is to be approved by the Architect.

The terrazzo pavings is to be washed clean on completion and covered with a thick bed of sawdust or other approved protective layer. This should be maintained and renewed as necessary and cleared away on completion.

Lay in-situ skirtings to match paving or of approved colour and finish coved at junction with paving of floor finish to 20mm radius.

Execute all required angles and stopped or fair returned ends.

Vertical dividing strips to match those used in paving are required at not more than three feet intervals. A diving strip is required between paving and skirting at the commencement of the coving.

Facing of diving strip nearest to wall to be 200mm from face of skirting.

A horizontal diving strip is required at top skirting finished flush with wall finish over.

Where in-situ terrazzo skirtings are required under door frames, etc., a pencil round junction is to be made threshold paving in lieu of coving as shown on drawings.

In-situ margins shall have dividing strips to match those used in pavings. They shall be positioned at junctions with paving and skirting and transversely at not more than three feet intervals to continue vertical strip in skirting.

All internal angles and coves are to be rubbed by hand with carborundum block to be polished finish matching the finish of the paving to the Architect's approval.

## **E GLAZED WALL TILES**

Glazed wall tiles shall be in accordance with B.S1281 and shall be 150mm x 150mm x 6mm tiles from the standard colour range with cusion edges. Wall tiling shall be carried out in accordance with C. P.212.

## **F PRECAST CONCRETE PAVING SLAB**

To be all in accordance with B.S.368. The slabs are to be of the sizes given herein and bedded, jointed and pointed in cement lime mortar. (1:2:9).

## **G RATES**

The rates for tile, slab and block finishings shall include for rounded edge tiles and angles, cutting and fitting up to boundaries and around pipes, brackets, etc., and waste; for work in narrow widths, small and isolated areas and for all other incidental labours.

## **PART TEN: GLAZING**

### **A GENERAL**

Glass used in glazing and for mirrors shall be best quality clear glass free from visible defects so as to afford uninterrupted vision or reflection as appropriate, and without obvious distortion.

### **B STANDARDS**

Glass for glazing and mirrors shall be of approved manufacture and is to comply with B.S.952 in all respects free from flaws, bubbles, specks and other imperfections.

### **C CLEAR SHEET GLASS ETC.**

The clear sheet glass shall be ordinary glazing (OG) quality.

### **D PLATE GLASS**

To be of type described and as approved by the Architect.

### **E OBSCURED GLASS**

To be of type described and as approved by the Architect.

### **F Putty**

- a) The putty for glazing to wood sashes is to be linseed oil putty all as B.S.544.
- b) The putty for glazing to metal windows is to be gold size metal window putty specially designed for tropical use, or patent mastic putty if approved by the Architect.
- c) All putty shall be delivered on site in the original manufacturer's sealed cans or drums and used direct therefrom, with the addition only of pure linseed oil if necessary. No mineral or other oils may be used in the putty except genuine linseed oil.

### **A MIRRORS**

Mirrors shall be polished float glass silverin quality, protected at back with electro-copper backing coated with shellac varnish and paint. The mirrors are to be fixed with chromium plated dome headed mirror screws with plastic or rubber distance pieces and washers unless otherwise stated and rates shall include for this.

## **WORKMANSHIP B GENERAL**

Glazing of all types and in all locations shall be carefully executed by artisans skilled in this type of work and in conformance with recommendations of C.P.152. Glazing shall be carefully fitted so that it is not subject to pressure and stress imposed by being an overtight fit within the framing.

### **C MEASUREMENTS**

Each element (door, window etc.) to receive glass shall be accurately measured to ensure a perfect fit subsequently.

### **D SINGLE GLAZING**

Single glazing shall be executed with glass of the various types described herein. Ordinary (non –safety) glass may be pre-cut or cut on site.



## **E      WIRED GLASS**

Wired glass shall be cut so that the wires embedded are truly vertical and horizontal (i.e at right angles to the cut edges).

## **F      SAFETY GLASS**

Safety glass shall be factory cut before delivery to site. Site cutting will not be permitted.

## **G      STORAGE AND HANDLING**

Glass shall be delivered to site in stout containers and clearly marked. The containers shall incorporate sling attachment points for lifting bridles. Glass shall be stored under cover so that the panes are truly vertical.

## **H      PROTECTION**

After fixing glass shall be boldly marked with paper or whitewash so that it is clearly visible. In positions where damage due to construction traffic or activity is likely to occur stout screens composed of hardboard or fibreboard on battens shall be arranged to protect the glass.

## **A      DAMAGE**

Should any glass delivered to site be found to be damaged it shall not be incorporated into the works without the express permission of the Architect. Should glazing installed be damaged for any reason it shall be removed and replaced free of charge to the satisfaction of the Architect. Should any adjacent works be damaged this shall equally be reinstated free of charge to the satisfaction of the Architect.

## **B      DEFECT WORK**

All glass shall be checked before installation to ensure that defective glass is not installed. Notwithstanding this, if in the opinion of the Architect, any installed glazing is defective it shall be removed and replaced free of charge to the satisfaction of the Architect.

## **C      GLAZING TO WOOD**

Glazing shall be secured to wood framing with hardwood beads. Edges shall be wrapped in washleather so that the washleather finishes just below the surface of the bead. No adhesives shall be used.

## **D      GLAZING TO METAL**

Glazing shall be secured to metal framing with clip in butyl rubber gaskets.

## **E      GLASS THICKNESS**

Glass thickness shall conform to the recommendations of C.P.152 and the manufacturer's recommendations for sizes of panes relative to the position in the building and the effects of wind pressure (both negative and positive).

## **PART ELEVEN : SPECIFICATIONS PAINTING & DECORATING**

### **PAINTING AND DECORATING**

#### **MATERIALS**

##### **A MANUFACTURERS**

Except where stated all materials shall be obtained from approved manufacturers. The contractor shall state the name and address of the manufacturer whose materials he proposes to use. Once approval has been given the contractor shall not obtain materials from other sources without the prior written agreement of the Architect.

##### **B GENERAL**

Each succeeding coat of priming, undercoating and finishing (pigment) or clear coating shall be sufficiently different in colour as to be readily distinguishable.

All primers and paints in one system upon a particular surface shall be obtained from the same manufacturer.

The mixing of paints, etc, of difference brands before or during application will not be permitted.

##### **C EMULSION PAINTS**

Emulsion paints shall be matt to satin finish vinyl emulsion paint. The first (mist) coat shall be thinned in accordance with the manufacturer's instructions.

##### **D GLOSS PAINT**

Gloss paint shall be hard gloss finish oil paint.

##### **E LEAD BASED PAINT**

The use of lead based paints will not be permitted.

##### **F CLEAR FINISHES**

Clear finishes internally shall be clear polyurethane varnish (one pack).

##### **G PRIMERS AND UNDERCOATS**

Unless otherwise specified, primers and undercoats shall be the type recommended by the manufacture of the finishing coats specified for a particular surface. Primer for external bare metalwork surfaces shall comply with B.S 2523.

##### **H KNOTTING**

Shellac knotting shall comply with B.S 1336

##### **A WHITE SPIRIT**

The white spirit shall comply with B.S. 245.

##### **B TIMBER STAIN**

Timber stain shall be oil based pigmented stain. The application of this materials shall be strictly in accordance with the manufacturers written instructions. Tint and degree of application shall be to the approval of the Architect.

## **C STOPPING**

The stopping shall be as follows:-

- a) plasterwork shall be plaster based filler.
- b) Concrete and brick work shall be similar material to the background and finished in a similar texture.
- c) Internal woodwork, plywood and blockboard shall be putty complying with B.S.544.
- d) External woodwork shall be white lead paste complying with B.S 2029.
- e) Internal clear wood finishes: the stopping shall be that recommended by the clear lacquer manufacturer.

## **D FILLERS**

The fillers for internal joinery shall be the type recommended by the paint manufacturer for use with his type of paint or lacquer.

Stopper and fillers shall be tinted to match the under coat, and shall be compatible with both undercoats and primers.

All materials shall be used strictly in accordance with manufacturer's instructions.

## **E TEXTURED COATING**

Textured coating is to be of proprietary manufacture approved by the architect and of an approved colour.

Technical information concerning the coating is to be submitted to the Architect before ordering, but the minimum qualities of the coating are to as follows:-

- a) Suitable for application internally and externally, plastered, rendered, concrete, block stone, brick, asbestos and timber surfaces.
- b) Minimum durability of 10 years even in exposed conditions
- c) Maintenance free
- d) Built- in mould resistant fungicide.

## **WORKMANSHIP**

### **A GENERAL**

Workmanship generally shall be carried out in accordance with B.S.C.P 231, unless otherwise specified. Before painting is commenced floors shall be swept and washed over; surfaces to be painted shall be cleaned before applying paint as specified, and all precautions taken to keep down dust whilst work is in progress. No paint shall be applied to surfaces structurally or superficially damp and all surfaces must be ascertained to be free from condensation, efflorescence, etc., before the application of each coat. No painting shall be carried out externally during humid, rainy, damp, foggy or freezing conditions, or conditions where surfaces have attained excessively high temperatures or during dust storms. No new primed or undercoated woodwork and metal work shall be left in an exposed or unsuitable situation for an undue period before completing the process.

No dilution of paint materials shall be allowed except strictly as detailed by the manufacturer's own direction, either on the containers, or their literature, and with special permission of the Architect. For external work dilution of paints will not be allowed whatsoever. For internal work, where permitted by the Architect, undercoats may be thinned by the addition of not more than 5% thinners. Gloss finish shall not be thinned at all.

Metal fittings such as ironmongery etc., not required to be painted shall first be fitted and then removed before the preparatory processes are commenced. When all painting is completed the fittings shall be cleaned as necessary and refixed in position.

## **B BRUSHWORK**

Unless otherwise specified, all primers and paints shall be brush applied. Written permission must be obtained from the Architect's if an alternative method of application is to be used.

## **C STOPPING AND FILLING**

Unless otherwise specified by the manufacturer all primers and undercoats shall be stopped flush and rubbed down to a smooth surface with an abrasive paper and all dust removed before each succeeding coat is applied. Care shall be taken to prevent burnishing of the surface.

## **D STIRRING**

Unless otherwise specified by the paint manufacturer all paint materials shall be thoroughly mixed and/or stirred before and during use, and suitably strained as and when necessary.

## **E INSPECTION**

No priming coats shall be applied until the surfaces have been inspected and the preparatory work has been approved by the Architect. No undercoats of finishing coats shall be applied until the previous coat has been similarly inspected and approved.

## **A. PAINT APPLICATION**

Each coat of paint shall be so applied as to produce a film of uniform thickness. All paint shall be applied in accordance with the manufacturer's instructions. Special attention shall be given to ensure that all surfaces including edges, corners, crevices, welds and rivets receive a film thickness equivalent to that of adjacent painted surfaces.

## **B DRYING**

All coats shall be thoroughly dried before succeeding coats are applied. Allow a minimum of 24 hours between application on any one surface, unless otherwise specified by the manufacturer.

## **C UPRIMED WOODWORKS**

Unprimed woodwork scheduled to be painted shall be rubbed down with abrasive paper and dusted off. Care shall be taken to prevent 'burnishing' of the surface. All knots and resinous areas shall be coated with two coats of knotting. Pitch on large, open unseasoned knots and all other beads or streaks of pitch shall be scrapped off, or if still soft, shall be removed with white spirit before applying the knotting.

Apply one coat of priming to all surface, two coats to all end grain, to be subsequently painted. Backs of all wood frames in contact with concrete, brickwork, blockwork, and metalwork or similar materials shall be primed before fixing. After priming all joints, holes, cracks shall be stopped and filled, rubbed down and dusted off.

## **D PRIMED WOODWORK**

Woodwork delivered primed shall be lightly rubbed down with abrasive paper, and dusted off. Touch up bare areas with a similar priming including open grained ends. After touch priming all joints holes, cracks and open grained ends shall be stopped and filled, rubbed down and dusted off.

## **E PLYWOOD AND BLOCKBOARD**

Edges of exterior plywood and blockboard shall be sealed with two coats of aluminium primer and the backs treated with a lead primer.

#### **F CLEAR FINISHED WOODWORK**

All woodwork scheduled to receive a clear finish shall be well sanded with the grain removing all dirt etc., to give as smooth a surface as possible. Resinous timber shall be swabbed down with white spirit and dried thoroughly.

Split or end grain shall be filled with suitable filler recommended by the clear lacquer manufacturer in accordance with their instructions, and of the appropriate shade.

#### **G BARE METALWORK**

Bare metalwork shall be thoroughly cleaned off all dirt, grease, rust and scale by means of chipping, scrapping and wire brushing; particular attentions should be given to the cleaning of welded, brazed and soldered joints. Wash down with white spirit and wipe dry with clean rags. Apply a coat of metal primer immediately the cleaned surfaces have been approved by the Architect.

#### **A GALVANIZED METALWORK**

Galvanized metalwork scheduled for painting shall be thoroughly cleaned of dirt, grease dusted and washed down with white spirit and wiped dry with clean rags. Any minor areas of rust shall be removed by wire brushing and spot primed with a zinc rich primer. Apply at least one coat of calcium plumbate primer at all surfaces subsequently to be painted.

#### **B PRIMED METALWORK**

If the priming coat of pre-primed metalwork has suffered damage in transit, or during erection on site, the affected areas shall be cleaned off by wire brushing abrading and dusting off, the bared patches touched up with a primer of a similar type to that already applied.

#### **C COPPER**

Copper scheduled for painting shall be lightly abraded with emery cloth, washed with white spirit and wiped dry with clean rags.

Apply a coat of each primer immediately the cleaned surfaces have been approved.

#### **D BRICKWORK, CONCRETE ETC.**

All brickwork, blockwork, concrete, rendered and plaster surfaces scheduled to be painted shall be brushed down, all holes and cracks filled, all projections such as plaster or mortar splashes etc., removed to leave a suitable dust free surface. All traces of mould oil shall be removed from concrete surfaces by scrubbing with water, detergent and rinsing with clean water. All these surfaces shall be thoroughly dry before any primer or paints are applied. Apply a coat of alkali resisting primer where surfaces are to be finished with oil paints or alkyd type emulsion.

Asbestos cement surfaces scheduled for painting shall be brushed down to remove powdery deposits, and a coat of alkali resisting primer applied where such surfaces are to be finished with oil paints or alkyed resin type emulsion.

#### **E COLOURS**

The colour will, be selected by the Architect from the paint manufacturer's standard colour range.

#### **F TOXIC WASH**

Concrete, blockwork, plaster and timber surfaces which are to be painted shall be washed down prior to painting with a toxic wash applied by brush or spray. A second wash shall be applied two days after the first wash. The surfaces shall be then allowed to dry out completely before application of paint.

## **G PROTECTION**

Proper care must be taken to protect surfaces while still wet by use of screens and 'wet paint' signs where necessary.

## **A DAMAGE**

Care must be taken when preparing surfaces, or painting etc., not to stain or damage other work. Dust sheets and covers to the satisfaction of the Architects shall be used to protect adjacent work. Any such stains or damage shall be removed and made good at the Contractor's expense.

## **B CLEANLINESS**

All brushes, tools, pails, kettles and equipment shall be clean and free from foreign matter. They shall be thoroughly cleaned after use and before being used for different colours, types or classes of material. Painting shall not be carried out in the vicinity of other operations that may cause dust. Waste liquids, oil soaked rag etc., shall be removed from the building each day. Waste liquids shall not be thrown down in any sanitary fittings or drains.

## **C PERFORMANCE**

If, while the work is in progress, the paint appears to be faulty, such as consistency of colour, drying time, or quality of finish, the work shall be stopped at once and the manufacturer consulted.

The manufacturer's of the materials shall be given every facility for inspecting the work during progress in order to ascertain that the materials are being used in accordance to their directions, and to take samples of their products from the site if they so desire for tests.

The finishing coats of the various paints or surface finishings shall be free from sags, brush marks, runs, wrinkling, dust, bare or 'starved patches, variations in colour and texture, and other blemishes.

When the work has been completed, the finished surfaces shall not be inferior in quality, colour and finish to the samples approved by the Architect, and imperfections in manufacture shall not be apparent through these finished surfaces.

In the event that the Architect is not satisfied that the quality of finish does not comply with the required standards and/or the sample panel the contractor will be required to repaint at his own expense, such work to the satisfaction of the Architect. If in the opinion of the Architect it is necessary to remove completely the unsatisfactory paintwork this shall also be done under the direction of the Architect at the expense of the contractor.

## **D Packaging, Delivery and Storage**

All paints and surface coatings shall be delivered in sound sealed containers, labelled clearly by the manufacturers, the label or decorated container must state the following:-

- a) The type of product
- b) The brand name and colour
- c) The use for which it is intended
- d) The manufacturer's batch number
- e) The B.S number if applicable
- f) All labels shall be printed – containers bearing type written labels will not be acceptable

Materials shall be stored under cover in accordance with the manufacturer's instructions, and with local fire and safety regulations.

The store itself must be maintained at temperature of not less than 50 degrees f (10 degrees C) and must not be subjected to extreme changes of temperature.

**A VINYL EMULSION PAINT**

Surfaces to be painted shall receive one mist coat followed by two full coats of vinyl emulsion paint. Application may be by means of rollers or brushes.

**B GLOSS FINISH PAINT**

Surfaces to be painted shall be primed then painted with two undercoats followed by one coat gloss finish paint.

**C CLEAR POLYURETHANE VARNISH**

Surface to be clear varnished shall be treated with two coats polyurethane varnish

**D TEXTURED COATING**

The manufacturer's instructions concerning application of the coating are to be strictly followed under the direction of the Architect.

All surfaces to receive textured coatings are to be clean and dry with surfaces scrapped and brushed before application of the coating.

Application of the coating is to be with textured roller or fibre brush as directed by the Architect with a minimum spreading capacity of 1 kilogramme per square metre. Under no circumstances is the coating to be thinned.

## **PART TWELVE: SPECIFICATIONS DRAINAGE**

### **GENERAL**

#### **A. REGULATIONS ETC.**

The whole of the drainage is to be executed by a registered plumber and drainlayer in strict accordance with the Regulations of local Authorities and to the satisfaction of the Architect.

#### **B. CEMENT, SAND ETC**

The description of material and workmanship contained in the foregoing sections shall apply equally hereto.

### **MATERIALS**

#### **C. PITCH FIBRE PIPES**

All pitch fibre pipes and fittings for external services shall be manufactured in accordance with the requirements of B.S 2760. Pipes shall be connected by means of purpose made tapered joints manufactured in accordance with B.S 2760.

#### **D. PRECAST CONCRETE PIPES**

Precast concrete pipes for surface water and sewage shall comply with the requirements of B.S. 556 class 1.

Where flexible spigot and socket type of flexible rebated type joints are specified, rubber gaskets complying with the requirements of B.S 2494 shall be used except where oil products are likely to be present, in which case gaskets shall comply with the requirements of B.S 3514.

Where ordinary spigot and socket type ordinary rebated type joints are specified, the joints shall be made with a cement mortar mix.

Porous concrete pipes shall comply with the requirements of B.S 1194.

#### **E ASBESTOS CEMENT PIPES**

Asbestos cement sewerage pipes and fittings shall comply with the requirements of B.S 3656 with asbestos cement sleeve joints with rubber rings complying with the requirement of B.S 2494 class C.

#### **F. CAST IRON PIPES**

Cast iron drain pipes for building drainage shall comply with the requirements of B.S 437. Fittings for cast iron pipes shall comply with the requirements of B.S 78 or B.S 2035. Pipes and fittings will be coated internally and externally with an approved bituminous composition, except those parts to be encased in concrete which shall be coated internally only in the concrete area.

#### **A CLAY PIPES**

Clay pipes and fittings for sewerage or surface water shall comply with the requirements of B.S 65 and B.S 540 with Type 1 sockets and supplied complete with the manufacturer's flexible joint.

Clay pipes for use in the construction of french drains shall be British surface water pipes glazed or unglazed manufacture in accordance with B.S 65 and B.S 540 with Type 2 sockets or plain ended and supplied with sleeve couplings. Type 1 socketed and sleeve coupled pipes shall be perforated.



## **B P.V.C DRAIN PIPES**

P.V.C drain pipes and fittings shall comply with the requirements of B.S 4660:1973.

## **C PRECAST CONCRETE MANHOLES**

Concrete manhole ring sections shall be unreinforced ogee jointed complying with the requirements of B.S. 556. Shaft and chambers slabs shall be either mild steel reinforced heavy or light duty type, as specified.

## **D PRECAST CONCRETE OPEN CHANNELS**

Precast concrete invert and sideblocks shall be of dense precast concrete free from cracks and spalls. The concrete used shall be nominal 1:2:4 mix.

Precast concrete invert and side blocks shall be cast in steel moulds. All arrises shall be true well defined.

## **E GULLIES**

Precast concrete gullies shall be unreinforced and shall comply with the requirements of B.S 556.

Glazed ware gullies shall comply with the requirements of B.S 539. Cast iron gullies shall be of approved manufacture and shall conform with the dimensions and weight specified.

Gulley gratings and frames shall comply with the requirements of B.S 497.

## **F MANHOLE COVERS AND FRAMES**

Manhole covers and frames shall be of cast iron in accordance with the requirements of B.S 497.

## **G MANHOLES LADDERS**

Manhole ladders and fixings shall be of galvanised mild steel. The steel shall be mild steel grade 43 in accordance with B.S 4360 and shall be galvanised after manufacturer has been completed.

## **H MANHOLE SAFETY CHAINS**

Manhole safety chains shall be of 10 mm galvanised mild steel short link chain and will comply with the requirements of B. S. 590. One end of the chain shall securely attached to 16 mm diameter galvanised mild steel eyebolt and the other end shall have a galvanised hook of attaching to a similar eyebolt.

### **MANHOLE STEP IRONS**

Manhole step irons shall comply with the requirements of B.S 1247. For brick or block manholes, step irons shall be of galvanised malleable cast iron general purpose pattern with 230 mm long tails complying with the requirements of B.S 556.

## **B FILTER BACKFILL MATERIAL**

Filter backfill material for field or french drains shall consist of hard clean rock, crushed slag or gravel having a grading within the limits given below for Type 'D' or 'E'. The aggregate crushing value of the material as determined by the tests in B.S 8.2 shall not exceed 30%. The material passing 420 microm sieve shall be non-plastic when tested in accordance with B.S 1377.

Sieve Sized Weight	Percentage by passing	
	Type 0	Type E
63 mm	-	100
37.5mm	100	85 – 100
20mm	-	0 - 20
10mm	45 - 100	0 - 5
3.35mm	25 - 80	-
600 microns	8 - 45	
75 microns	0 - 10	

## WORKMANSHIP

### C UNDERGROUND PIPELINES

The contractor shall construct the pipelines using the designs of pipe, bed, haunch and surround details on the drawings.

‘Rigid pipes’ shall mean pipes of cast or spun iron concrete, asbestos cement, clay or similar materials.

‘Flexible pipes’ shall mean pipes of steel PVC or other plastic, pitch fibre, ductile iron or similar materials.

‘Rigid joints’ shall mean joints made by bolting together flanges intergral with the barrels of the pipes, by welding together the barrels of the pipes by caulking sockets with non-deformable materials, such as cement mortar, run lead or by similar techniques.

‘Flexible joints’ shall mean joints made with factory made jointing materials, loose collars, rubber rings etc., and which allow some degree of flexing, however small, between adjacent pipes.

### TRENCH EXCAVATION

Trenches for pipes other than those forming part of a field or french drain shall be excavated to a sufficient depth and width, subject to the following restrictions, to enable the pipe, joints, bed, haunch and surround to be accommodated.

From the bottom of the trench to a level 300 mm above the crown of the pipe trench widths shall not be less than the minimum nor greater than the maximum figures shown in the Table A.

Battering the sides of trenches shall only be permitted above this level where approved.

The minimum width of trench shall be used for measurement purposes.

**Table A- pipe Trench widths**

Nominal Interna Max.Trench		Min.Trench
Diameter (mm)	Width(mm)	Width (mm)
630	100	430
700	150	500
750	200	550
780	225	580
880	300	680
1150	375	950
1200	400	1000
1230	450	1030
1320	525	1120
1440	600	1240
1530	675	1330
1600	750	1400
1690	825	1490
2120	900	1920
2300	1250	2100
1200	2290	2490
Above 1200 Outside Dia	Outside dia. Of Above 1200 of pipes plus 1000mm	Pipes plus 800 mm

All sheeting and supports are to be out with the minimum width stated.

The contractor shall provide whatever additional pipe protection is directed should the specified maximum width be exceeded due to his method of working.

The contractor shall fill up with well compacted granular bedding material with 1:2:4 mix concrete where ordered by the Architect, any excessive depth or trench arising from his method of working.

Where the trench formation is in ground that, in the opinion of the Architect, is too soft to afford proper support to the pipes, either

- i The trench shall be excavated down to solid ground and the extra shall be refilled with lean mix concrete, granular bedding material, gravel or broken stone, as the Architect directs, well compacted to form even bed or:
- ii The pipe shall be supported by facines, piles or such other means as the Architect may direct.

The contractor shall avoid unduly disturbing the finished trench formation and shall make good disturbed areas and excavate any wet or puddled material which might result from his failure to do so. Voids shall be made good as the previous clause.

Where directed trenches close to existing structures be opened in short lengths and refilled or partly filled with lean mix concrete or other approved material.

The material excavated in forming pipelines shall if unsuitable be run to spoil and replaced with suitable materials as so defined.

Suitable material shall be set aside for use as backfill. Unsuitable material shall comprise all material such as material from bogs, marshes, swamp peat, logs, stumps, perishable material, clays having a liquid limit exceeding 80 or a plasticity content greater than 30% of the dry weight.

All surplus excavated material shall be disposed of to spoil hips provided by the contractor.

## **A PIPELAYING – GENERAL**

On arrival at the site, pipes shall be carefully inspected for damage ends, cracks or other defects and any found to be faulty shall be marked and set aside for a decision from the Architect as to their acceptability.

Pipes with damaged ends shall be either completely replaced or have the ends to the extent, and trimmed, as directed by the Architect.

The contractor shall ensure that all pipes are properly hauled both by his staff and by any cartage contractor employed by him.

During transport, pipes shall not be allowed to rest on narrow cross members of vehicles or anything else that might give concentrated loads due to the weight of the pipe or bumping of the vehicle but must be properly supported on soft material. Sufficient labour and equipment must be handed before unloading is commenced and under no circumstances must any pipes be dropped or thrown from a vehicle. The Architect shall have the right to reject consignments or stocks of piping from which failed pipes have been drawn, or order them to be pressure tested outside the pipelines at the contractor's expense even though no defects are apparent, if there is reason to believe that mishandling has taken place.

Flat braided wire slings or band slings shall be used for slinging all pipes except externally coated pipes and plastic pipes for which only special band slings not less than 300 mm wide shall be used. Chain or rope slings, hooks or other devices working on scissors or grab principles must not be used.

Subject to the requirements of inspection before acceptance protective bolsters, caps or discs on the ends of flanges, specials or fittings shall not be removed until the pipes, special or fittings are about to be lowered into the trench.

Before a pipe is lowered into the trench it shall be thoroughly examined to ensure that the internal coating or lining and the outer coating or sheathing are undamaged. Where necessary the interiors or pipes, specials and fittings shall be carefully brushed clean.

Any damaged parts of the coatings or lining shall, before a pipe is used, be made good as directed. Pipelaying shall not commence until the bottom of the trench and the pipe bed have been approved. Flexible pipes, rigidly jointed, may be joined on the ground surface before lowering into the trench. All joints shall be supported by slings as the pipes are lowered and the pipe-line must not be deformed to a greater extent than recommended by the manufacturer.

Pipes must be brought to the correct alignment and inclination, concentric with the pipes already laid.

All pipes less than 600 mm in diameter with flexible joints must be accurately marked prior to laying to ensure that the correct gap is left in the joint. An indelible mark shall be made on the spigot end on top of the pipe barrel to the depth of the socket less the detailed or specified joint gap. After correct jointing the mark should be flush with the face of the socket.

PVC pipes must be stored and handled carefully and must be in accordance with the manufacturer's recommendations.

## **A WITHDRAWAL OF SUPPORTS**

During the placing of bedding, haunching, surrounding or anchoring material, temporary side supports and sheeting shall be removed except where directed to be left in and the full width of the trench will be infilled with bedding haunching, surrounding or anchoring materials.

## **B BEDDING AND PROTECTING PIPES – GENERAL**

Bedding, haunching, surrounding and anchoring pipes shall be to the arrangement and dimensions shown on the drawings. A cavity of adequate size shall be excavated in the sides and bottom of the trench or left in the pipes bed at each joint and at each sling position.

The bottom of the trench or surface of the bed shall be finished to a smooth even surface at the correct levels to permit the barrel of the pipe to be solidly and evenly bedded throughout its whole length between joint and sling holes.

The preparation of the trench bottom or surface of the bed shall be completed for at least one full pipe length in advance of the pipe laying, except where in exceptional circumstances another arrangement is approved. No bedding material shall be placed in trenches containing water.

Where granular bedding is to be used, stones, bricks or similar materials shall not be used below or against the pipe to locate them in position in the trench or to level the pipes. Sufficient infill materials shall be placed around the barrels of pipes to prevent movement.

Where directed, puddle clay dams 500 mm thick shall be constructed around the pipe and across the trench as haunching and surrounding proceeds. The dams shall be at intervals not exceeding 30 metres or as directed and their height shall be determined by the Architect.

Where directed by the requirements for testing pipelines the method of haunching and surrounding pipes shall be modified to leave pipe joints exposed. Where there is a high ground water table all pipes shall be surrounded in an approved free drainage material.

## **A CONCRETE BEDDING, HAUNCHING, SURROUNDING AND ANCHORING**

Concrete for bedding, haunching or surrounding pipes shall be 1:2:4 nominal mix concrete and no back filling of the trench shall be done until the concrete has reached a strength of 15 N/mm<sup>2</sup>.

Before placing concrete, pipes shall be supported near each joint on a precast concrete block or on engineering bricks with a padding of two layers of hessian based damp proof course or material of similar yield between the barrel of the pipe and the supporting block. The surface of the support shall be perfectly smooth for at least 75 mm by 75 mm under the pipe, and the size of the blocks shall be as directed.

Concreting of bedding, haunching or surrounding shall not be done until the pipes have been jointed and inspected. The concrete shall be vibrated into place under the pipe and concrete shall be in full contact with the underside of the pipe throughout its length.

The concrete shall be placed in one operation and shall be well worked form a homogeneous mass. There shall be no horizontal construction joint in the concrete below the level of the half pipe. The pipe shall be carefully anchored against flotation. Concrete beds, haunches and surrounds of pipes with rigid joints shall be formed in lengths not exceeding 10.0 metres which shall be separated by a soft wood joint filter 25 mm thick.

Concrete bedding, haunching pipes shall be discontinuous at flexible pipe joints. Shaped formwork made from fibreboard or other equally compressible material of the thickness stated in the contract and of size and shape equal to the next section of the concrete protection to the pipes shall be used and left at the pipe joint as shown on the drawings. The formwork shall be neatly cut and properly supported by temporary strut and rails where necessary.

PVC pipes shall be wrapped in polythene sheet or roofing felt about 2 mm thick before being haunched or anchored in concrete.

Nominal 1:2:4 mix concrete shall be placed at all bends, tees, junctions, changes of direction and gradients to prevent movements of pipelines due to thrust from water pressure, in such positions and quantities as directed.

Concrete pipe anchorages and thrust blocks in trench shall be placed against undisturbed ground. Any loose or disturbed material shall be removed immediately before the concrete is placed.

Concrete anchorages to PVC pipes shall be placed to support half the circumference of the pipe. The pipe must not be encased. Where compliance with the requirement would result in concrete above the pipe, the anchorage concrete shall be placed beneath the pipe and the pipe will be restrained by straps as shown on the drawings.

#### **A PLUG**

Immediately after laying, the open end of a pipe shall be sealed with wooden plug or approved stopper of appropriate size to prevent the entry of material which might contaminate the pipelines, damage the linings, obstruct the waterway or effect the working of valves, meter etc. Plugs shall be unperforated and shall be shaped to fit exactly so that water from the trench excavations shall not be allowed to gain access to the pipeline.

The plugs in sewers may, with the Architects approval, be provided with small holes for drainage purposes, but water from the trench excavation which is heavily charged with silt shall not be allowed to gain access to the pipe.

Where work is interrupted for a period, the plug left in position shall be regularly inspected for their fixing to ensure that there has been no tampering by unauthorised persons. Whenever any plug is removed, the immediate length of pipe shall be examined for dirt or obstructions and shall be cleaned as required.

Adequate precautions must be taken by way of backfilling or other means to anchor each pipe securely to prevent flotation of the pipeline in the event of the trench being flooded. No equipment, clothing or apparel must be left or sorted inside pipelines.

#### **B JOINTING PIPES**

Joints shall be made strictly in accordance with the manufacturer's instructions. The contractor shall make use of the technical advisory services offered by manufacturers for instructing pipe jointers in the methods of assembling joints. Where manufacturers recommend the use of special jointing tackles, the contractor shall use these for the assembly of all joints to pipes. Sockets shall be laid looking uphill unless otherwise approved.

Before making any joints, all jointing surfaces shall be thoroughly cleaned and dried and maintained in such condition until the joints have been completely made or assembled. Notwithstanding any flexibility provided in the pipe joints, pipes must be securely positioned to prevent avoidable movement during and after the making of the joint.

The space between the end of the spigot and the shoulder of the socket of flexibly jointed pipes when jointed shall be as recommended by the manufacturer or ordered by the architect. After flexibility jointed pipes, other than

PVC pipes have been jointed the gaps between the barrel of the pipes and the internal face of the socket shall be sealed with puddle clay, uncaulked rope yarn or other approved material. The rope yarn or other material must have been treated so as not to support bacterial growth.

Where loose collars are used to join pipes cut for closers, special tools shall be employed to keep the inside of the pipes flush and the collar concentric with the pipe while the joint is being made. Pipes provided with spigot and socket joints of the selfcentering, instantaneous joint type, such as the rubber ring push fit joint, shall be laid and jointed strictly in accordance with the makers instructions. Generally the joint ring shall be cleaned and inspected for cuts and defect, and socket spigot examined to ensure free recommended lubricant will be used.

## **A CAST IRON JOINT FITTINGS**

Cast iron detachable joint collars and flanges shall be tested by striking lightly with a spanner immediately before they are placed and if they fail to ring true shall be set aside and not incorporated in the work until proven sound. The flanges shall be correctly positioned and the component parts including any insertion ring cleaned and dried.

Insertion rings shall be fitted smoothly to the flange without folds or wrinkles. The face and bolt holes shall be brought fairly together and the joints shall be made by gradually and evenly tightening bolts on diametrically opposed positions. Only standard length spanners shall be used to tighten the bolts. The protective coating, if any, of the flange shall be made good when the joint is completed. Bolts threads shall be wrapped with PTFE tape where directed before use.

No washers shall be used on flanged pipework to be laid below ground. Bolts shall be as specified and shall be the correct length, leaving a maximum of two threads exposed.

## **B CEMENT MORTAR JOINTS**

The spigots and sockets of concrete pipes shall be thoroughly moistened before cement mortar joints are made. In making ogee joint to concrete pipes a thick layer of cement shall be applied to the butting faces, the pipe being laid shall be well driven against the other, and the jointed finished off inside, flush with the pipe wall. The outside of the joint shall be pointed up with a 75mm wide x 25mm thick mortar fillet all round and central about the joint. In making yarn and mortar joints for concrete and clay pipes, the spigot of the last pipe laid until it bears on the back face of the socket and shall be centred in the socket. Two turns of tarred yarn shall then be firmly caulked into the back of the socket with a proper caulking tool. Mortar consisting of 2 parts of sand to 1 part of cement shall then be pressed firmly into the joint to fill the socket completed and shall be neatly bevelled off at 45 degrees from the outside edge of the socket. Joints made with cement mortar shall remain exposed for at least 3 hours to allow for the initial set of the cement.

All joints shall be examined and approved before the refilling of the trench is commenced

## **C BACKFILLING TRENCHES**

If the contractor allows material to become unsuitable, which when excavated was suitable for re-use, and it is unsuitable when required for backfilling, he shall run it to spoil and make good by replacing with suitable material.

Where required to meet the specification for testing pipelines, trenches shall be partially backfilled to provide anchorage, but joints shall be left exposed.

Backfilling shall whenever practicable be undertaken immediately the specified operations preceding it have been completed. No backfill material shall be placed in trench containing water.

In trenches in roads, verges and where shown on the drawings above 300mm over the crown of the pipe backfill, material shall be deposited in layers each not exceeding 225mm thickness and each compacted to 100% with a moisture content between with the moisture content between 0.8 and 1.05. M.C. Power rammers or vibrating plate compactors shall be used to compact the backfilling from one metre above the crown level of the pipe to the surface.

In trenches in fields or open country backfill material above 300mm over the crown of the pipe may be placed by machines provided the method of operation ensure that the materials slides or rolls into position and does not drop from a height.

The backfill material must not include any stones or boulder of dimensions exceeding 150mm in any position. Sufficient space shall be left to receive the original thickness of solid, turf or other materials removed from the surface. The surfaces shall be restored by replacing the materials in their proper order and form, and by compacting then to such a level as shall ensure that after settlement is complete the surface level of refilled trenches shall be within 30mm of that of the adjacent undisturbed ground.

Where directed, trenches shall be backfilled with lean mix concrete made with 1kg cement to 12 kg aggregate. The aggregate will be as, clinker, gravel, stone or other hard material, approved by the architect, and free from sulphates, dust and other deleterious material.

#### **A FIELD OR FRENCH DRAINS**

Trenches for drains up to 150mm in diameter shall be excavated to a width of at least four times the normal diameter of the pipe; above 150mm diameter the width shall be the diameter plus 450mm.

Where shown on the drawings pipes for drains shall be bedded on a 75mm thickness of lean mix concrete which shall also be brought up until at least one-third of the depth of the pipe is supported and in the case of perforated pipes, no line of operations is thereby blocked. Non-circular pipes shall be bedded as shown on the drawings. Socketed pipes shall be laid with a space of about 12mm between the spigot and the inner end of the socket. Ogee jointed porous concrete and perforated clay pipes with rebated joints shall be dry jointed. Perforated pitch fibre pipes may be jointed with any of the joints specified in B.S.2760.

Trenches for drains shall be backfilled with materials approved by the architect.

The pipes, the filter materials and the surface over drains shall at all times be kept free of obstructions.

#### **B OPEN SURFACE WATER CHANNELS**

Excavation shall be carried out generally as described for pipework. The invert shall be finished to a true line and fall and sides shall be trimmed to the slopes indicated.

Invert blocks and sides slabs shall be laid on a 100mm thick bed of suitable approved granular material formed and well compacted. They shall be jointed by thickly covering the joint face with mortar and driving the next unit firmly against that previously laid. The excess mortar squeezed out of the joint shall be neatly trowelled off. Channels ends shall be saturated with water and newly completed joints shall be protected and cured as for concrete pipes.

#### **C MANHOLE INSITU CONCRETE**

Manholes of insitu concrete will be formed as for blockwork manholes, the blockwork being replaced by nsitu mass 1:2:4 nominal mix concrete.

Precast concrete manholes for sewers of up to 1200mm diameter shall be constructed as detailed on drawings using precast concrete component.

Manhole cover slabs may be cast insitu using reinforced nominal 1:2:4 mix concrete precast using reinforced nominal 1:1½:3 mix concrete.

Unreinforced precast concrete chamber rings shall be surrounded with a minimum thickness of 150mm nominal 1:3:6 mix mass concrete as detailed on the drawings.

Step irons 230mm long shall be set into the external concrete surround to the manhole and the slots through the chamber rings filled with cement mortar.

#### **A CHAMBERS**

Chambers for access to valves and fittings on pressure pipelines for water or sewage, unless otherwise directed shall be constructed in concrete blockwork.



## **B SEPTIC TANKS**

Septic tanks shall be constructed to the dimensions and general arrangement detailed on the drawings and in the contract. Tanks with blockwork shall be constructed as for manholes.

## **C TESTING FOR SEPTIC TANKS**

Septic tanks and other chambers shall be tested by filling with water after completion of backfilling.

The first 1.0 metre of depth may be filled as quickly as the supply permits. Between this and top water level the rate of filling must not exceed 1.0 metre in 24 hours. After filling to top water level no further water shall be introduced for 2 days. At the end of this period the tanks shall be topped up to top water level and allowed to stand for 24 hours. The test shall be considered satisfactory if the fall in water level in 24 hours does not exceed 15mm.

In the event of a fall exceeding the above tank will be emptied and any defects made good prior to retest as before, all at the contractor's expense.

## **D CONNECTION TO SEWER**

All connections to sewers are to be made with angle junctions set at the correct angle to minimize the use of bends. All angles shall not exceed 45 degrees.

The open ends of all house connections and other pipes not required for immediate use shall be sealed up with purpose made stoppers secured in position. The ends of connections and all junction positions will be clearly marked by posts and painted boards of a type and size to be approved by the Architect and the board shall be plainly marked with the letter 'S' and the size and depth below kerb level or ground level. A length of 4.5 mm galvanised iron wire shall be fixed to the face of the last pipe and the marking post.

Every care shall be taken to prevent the marking boards being disturbed and the contractor shall take responsibility for their safety.

The information shall also be painted on the kerbs in an approved manner when all works are complete and the contractor shall record the position of all branches fixing distances from the manhole immediately downstream of the branch.

## **A TESTING SEWER**

Wherever possible, testing shall be carried out from manhole to manhole. Short branch drains connected to main sewer between manholes shall be tested as one system with the main sewer. Long branches shall be tested separately.

Pipes not exceeding 750mm nominal diameter shall be tested in one of the following ways:-

### **I. WATER TEST**

A test pressure of 1.2 metres head of water above the soffit of the sewer shall be applied at the high end but not more than 6 metres at the low end by means of a stand-pipe. Steeply graded sewers shall be tested in stages where the above maximum head shall be exceeded if the whole section is tested in stages where the above maximum head shall be exceeded if the whole section is tested at once. A period of one hour shall be allowed for absorption. The loss of water over a period of 30 minutes shall be measured by adding water from a measuring vessel at regular intervals of 10 minutes and noting the quantity required to maintain the original water level in the standpipe. The average quantity of water added for sewers up to 300mm nominal bore must not exceed 0.06 litre per hour per 100 linear metres per mm of nominal bore of sewer. For sewers exceeding 300mm nominal bore the average quantity of water added must not exceed 0.12 litre per hour per 100 linear metres per mm of nominal bore of the sewer.

## II. AIR TEST

The length of sewer under test shall be effectively plugged and air pumped in by suitable means e.g. a hand pump, until a pressure of 100mm head of water is indicated in a U-tube connected to the system. The air pressure must not fall to less than 75mm head of water during a period of 5 minutes, without further pumping, after a period of 2 minutes for requisite stabilization.

Sewers will be tested:

- i after laying and placing concrete if any but before backfilling over joints and after backfilling has been completed.

Sewers constructed of steel, spun iron or other materials designed for high pressure shall be tested in accordance with the provisions of clause 33.00 below. Pipes exceeding 750mm nominal diameter shall be tested as required by the contract.

Where required by the contract the sewer shall be tested for obstruction by the insertion and pulling through of twin-coupled rubber plunges of the same diameter as the sewer.

Sewer shall be tested for infiltration after backfilling. All inlets to the system shall be effectively closed and the residual flow shall be deemed to be infiltration. The following limits of infiltration must be exceeded:-

- ii for sewers not exceeding 750mm nominal internal diameter, 0.08 litre per hour per 100 linear metres per mm of nominal bore of the sewer.
- iii for sewer exceeding 750mm nominal internal diameter 0.16 litre per hour per 100 linear metres per mm of nominal bore of the sewer.

Infiltration to manhole must not exceed 5 litres per hour per manhole

## A MANHOLES AND CHAMBERS

Manholes and chambers shall be constructed in accordance with the drawings and specifications and in the positions as detailed on the drawings or directed by the Architect.

Pipes in and out of manholes are to be as short as practicable and shall be built in monolithically with the manhole and the manhole made watertight. Where line, level and pipe diameter permit and where approved by the architect, the pipeline may be laid broken through the manhole position subject to the pipe joints external to the manhole not exceeding 600mm from the inner face of the manhole wall.

The depth of the main channel must not be less than the diameter of the largest pipe. Where pipes have been laid unbroken through the manhole position the crown of the pipe shall be broken out to the half diameter over the full length of the manhole and the benching completed as directed by architect.

Branch bends shall be curved in the direction of flow and will be trowelled smooth with a steel float finish. Spaces between branch bends shall be completely filled with concrete and the faces above the main and branch channel inverts shall be trowelled smooth with a steel float finish.

Bases and benching shall be formed in 1:2:4 nominal mix concrete trowelled smooth with a steel float finish

Manholes inside buildings and elsewhere as shown in the contract shall have cast iron pipes with access openings and bolted cover plates with the requisite branches in lieu of open channels and branch bends. The bottom of the manhole shall be brought up in concrete to the underside of the cast iron cover plate of the access pipe and benched up at slope of 1:12 and trowelled smooth.

Manhole covers and frames shall be fixed in the position shown, the frame shall be solidly bedded in cement mortar so that generally the cover when in position are fair and even with the adjacent surfaces except where directed by the architect when they shall be kept 75mm above the adjacent surfaces. Where shown or directed frames shall be bedded on one or two courses of blockwork in cement mortar.

Step irons are not required where the depth to benching is less than 900mm and the diameter of the largest pipe is less than 450mm. Channels more than 450mm in depth shall have one or more step irons in a recess, or toe holes and hand rail or post within easy reach, as detailed. A manhole shaft (excluding the 1-2 courses of blockwork under the cast iron cover) shall not be constructed unless the complete length shall exceed 1.0 metres.

Where depth from ground level to top of benching exceeds 4.5 metres a ladder may be used instead of a step iron where directed.

Manhole ladders shall have brackets (not less than two pairs per ladder) of material equal to the stingers built into the blockwork or concrete at intervals of not more than 2.0 metres.

In deep manholes suitable rest chambers shall be provided at about 6 metre intervals, each with a landing platform incorporating a hinged trap door immediately under the ladder as detailed in the contract.

Cover slabs of manholes shall be reinforced as shown on the drawings, minimum cover to steel 40mm, and the concrete shall be as detailed in the contract. All manholes on sewers of 600mm diameter and over shall be provided with safety chains across the mouth of the sewer on the downstream side and handholds or a 25mm solid bar handrail shall be provided on the edges of all benching platforms etc., as detailed or directed. The contractor shall supply two sets of lifting keys for each pattern of manhole cover incorporated in the work. General Specifications All manholes and chambers when completed must be watertight and to the satisfaction of the architect.

#### **A CONCRETE BLOCKWORK MANHOLES**

Concrete blockwork manholes for sewers up to 750 mm diameter shall be constructed as detailed on the drawings, using concrete blocks as specified laid in English bond beds and vertical joints shall be completely filled with mortar as the blocks are laid. External joints shall be flush pointed and internal joints shall be raked out to receive rendering as work proceeds. Cuts blocks shall only be incorporated when necessary for closures.

Where built into manhole walls, pipes of 375mm diameter and above shall have 150mm thick concrete relieving arches turned over to the full thickness of the blockwork. Where the depth of the invert exceeds 5.0 metres below the finished ground level the arch shall be 300mm thick. Walls of manholes up to 2.0 metres deep and up to 4.0 metres shall be increased in thickness to 400mm blockwork. Walls over 4.0 metres deep and upto 7.0 metres shall be 600mm blockwork and over 7.0 metres deep manholes shall be precast concrete or insitu concrete as directed by the architect. Overall manhole deep manholes shall be adjusted to the nearest half block size with the approval of the architect.

Manhole shafts shall be 750mm by 675mm and where ladders are used this size shall be increased to 825mm by 675mm with the shaft top corbelled as necessary.

Step iron having tail 230mm long shall be built in at 300mm vertical intervals as shown with the uppermost step iron from 60mm to 900mm from the top of the manhole cover as detailed.

## PARTICULAR PRELIMINARIES

Item	Description	Amount KSh
	<b><u>PARTICULAR PRELIMINARIES</u></b>	
A	<b>EMPLOYER</b>  The Employer is the <b>County Assembly of Bungoma</b> The term "Employer" and "Government" wherever used in the contract document shall be synonymous.	
B	<b>PROJECT MANAGER</b>  The term "PM" wherever used in these Bills of Quantities shall be deemed to imply the project Manager as defined in General Conditions of Contract or such person or persons as may be duly authorised to represent him on behalf of the Government .	
C	<b>ARCHITECT</b>  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.	
D	<b>QUANTITY SURVEYOR</b>  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.	
E	<b>ELECTRICAL ENGINEER</b>  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.	
F	<b>MECHANICAL ENGINEER</b>  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.	
G	<b>STRUCTURAL ENGINEER</b>  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.	
H	<b>CHIEF DESIGNER</b>  The term "Chief Designer" 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.	
	<b><i>Carried to collection</i></b>	

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 a County Assembly Buidling and associated Civil works, Electrical and Mechanical Installations works at Bungoma</p>	
C	<p><b>DESCRIPTION OF THE WORKS</b></p> <p>The Works consist of: Erection and completion of a four (4No.) storey building on reinforced concrete foundations. The superstructure will be consist of concrete works and natural stone walling. The roof slab consisting of stone coated Decra roof covering on timber trusses. The external wall finish will consist of render and weatherguard paint to external areas. The internal wall finish will include plaster and paint &amp; tiles to all wet areas. Floors to be finished in tiles. Ceiling finishes are in plaster and paint, and gypsum ceiling on timber brandering. Doors are in Aluminium Externally and solid core timber flush doors Internally. Windows are in aluminium casement</p> <p>Electrical works include electrical wiring &amp; fittings</p> <p>Mechanical works including associated piping and fittings</p>	
D	<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 Clause 13 of the General Conditions of Contract. The discrepancies shall then be treated as a variation and be dealt with in accordance with Clause 13 of the said Conditions.</p>	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
A	<p><b>FLOOR AREAS</b></p> <p><b>County Assembly</b></p> <p>Ground Floor = 1,189 SM</p> <p>First Floor = 812 SM</p> <p>Second Floor = 676 SM</p> <p>Third Floor = 676 SM</p> <p>Fourth Floor = 108 SM</p> <p><b>Total floor area = 3,406 SM</b></p> <p>Storey height = 3.75 Meters</p>	
B	<p><b>LOCATION OF SITE</b></p> <p>The site of the proposed works is at <b>Bungoma Town</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>	
C	<p><b>SIGNING OF THE TENDER DOCUMENTS</b></p> <p>The bidder shall append his / her signature and / or company 's rubberstamp on each and every page of tender document.</p>	
D	<p><b>DEMOLITIONS AND ALTERATIONS</b></p> <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>	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
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 Payments will be paid for work done and materials delivered to sit: all in accordance with Clause 14.3 of the General Conditions of Contract Agreement. 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. Advance Payment to be in Accordance with Clause 14.2 and the Information provided in the Tender Data Sheet.</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.</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>	
	<b>Carried to collection</b>	



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>	
G	<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>	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
A	<p><b>PERFORMANCE BOND</b></p> <p>A bond of 5% of the contract sum will be required in accordance with Instruction To Tenderers (ITT) 48.1 and clause 4.2.1 of the General Conditions of Contract on award of contract of the Instructions to Tenderer's. 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 Clause 6.1 of the Instructions To Tenderers (ITT)</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>	
D	<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 1st 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>	
E	<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>	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
	<b>SPECIAL PRELIMINARIES</b>	
	<b><u>PROJECT MANAGEMENT</u></b>	
A	Allow a provisional sum of Kenya Shillings Five Million, Five Hundred Thousand Only (Kshs. 5,500,000.00) for Per Diem allowances, Airtime and stationeries for Project Management Team	5,500,000.00
	Allow for Contractor's profit and overheads (-----%)	
B	Provide a provisional sum of Kenya Shillings Five Hundred Thousand (Kshs 500,000.00) only for Continuous Professional Development Training for Project Management Team Paid DIRECTLY to BORAQS or Kenya School of Government.	500,000.00
	Allow for Contractor's profit and overheads (-----%)	
C	Provide for Purchase of <b>Two (2No.) HP Spectres X360 - 14t - ea000</b> Convertible PC with the following features; Windows 10 Pro 64, Intel core i1 - 116G7 (Upto 4.7GHz, 12MB L3 cache, 4 cores) + Intel Iris Graphics + 16GB (Onboard) 13.5" diagonal, WUXGA + (1920 x 1280), Touch, IPS, edge - to - edge glass, micro - edge, 1000 nits with integrated privacy screen, 1 TB Intel® SSD + 32 GB Intel® Optane™ memory, microsoft® office 2019 Home and Business 4 - cell, 66 Wh Li-ion polymer battery complete with power cable, Full-size island-style backlit keyboard HP True Vision HD IR Camera with Integrated dual array digital microphone, Intel® Wi-Fi 6 AX 201 (2x2) and Bluetooth® 5 combo (supporting Gigabit file transfer speeds) HP Rechargeable MPP 2.0 Tilt Pen	500,000.00
	Allow for Contractor's profit and overheads (-----%)	
D	Provide for Purchase of <b>Two (2No.) Kyocera Taskalfa TA1800 Printers</b>	200,000.00
	Allow for Contractor's profit and overheads (-----%)	
E	Provide a provisional sum of Kenya Shillings Two Million (Kshs 2,00,000.00) only for <b>Clerk of works</b> expenses.	2,000,000.00
	Allow for Contractor's profit and overheads (-----%)	
F	<b><u>PROJECT VEHICLE: 1NO. 11 SEATER - TO THE PROJECT MANAGER'S APPROVAL</u></b>	
	The Contractor shall price for supply and provision of One (1No.) Brand New 11 Seater Toyota VAN 2,800 Litre Diesel together with a licensed competent driver for use and to the satisfaction of the PROJECT MANAGER' all in accordance with the notes and specifications below:-	
	The Contractor shall ensure that the vehicles comply with the all government regulatory requirements in force such as licenses, comprehensively insured, and serviced regularly in accordance with the manufacturer's instructions and maintained in good condition throughout the entire contract period so that the vehicles are available for use in good serviceable condition at all times.	
	In the event of the vehicles being unserviceable when required, the contractor shall provide alternative vehicles of the same model or other equal and approved in compliance with the provisions of this condition.	
	In the event of the drivers being unavailable for whatever reason, the contractor shall provide alternative and equal qualified drivers.	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
	<p><b>PROJECT VEHICLE: '.....CONTINUED</b></p> <p>The vehicles shall be privately registered and the log books handed over to the Project Manager for safe keeping. After the contract is over the owner ship of the vehicles shall revert to <b>Bungoma County Assembly</b></p> <p>The rates shall include for the provision of driver, fuels, lubricants and tyres, all maintenance, minor and major repairs including those occasioned by accidental damage from whatever cause arising and everything necessary to satisfy fully the requirements of this conditions.</p> <p>Prior to handing over the vehicles to <b>Bungoma County Assembly</b> at the end of the contract, the Engine Chassis and body work of the vehicle shall be re-conditioned to be as new and no excessive wear or use shall be obvious.</p> <p>The vehicle shall be given a final check by the Mechanical and Transport Engineer (M &amp; T.E) Department of Roads, Transport, Public Works and Utilities; certificate of roads worthiness shall then be issued to the 'PROJECT MANAGER' for approval prior to acceptance of the vehicle by the Department of Roads Transport, Public Works and Utilities</p> <p>Reimbursement to the contractor for providing regular servicing fuels,oils,lubricants and tyres will be monthly based on actual kilometres travelled at a rate to be inserted here below</p> <p><b>Notes: Amount quoted to be for the 1no. vehicles</b></p> <p>A Lump sum for providing 1No. Brand New Toyota VAN including charges thereof in connection with, inspection, licencing and registration</p> <p>B Allow for providing a comperensive insurance as described per year for 2No. year @ Ksh ..... Per year for the 1No. vehicles</p> <p>C Allow for providing a competent driver as described per calendar month for 24 No. calendar months @ Ksh..... Per month</p> <p>D Allow for providing regular maintenance,lubricants,spare and tyres for the first 100,000 km @ Ksh..... Per km for the 1No. vehicles</p> <p>E Extra over rate (D) above for the distance travelled in excess of 100,000 km @ Ksh per km for 50,000 km for the 1No. Vehicle</p> <p>F Allow for fitting each vehicle with Five (5No) New tyres at the end of the contract. The old tyres shall remain the property of the contractor.</p> <p>G Allow for final inspection by the Mechanical and Transport Engineer (M &amp; T.E) Department of Roads, Transport, Public Works and Utilities for issuance of road worthiness for 1No. Vehicles</p> <p>H Allow for change in registration and transfer to employer for the 1No. Vehicle</p>	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
	<p><b><u>PARTICULARS OF INSERTIONS TO BE MADE IN APPENDIX TO CONTRACT AGREEMENT</u></b></p> <p>The following are the insertions to be made in the appendix to the Contract Aareement: -</p> <p><b>Period of Final Measurement</b>                      <b>3</b> Months From Practical completion</p> <p><b>Defects Liability Period</b>                              <b>6</b> Months from Practical completion</p> <p><b>Date for Possession</b>                                      To be agreed with the Project Manager</p> <p><b>Date for Completion</b>                                      As stated in the Conditions of Contract</p> <p><b>Liquidated and Ascertained Damages</b>                      As stated in the Conditions of Contract</p> <p><b>Prime cost</b> sums for which .....</p> <p>The Contractor desires to tender .....</p> <p><b>Period of Interim Certificates</b>                                      Monthly</p> <p><b>Period of Honouring Certificates</b>                                      60 days</p> <p><b>Percentage of Certified Value Retained</b>                                      10%</p> <p><b>Limit of Retention Fund</b>                                      5%</p>	
	<b>Carried to collection</b>	

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# GENERAL PRELIMINARIES

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



Item	Description	Amount KSh
A.	<p><b>EXCEPTION TO THE STANDARD METHOD OF MEASUREMENT</b></p> <p><b>Attendance :</b> 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>Allow for providing all scaffolding, plant, tools and vehicles required for the works except in so far as may be stated otherwise herein and except for such items specifically and only required for the use of nominated Sub-Contractors as described herein. No timber used for scaffolding, formwork or temporary works of any kind shall be used afterwards in the permanent work.</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>	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
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>	
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 settting 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>	
	<b>Carried to collection</b>	

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>	
	<b>Carried to collection</b>	

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>	
	<b>Carried to collection</b>	

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>	
C	<p><b>PROVISIONAL SUMS.</b></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 Sub-Contractors ; 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>	
	<b>Carried to collection</b>	

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>	
F	<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>	
	<b>Carried to collection</b>	

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	<p><b>WORKS TO BE DELIVERED UP CLEAN</b></p> <p>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.</p>	
F	<p><b>GENERAL SPECIFICATION.</b></p> <p>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.</p>	
	<b>Carried to collection</b>	

Item	Description	Amount KSh
A	<p><b>NEMA REQUIREMENT</b></p> <p>The Contractor shall be responsible for complying with Nema requirements and shall allow for all costs arising or resulting therefrom. No claim of extension of time shall be allowed as a result of complains to NEMA requirements.</p>	
B	<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>	
C	<p><b>OTHER STATUTORY OBLIGATIONS, NOTICES, FEES AND CHARGES</b></p> <p>Notwithstanding any other statutory obligations, notices, fees and charges not listed above, the contractor shall allow in his tender for all such costs incurred in complying with all statutory requirements and payment of all leviers currently in force and affecting the construction industry.</p>	
D	<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>	
E	<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 300 Metres</p>	
F	<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>	
G	<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 appovals shall not imply any further indication or correctness.</p>	
H	<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>	
	<b>Carried to collection</b>	



Item	Description	Amount KSh
	<b><u>COLLECTION</u></b>	
	Brought Forward From Page GP/1	
	Brought Forward From Page GP/2	
	Brought Forward From Page GP/3	
	Brought Forward From Page GP/4	
	Brought Forward From Page GP/5	
	Brought Forward From Page GP/6	
	Brought Forward From Page GP/7	
	Brought Forward From Page GP/8	
	Brought Forward From Page GP/9	
	<b>TOTAL FOR GENERAL PRELIMINARIES CARRIED TO GRAND SUMMARY</b>	

# DEMOLITIONS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p><b><u>SECTION NO. 1; DEMOLITIONS &amp; ALTERATIONS (PROVISIONAL)</u></b></p> <p><b>NOTES ON DEMOLITIONS GENERALLY:</b></p> <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 Architect and as necessary for the protection of the existing structure, openings and finishings, workmen employed upon the site 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 work and any necessary making good consequent upon this is to be executed to the satisfaction of the Architect.</p> <p>All useable materials arising from the demolitions shall remain the property of the Employer but the Contractor may take away any materials not so required by the Employer. Prices shall be deemed to include all credit allowances for all such materials that are re-usable, unless an additional credit is offered by means of a lump sum deduction on the collection page of this element. All debris arising therefrom shall be carried away and dumped where directed by the Employer</p> <p>The works shall be executed in such order and sequence as the Architect may direct and as little disruption and inconvenience as possible shall be caused to the normal functioning of the existing property, occupants and the public. No demolitions shall be commenced without the express instructions of the Architect.</p> <p>The works shall be propped and strutted and supported as necessary before any alteration or demolition work commences. Prices shall include for all cleaning and preparatory work to structure and finishings and for making good to finishes on completion whether or not specifically described herein or shown on the drawings.</p> <p>Unless described as being set aside for re-use or stored on site all debris and surplus materials arising from the works shall be carefully removed and carted away from the site.</p> <p>Making good shall include all necessary preparatory work of surfaces to receive new finishes, making good up to new finishings, new door and window frames and all work of a like nature. All surfaces shall be cleaned as necessary prior to application of new finishes.</p> <p>Prices for demolitions or for blocking up existing openings shall include for all necessary preparatory work to receive new constructions, i.e. cutting, hacking, chasing etc. of the existing fabric of the building where new structures are to be received.</p>				
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<p>All items of cutting openings through walling, slabs etc. shall include for temporary propping, supporting the existing walls, floors and roofs, building up jambs, making good wall plaster both sides to reveals (including plastering sides and soffits of new concrete lintols where applicable) and making out screeds or pavings through thresholds.</p> <p>All items of blocking up openings shall include for new masonry or concrete blockwork in gauged mortar, properly cut, toothed and bonded to the existing walls and pinned and wedged to existing soffits.</p> <p>New finishings applied to existing surfaces shall in all areas include for cleaning, levelling and other preparatory work and all additional thickening out and dubbing to make up irregularities of surfaces including those exposed by demolitions.</p> <p>The items of demolitions and removal shall include shoring, making good disturbed areas to match existing and loading and carting away debris unless otherwise specified</p> <p><b>NB: The Contractor is advised to visit the site and familiarise himself with the site conditions before pricing this section</b></p> <p><u>Existing Structures</u></p> <p>Visit the site, familiarise yourself with the nature of demolitions; Carefully demolish the existing structures (Building, ablution block and covered walkway) - Approx 500 SM; Set aside salvageable materials for the Client; Make good any affected areas. Cart away arising materials from site as directed by the Project Manager</p>	ITEM			
	Carried to Collection				
	<p><u>COLLECTION</u></p> <p>From Page DM/1</p> <p>From Above</p> <p>Credit Allowance for Re - Usable Materials</p>				
	<p><b>SECTION NO. 1</b></p> <p><b>DEMOLITIONS</b></p> <p><b>Carried to the GRAND summary</b></p>				

# BUILDER'S WORK GROUND FLOOR

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .2. - GROUND FLOOR</u></b>				
	<b><u>ELEMENT NO. 1 - SUBSTRUCTURES (ALL PROVISIONAL)</u></b>				
	<p><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></p> <p><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></p> <p><b>All excavations shall be measured net and no allowance shall be made for working space as per SMM D5(g)</b></p> <p><u>Excavations</u></p> <p>A Excavate to reduce level not exceeding 1.50 metres deep CM 4,281</p> <p>B Ditto exceeding 1.50 but not exceeding 3.0 metres deep CM 3,425</p> <p>C Excavate for strip footing not exceeding 1.50 metres deep from reduced level CM 362</p> <p>D Excavate for column bases not exceeding 1.50 metres deep from reduced level CM 602</p> <p>E Excavate for lift bases not exceeding 1.50 metres deep from reduced level CM 24</p> <p>F Extra over excavations for excavating in soft rock CM 482 [With a Soil Bearing Pressure of 200 - 300 Kilo Newtons / M2 ]</p> <p>G Extra over excavations for excavating in hard rock CM 290 [With a Soil Bearing Pressure of above 300 Kilo Newtons / M2 ]</p> <p><u>Disposal</u></p> <p>H Load,wheel and deposit surplus excavated material away from site to an approved county government dumping site CM 386</p> <p>J Return, fill and ram selected excavated material around foundations. (Including stock piling and double handling where necessary) CM 8,284</p> <p><u>Hardcore or other approved filling, as described</u></p> <p>K 300mm thick hardcore bed : hand packed : compacted in layers not exceeding 150mm thick : to the satisfaction of the Structural Engineer: SM 1,137</p> <p><u>Blinding</u></p> <p>L 50mm Thick (Average) quarry dust or "equal and approved" blinding to surfaces of hardcore SM 1137</p> <p><b>Total Carried to Collection</b></p>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Filling - To Make up Levels</u>				
A	Providing & laying Approved Fill Material (Natural Gravel), compacted in uniform layers of 150mm 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	2,956		
	<u>Thickening</u>				
B	Extra over to existing hardcore bed for thickening 600 mm wide (average) x 300 mm deep (average) including handpacking hardcore to a slope both sides to receive staircases.	LM	6		
	<u>Anti - termite to treatment</u>				
C	Chemical anti-termite treatment, as "BASF Termidor" 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	1,189		
	<u>Damp-proof membrane</u>				
D	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	1,189		
	<u>Mass concrete class 15 (1.3.6) in:-</u>				
E	50mm thick blinding- Strip footing	SM	242		
F	50mm thick blinding - Column bases	SM	401		
G	50mm thick blinding - Lift Base	SM	16		
H	50mm thick blinding - Ground Beam	SM	38		
	<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>				
J	Strip foundation	CM	49		
K	Column bases	CM	244		
L	Stub Columns	CM	33		
M	Ground beam	CM	23		
N	Entrance Steps	CM	4		
P	200 mm thick concrete wall - Shear Walls and Strong Room	SM	81		
Q	150mm thick surface bed	SM	1,143		
R	150mm thick sloping ramp complete with treating surface of unset concrete; to produce ribbed, herring bone pattern grooves diagonal to traffic flow	SM	46		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Vibrated reinforced concrete class 25, mix (1:2:4) 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; <b>INCLUDING masterseal 501WA waterproofing admixture</b> or equal and approved in concrete mix to Manufacturer's detailed specification and S.E's approval</u>				
A	200 mm thick lift wall - Sub	SM	36		
B	200 mm thick lift wall - Super	SM	63		
	<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>				
C	Finish to concrete wall internally	SM	52		
	<u>Light weight cement and sand (1:4) screeds : on concrete : to</u>				
D	25 mm Thick screed laid to receive waterproofing membranes (m.s)	SM	52		
	<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	25 mm Diameter bars	KG	12,644		
F	20 mm Diameter bars	KG	4,863		
G	16 mm Diameter bars	KG	11,672		
H	12 mm Diameter bars	KG	22,370		
J	10mm Diameter bars	KG	29,178		
K	8mm Diameter bars	KG	16,535		
	<u>Steel mesh fabric reinforcement to BS 4483 : including setting in concrete with 300mm laps( measured nett : no allowance for laps)</u>				
L	Mesh reference A142 weighing 2.22 kilogrammes per square metre in floor beds	SM	1,189		
	<u>Sawn formwork as described to:-</u>				
M	Vertical sides of column base	SM	119		
N	Vertical sides of strip footing	SM	161		
P	Ditto to stub columns	SM	376		
Q	Ditto to ground beam	SM	226		
R	Ditto to concrete walls	SM	162		
S	Ditto to lift walls	SM	198		
T	Edge of slab, not exceeding 150mm girth	LM	152		
U	Step stringers over 225mm but not exceeding 300mm wide	LM	9		
V	Step risers 150mm high	LM	173		
	<b>Total Carried to Collection</b>				



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<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>				
A	200 mm Thick wall, medium chisel dressed on both sides.  <u>Expansion joint</u>	SM	1,109		
B	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	12		
C	Mastic sealant or other equal and approved filler  <u>Hessian based bituminous felt damp proof course laid on cement and sand (1:4) mortar under :-</u>	LM	8		
D	200mm wide	LM	486		
E	150mm wide  <u>Splash Apron</u>	LM	53		
F	600 x 600 x 50 mm Thick precast concrete paving slabs squarepattern bedded on and including cement/ sand (1:4) mortar on 50 mmmurram bed on 150 mm thick hardcore bed including all necessaryground preparations.  <b>Water Proof Cement Rendering.</b>	SM	183		
G	12 mm Thick sulphate resisting cement sand (mix 1:3) to vertical sides of walls	SM	30		
H	Provide and apply intergral capillary system water proofing to walls as per the manufacturer's specifications	SM	30		
	<b>Plinth</b>				
J	15mm Thick cement/sand (1:4) render to plinths, wood float finish.	SM	76		
K	Prepare surface and apply three coats of black bituminous paint or other approved paint to rendered plinth.	SM	76		
	<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 Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .2. - GROUND FLOOR</b>				
	<b>ELEMENT NO 2- REINFORCED CONCRETE FRAME</b>				
	<b>Reinforcement to BS 4449 / 4461:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b>				
	<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>				
A	Columns	CM	32		
B	Beams	CM	60		
C	150mm thick suspended slab	SM	708		
D	200mm thick lift shaft walls	SM	62		
E	200mm thick shear walls	SM	52		
	<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/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>				
F	25 mm Diameter bars	KG	5,177		
G	20 mm Diameter bars	KG	1,991		
H	16 mm Diameter bars	KG	4,779		
J	12 mm Diameter bars	KG	9,159		
K	10mm Diameter bars	KG	11,946		
L	8mm Diameter bars	KG	6,770		
	<u>Expansion joint</u>				
M	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	30		
N	Mastic sealant or other equal and approved filler	LM	8		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Fairface formwork as desribed to:-</i>				
A	Sides of columns	SM	364		
B	Sides and soffits of beams	SM	661		
C	Sides of lift walls	SM	124		
D	Sides of shaft walls	SM	104		
E	Soffits of suspended slabs	SM	708		
F	Edges of slab not exceeding 150mm girth	LM	191		
	<b>Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	From Page GF/5				
	From Above				
	<b>ELEMENT NO. 2</b>				
	<b><u>REINFORCED CONCRETE FRAME</u></b>				
	<b>Carried to Main Summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .2. - GROUND FLOOR</b>				
	<b>ELEMENT NO. 3 STAIRCASE CONSTRUCTION &amp; FINISHES</b>				
	<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>				
A	Base	CM	5		
B	Staircase	CM	7		
C	175mm thick staircase landing	SM	13		
	<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>				
D	12 mm Diameter bars	KG	294		
E	10mm Diameter bars	KG	734		
F	8mm Diameter bars	KG	441		
	<u>Fairface formwork as desribed to:-</u>				
G	Vertical Sides of bases	SM	2		
H	Soffits of staircase landing	SM	13		
J	Sloping soffits of staircase	SM	23		
K	Edges of staircase landing 150 - 225mm girth	LM	25		
L	Staircase stringers over 225mm but not exceeding 300mm wide	LM	27		
M	Staircase risers 150mm high	LM	142		
	<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	13		
B	Sloping soffits of staircase	SM	23		
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
C	30mm thick screed to Landing finished to receive porcelein tiles (m.s)	SM	13		
D	300mm wide x 30mm thick treads to receive porcelein tiles (m.s)	LM	129		
E	150mm high x 20mm thick Risers to receive porcelein tiles (m.s)	LM	142		
	<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>				
F	600 x 300 x 10mm thick Matt Porcelein Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection ) to Landings- Contractor to factor this cost plus the fixing rate	SM	13		
G	Ditto to 300mm wide treads, 1200mm long; Complete with 2No. grooves	LM	129		
H	Ditto to 150mm high risers, 1200mm long	LM	142		
J	10 x 150mm high skirting	LM	14		
K	Ditto to profile of treads and risers	LM	35		
	<u>Painting and decorating</u>				
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
L	Plastered soffits of landings and staircase/ramp	SM	36		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Balustrading and Railing - (Provisional)</u>				
	<u>Staircase railing; In Stainless Steel</u>				
A	1200mm stainless steel balustrade comprising 50mm diameter x 3mm handrail : 5No 20mm diameter x 3mm horizontal rails : 800mm long x 50 x 10mm plate balusters at 1500mm centre one end fish tailed built into concrete work : To Architect detail & Approval	LM	5		
	<u>60mm diameter stainless steel handrail fixed to masonry wall solid balustrade using 200mm long 38mm diameter stainless steel brackets at 600mm centres.</u>				
B	Handrail fixed to the wall	LM	31		
	<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>STAIRCASE CONSTRUCTION &amp; FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .2. - GROUND FLOOR</u></b>				
	<b><u>ELEMENT NO. 4 - 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  <i>External walling</i>	LM	10		
	<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>				
B	200mm thick walling externally	SM	263		
C	Extra Over for key pointing - horizontal  <i>Internal walling</i>	SM	53		
	<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>				
D	200mm thick walling internally	SM	649		
E	100mm thick walling internally	SM	34		
	<b><u>ELEMENT NO. 4</u></b> <b><u>WALLING</u></b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .2. - GROUND FLOOR</u></b>				
	<b><u>ELEMENT NO. 5 - EXTERNAL FINISHES</u></b>				
	<b><u>External Floor finishes</u></b>				
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
A	30mm thick bed finished to receive granito tiles (m.s)	SM	73		
B	300mm wide x 30mm thick treads to receive granito tiles (m.s)	LM	74		
C	150mm high x 20mm thick Risers to receive granito tiles (m.s)	LM	89		
	<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>				
D	600 x 600 x 10mm thick Matt Granito Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection ) - Contractor to factor this cost plus the fixing rate	SM	73		
E	Ditto to 300mm wide treads: Complete with 2No. grooves	LM	74		
F	Ditto to 150mm high risers, 7,400mm long	LM	89		
G	Ditto to 100mm high skirtings	LM	52		
	<b><u>External wall finishes</u></b>				
	<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>				
H	Concrete/masonry surfaces to receive paint (m.s)	SM	435		
J	Ditto to receive stone Cladding (m.s)	SM	85		
	<u>Blue stone cladding including delivery, grouting, fitbond waterproof adhesive, wax polish finish, spacers and all other materials and laying to completion as selected by the Architect: Allow for 50x50x2mm angle iron support to cladding at 1000mm centres horizontally</u>				
K	300 x 200 x 25 mm tiling with linseed oil waterproofing; works polished to approval	SM	85		
	<b>Total Carried to Collection</b>				



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>In Mild Steel;one coat red oxide primer; three coats enamel gloss paintwork to metal surfaces</u>				
A	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	26		
	<u>Alucobond Cladding</u>				
B	2mm thick aluminium alucobond cladding complete with 50 x 50 x 3mm thick RHS framing at 600mm centres both ways	SM	100		
	<b><u>Ceiling finishes</u></b>				
	<u>12mm Thick (minimum) two coat lime plaster as described to:-</u>				
C	Concrete soffits	SM	90		
	<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>				
D	Plastered soffits	SM	90		
	<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>				
E	Plastered vertical wall/concrete surfaces	SM	435		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page GF/11				
	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 .2. - GROUND FLOOR</u></b>				
	<b><u>ELEMENT NO. 6 - INTERNAL FINISHES</u></b>				
	<b><u>Floor finishes</u></b>				
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
A	30mm thick bed finished to receive carpet (m.s)	SM	525		
B	30mm thick bed finished to receive granito tiles (m.s)	SM	439		
C	30mm thick bed finished to receive ceramic tiles (m.s)	SM	54		
	<u>Carpet - Wall to Wall</u>				
	Provide and lay high quality executive heavy duty 15mm thick minimum 80% wool and 20% nylon (polyamide) fused in woven textile backing 1400/1040 g/sm carpet, high fade resistance suitable for heavy commercial use, anti-soiling treated, permanently anti-static, including all the necessary fixing metal clips, grippers, stoppers, complete with strip bond at the edges and all the associated accessories	SM	525		
D	Prepare surface, provide and lay underlay complete with approved adhesive as per manufacturers printed instructions	SM	525		
	<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>				
E	400 x 400 x 10mm thick Matt Granito Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection ) - Contractor to factor this cost plus the fixing rate	SM	439		
F	Ditto to 100mm high skirtings	LM	326		
G	300 x 300 x 10mm thick Matt Ceramic Tiles (Budget Supply Rate of Kshs. 1,500 per SM per the Client's Selection ) - Contractor to factor this cost plus the fixing rate	SM	54		
H	Ditto to 100mm high skirtings	LM	6		
	<u>In Wrot Mahogany</u>				
J	100 x 20mm skirting, plugged, screwed and pelleted	LM	167		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>Internal Wall finishes</u></b>				
	<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	2,229		
B	15mm backing finished to receive porcelein wall tiles (m.s)	SM	199		
C	Ditto to receive granite wall tiles (m.s)	SM	14		
D	Ditto to 400mm wide architrave to receive granite (m.s)	LM	11		
	<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	600 x 300 x 10mm thick Polished Porcelein Tiles ( <b>Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection</b> ) - Contractor to factor this cost plus the fixing rate	SM	199		
F	300 x 600 x 25mm thick natural granite as Black Galaxy or equal and approved	SM	14		
G	400mm wide Granite to lift architrave; with mitred and rounded edges	LM	11		
	<b><u>Wall Padding - Refer to Interior Designer's detail</u></b>				
	<u>20mm thick (custom made) pressure lanimated MDF boarding embossed with mahogany veneer separated by black formicca strips (Grooves) to architects satisfaction Screwed to 50 x 25mm wrot cypress timber backing at 600mm centres vertically and horizontally; all assembled and fixed together to:-</u>				
H	Existing masonry/concrete surface	SM	540		
J	Supply and install 100 mm Acoustic foam to Architect's satisfaction & approval	SM	540		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Acoustin Leather Padding - Refer to Architects detail</u>				
	<u>110mm thick Padded Timber Partition</u>				
	<u>The following in padded acoustic foam wall lining all assembled and fixed together to existing masonry/concrete/timber surfaces</u>				
A	50x50mm sawn celcured cypress bearers; framing plugged or nailed to walling at 600mm centers both sides	LM	410		
B	5mm thick plywood backing onto timber bearers (m.s)	SM	108		
C	50mm thick high-density accoustic foam onto plywood	SM	108		
D	High quality genuine leather complete with all necessary buttons stiched to budding in approved pattern	SM	108		
E	50 x 20mm thick wrot mahogany moulded quadrant beading or any other equal and approved; with clear varnish	LM	180		
F	200mm wide MDF board as dado rail	LM	50		
G	25mm thick MDF board for wall clading	SM	108		
	<b><u>Ceiling finishes</u></b>				
	<u>12mm Thick (minimum) two coat lime plaster as described to:-</u>				
H	Concrete soffits	SM	381		
	<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	263		
	<u>Suspended accoustic ceiling as "Armstrong" or any other equal and approved; on and including proprietary pressed metal brandering 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	54		
	<b><u>Cornice</u></b>				
L	25 x 25mm high moulded gypsum cornince; with one labour	LM	152		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Painting and decorating</u>				
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
A	Plastered vertical wall/concrete surfaces	SM	2,229		
B	Plastered soffits	SM	381		
C	Gypsum Ceiling Soffits	SM	263		
	<u>Skim, Prepare and apply three coats first quality SPECIAL EFFECT paint on:-</u>				
D	Partition Walling	SM	50		
	<u>Supply and Fix Ornamental Wall Paper to Architects Approval</u>				
E	Selected Areas	SM	50		
	<u>Prepare and apply three coats polyurethane clear polish to woodwork</u>				
F	Surfaces not exceeding 100mm girth	LM	152		
G	Surfaces over 100mm but not exceeding 200mm girth	LM	167		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page GF/13				
	Carried from page GF/14				
	Carried from page GF/15				
	Carried from Above				
	<b>ELEMENT NO. 6</b>				
	<b>INTERNAL FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .2. - GROUND FLOOR</b>				
	<b>ELEMENT NO. 7 - WINDOWS [REFER TO WINDOW SCHEDULES]</b>				
	<b>General Notes:</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 fasters, stays, hinges and sliding rails to Architects details and approval</u>				
A	Window Overall size 2,100 x 2,400mm high	NO	15		
B	Window Overall size 600 x 2,400mm high	NO	1		
C	Window Overall size 1,800 x 600mm high	NO	3		
D	Window Overall size 1,200 x 600mm high	NO	2		
	<u>Curtain Walling</u>				
E	Window Overall size 3,000 x 17,400mm high	NO	4		
F	Window Overall size 6,000 x 4,000mm high	NO	2		
	<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>				
G	275 x 75mm thick window cill once rebated; 20 x 20mm splaged drip and jointing in cement and sand 1:3 mortar	LM	72		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Burglar proofing</u>				
A	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>Blinds</u>				
B	Supply and fix 'Hunter Douglas' or other equal and approved hunting green colour Venetian blinds system with high quality horizontal louvers with opening and closing mechanism as per manufacturer's specifications subject to approval of sample by Project Manager	SM	130		
	<u>Curtain rod</u>				
C	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	72		
	<u>In Prime Grade Wrot Cypress</u>				
D	175 x 25mm window board, plugged, screwed and pelleted	LM	72		
E	25 x 25mm quadrant beading; plugged	LM	72		
	<u>Finishing to reveals</u>				
	<u>15 mm cement and sand (1:3) render,finished with woodfloat to:-</u>				
F	Concrete or masonry surfaces externally	SM	37		
	<u>12mm (minimum) two coat lime plaster as described to</u>				
G	Concrete or masonry surfaces internally	SM	37		
	<b>Painting &amp; derocation</b>				
	<u>Prepare and apply one undercoat and two finishing coats first quality weatherguard emulsion paint on:-</u>				
H	Concrete or masonry surfaces externally	SM	37		
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
J	Plastered walls internally	SM	37		
	<u>Prepare and apply three coats polyurethane clear on woodwork</u>				
K	Window board/Beading over 100mm but not exceeding 200mm gi	LM	72		
	<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
	<b>SECTION NO .2. - GROUND FLOOR</b>				
	<b>ELEMENT NO. 8 - DOORS [REFER ALL TO ARCHITECT'S SCHEDULES]</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	129		
B	Ditto Transome	LM	23		
C	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	258		
D	Ex 25 x 25mm quadrant	LM	258		
	<u>Supply and fix softwood Frames with and including supply of low expansion polyurethane foam; in Prime Grade Wrot Cypress or equivalent softwood and approved (stained to match the colour of veneer):</u>				
E	Ex 50 x 200mm Frame with one labour and 10mm groove to detail; plugged	LM	12		
F	Ditto Transome	LM	2		
G	Ex 50 x 150mm Frame with one labour and 10mm groove to detail; plugged	LM	45		
H	Ditto Transome	LM	7		
J	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	114		
K	Ex 25 x 25mm quadrant	LM	114		
	<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>				
L	Double Door Overall Size 2,100 x 2,400mm high comprising of 2No. Equal openable door leaves size 1,050 x 2,400mm high with 100 x 50mm top and middle rails, 100 x 50mm stiles, curved mullions and mouldings - All to the Architects Detail	NO	2		
M	Ditto Overall Size 1,500 x 2,400mm high comprising of 2No. Equal openable door leaves size 750 x 2,400mm high	NO	1		
N	Single Leaf Door Overall size 900 x 2,400mm high (see Architect's details)	NO	18		
P	DUCT LOUVERED Double Door Overall Size 1,200 x 2,100mm high comprising of 2No. Equal openable door leaves size 600 x 2,100mm high	NO	3		
	<b>Total Carried to Collection</b>				



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<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>				
A	Double Leaf Door size 1,000mm x 2,400mm high	NO	1		
B	Single Leaf Door size 900mm x 2,400mm high	NO	2		
C	Single Leaf Door size 800mm x 2,400mm high	NO	8		
	<u>Fanlight glazing</u>				
D	4mm thick clear glass fixed with timber beads (m.s)	SM	8		
E	Ditto but obscured to washroom doors	SM	3		
	<b>Automatic Sliding Frameless Glass Door</b>				
	<u>Supply and fix sliding frameless glass door comprising 10mm thick toughened glass complete with Motion Sensor, L- bracket, normal patch, top patch, bottom, sliding truck, tower bolt, stainless steel hand; including all other associated fixing accessories and ironmongeries ; all to architect's approval;as described</u>				
F	3,000 x 2,400mm high DOUBLE Sliding door	NO	2		
	<b>Steel Doors</b>				
	<u>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)</u>				
G	Door overall size 900 x 2,400mm high complete with 100 x 25 x 3mm RHS framing all round; 100 x 25 x 3mm RHS middle rails; infilled with 3mm thick metal	NO	1		
	<b>Strong Room Door</b>				
H	Provide a Sum of <b>Kenya Shillings Three Hundred Thousand (Kshs. 300,000.00) Only</b> for Strong Room Door to Specialists detail	ITEM			300,000.00
	<u>Painting and decorating</u>				
	<u>Aluminium primer or other equal and approved wood primer before fixing: -</u>				
J	Frames; over 100mm but not exceeding 200mm girth	LM	52		
K	Surfaces over 300mm girth	SM	57		
	<u>Prepare and apply approved stain, sanding sealer and three coats of 'Crown Paints Solo' or other equal and approved varnish to :</u>				
L	General timber surfaces	SM	165		
M	Frames; over 100mm but not exceeding 200mm girth	LM	52		
N	Surfaces over 300mm girth	SM	57		
	<u>Prepare and apply one coat etching primer two undercoats and one coat oil paint full gloss furnish to:-</u>				
P	General surfaces of metal doors	SM	5		
	<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.	63.0		
B	Three lever mortice lock complete with furniture	NO	21		
C	Two lever mortice lock complete with furniture	NO	11		
D	Coat & hat hook - Rubber tipped	NO	9		
	<u>To concrete or blockwork; fixing with bolts; plugging</u>				
E	Rubber door stop	NO	43		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>  Carried from page GF/19  Carried from page GF/20  Carried from Above				
	<b><u>ELEMENT NO. 8</u></b> <b><u>DOORS</u></b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .2. - GROUND FLOOR</b>				
	<b>ELEMENT NO. 9- JOINERY &amp; FITTINGS</b>				
	<u>Main reception Counter : "U" shaped reception counter with curved bulge at the middle, (overall) size 3000 x 940 x 1200 mm : comprising steel frame supports covered with and including 25mm polished solid mahogany panels to front and sides; provision for fixing artwork to the front : 25mm thick polished black marble top and fascia, fixed with approved adhesive to and including 25mm thick blackboard base fixed on RHS framing ; fitted with 2no. pedestal each with 3no drawers : provision for downlighter below the fascias : 150 mm high moulded skirting : 2no receptionists ( Architects detail no. --)</u>				
A	Reception counter	NO	1		
	<u>Main reception Counter : bulk head "lattice "ceiling overall size 2700 x 1860mm x 330mm deep suspended from masonry walling and constructed in : 25 x 75 mm painted soft wood timber strips fixed diagonal at 150mm centres both ways - lattice : 300 mm wide x 330mm deep downlighter to edges of lattice ceiling fixed on 50 x 50 mm timber framing with provision for downlighters - to follow profile of counter on plan ; (to Architect's detail and approval)</u>				
A	Reception bulkhead	NO	1		
	<u>Worktops</u> <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>				
B	6,500mm long; allow for forming holes for sink (m.s)  <u>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</u>	NO	1		
C	Low level cupboard size 6,500 x 600 x 900mm high; Complete with 20mm thick granite worktop	NO	1		
D	High level cupboard size 4,500 x 300 x 600mm high	NO	1		
	<b>Inbuilt Cabinets &amp; TV Units</b>				
E	Provide a Sum of Kenya Shillings <b>Three Million, Five Hundred Thousand</b> Only for Inbuilt Cabinets & TV Units	ITEM			3,500,000.00
	<b>ELEMENT NO. 9 JOINERY FITTINGS</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<b><u>SECTION NO .2. - GROUND FLOOR</u></b>	ITEM			
	<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>  Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works				
	<b><u>ELEMENT NO. 10</u></b> <b>BUILDER'S WORK IN CONNECTION</b>				
	Carried to the Main summary				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .2. - 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/10		
6	EXTERNAL FINISHES		GF/12		
7	INTERNAL FINISHES		GF/16		
8	WINDOWS		GF/18		
9	DOORS		GF/21		
10	JOINERY FITTINGS		GF/22		
11	BUILDER'S WORK IN CONNECTION		GF/23		
	<b><u>SECTION NO. 2 - GROUND FLOOR</u></b>				
	<b><u>TOTAL AMOUNT</u></b>	<b><u>CARRIED TO</u></b>			
		<b><u>GRAND SUMMARY</u></b>			
		KSHS			

# BUILDER'S WORK FIRST FLOOR

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .3. - FIRST FLOOR</b>				
	<b>ELEMENT NO 1- REINFORCED CONCRETE FRAME</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>				
	<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>				
A	Columns	CM	31		
B	Beams	CM	48		
C	150mm thick suspended slab	SM	657		
D	175mm thick suspended slab	SM	54		
E	200mm thick lift shaft walls	SM	62		
	<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/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>				
F	25 mm Diameter bars	KG	4,793		
G	20 mm Diameter bars	KG	1,844		
H	16 mm Diameter bars	KG	4,424		
J	12 mm Diameter bars	KG	8,479		
K	10mm Diameter bars	KG	11,059		
L	8mm Diameter bars	KG	6,267		
	<u>Expansion joint</u>				
M	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	30		
N	Mastic sealant or other equal and approved filler	LM	8		
<b>Total Carried to Collection</b>					

**Carried to  
Main Summary**



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .3. - FIRST FLOOR</u></b>				
	<b><u>ELEMENT NO. 2 STAIRCASE CONSTRUCTION &amp; FINISHES</u></b>				
	<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>				
A	Staircase	CM	7		
B	175mm thick staircase landing	SM	13		
	<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/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>				
C	12 mm Diameter bars	KG	294		
D	10mm Diameter bars	KG	734		
E	8mm Diameter bars	KG	441		
	<u>Fairface formwork as desribed to:-</u>				
F	Vertical Sides of bases	SM	2		
G	Soffits of staircase landing	SM	13		
H	Sloping soffits of staircase	SM	23		
J	Edges of staircase landing 150 - 225mm girth	LM	25		
K	Staircase stringers over 225mm but not exceeding 300mm wide	LM	27		
L	Staircase risers 150mm high	LM	142		
	<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	13		
B	Sloping soffits of staircase	SM	23		
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
C	30mm thick screed to Landing finished to receive ceramic tiles (m.s)	SM	13		
D	300mm wide x 30mm thick treads to receive ceramic tiles (m.s)	LM	129		
E	150mm high x 20mm thick Risers to receive ceramic tiles (m.s)	LM	142		
	<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>				
F	600 x 300 x 10mm thick Matt Porcelain Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection) to Landings- Contractor to factor this cost plus the fixing rate	SM	13		
G	Ditto to 300mm wide treads, 1200mm long; Complete with 2No. gro	LM	129		
H	Ditto to 150mm high risers, 1200mm long	LM	142		
J	10 x 150mm high skirting	LM	14		
K	Ditto to profile of treads and risers	LM	35		
	<u>Painting and decorating</u>				
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
L	Plastered soffits of landings and staircase/ramp	SM	36		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Balustrading and Railing - (Provisional)</u>				
	<u>Staircase railing; In Stainless Steel</u>				
A	1200mm stainless steel balustrade comprising 50mm diameter x 3mm handrail : 5No 20mm diameter x 3mm horizontal rails : 800mm long x 50 x 10mm plate balusters at 1500mm centre one end fish tailed built into concrete work : To Architect detail & Approval	LM	5		
	<u>60mm diameter stainless steel handrail fixed to masonry wall solid balustrade using 200mm long 38mm diameter stainless steel brackets at 600mm centres.</u>				
B	Handrail fixed to the wall	LM	31		
	<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>STAIRCASE CONSTRUCTION &amp; FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .3. - FIRST FLOOR</u></b>				
	<b><u>ELEMENT NO. 3 - WALLING</u></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  <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	10		
B	200mm thick walling externally	SM	311		
C	Extra Over for key pointing - horizontal  <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	62		
D	200mm thick walling internally	SM	649		
E	100mm thick walling internally	SM	47		
	<b><u>ELEMENT NO. 3</u></b> <b><u>WALLING</u></b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .3. - FIRST FLOOR</b>				
	<b>ELEMENT NO. 4 - EXTERNAL FINISHES</b>				
	<b><u>External Floor finishes</u></b>				
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
A	30mm thick bed finished to receive granito tiles (m.s)	SM	27		
	<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>				
B	600 x 600 x 10mm thick Matt Granito Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection) - Contractor to factor this cost plus the fixing rate	SM	27		
C	Ditto to 100mm high skirtings	LM	22		
	<b><u>External wall finishes</u></b>				
	<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>				
D	Concrete/masonry surfaces to receive paint (m.s)	SM	418		
	<u>In Mild Steel;one coat red oxide primer; three coats enamel gloss paintwork to metal surfaces</u>				
E	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	12		
	<u>Alucobond Cladding</u>				
F	2mm thick aluminium alucobond cladding complete with 50 x 50 x 3mm thick RHS framing at 600mm centres both ways	SM	50		
	<b><u>Ceiling finishes</u></b>				
	<u>Painting and decorating</u>				
	<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>				
G	Plastered vertical wall/concrete surfaces	SM	418		
	<b>ELEMENT NO. 4</b>				
	<b>EXTERNAL FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .3. - FIRST FLOOR</u></b>				
	<b><u>ELEMENT NO. 5 - INTERNAL FINISHES</u></b>				
	<b><u>Floor finishes</u></b>				
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
A	30mm thick bed finished to receive carpet (m.s)	SM	307		
B	30mm thick bed finished to receive granito tiles (m.s)	SM	313		
C	30mm thick bed finished to receive ceramic tiles (m.s)	SM	41		
	<u>Carpet - Wall to Wall</u>				
D	Provide and lay high quality executive heavy duty 15mm thick minimum 80% wool and 20% nylon (polyamide) fused in woven textile backing 1400/1040 g/sm carpet, high fade resistance suitable for heavy commercial use, anti-soiling treated, permanently anti-static, including all the necessary fixing metal clips, grippers, stoppers, complete with strip bond at the edges and all the associated accessories	SM	307		
E	Prepare surface, provide and lay underlay complete with approved adhesive as per manufacturers printed instructions	SM	307		
	<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>				
F	Supply & 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.	SM	313		
G	Ditto to 100mm high skirtings	LM	296		
H	300 x 300 x 10mm thick Matt Ceramic Tiles (Budget Supply Rate of Kshs. 1,500 per SM per the Client's Selection) - Contractor to factor this cost plus the fixing rate	SM	41		
J	Ditto to 100mm high skirtings	LM	8		
	<u>In Wrot Mahogany</u>				
K	100 x 20mm skirting, plugged, screwed and pelleted	LM	148		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>Internal Wall finishes</u></b>				
	<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	2,118		
B	15mm backing finished to receive porcelein wall tiles (m.s)	SM	181		
C	Ditto to receive granite wall tiles (m.s)	SM	2		
D	Ditto to 400mm wide architrave to receive granite (m.s)  <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>	LM	11		
E	600 x 300 x 10mm thick Polished Porcelein Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection) - Contractor to factor this cost plus the fixing rate	SM	181		
F	300 x 600 x 25mm thick natural granite as Black Galaxy or equal and approved	SM	2		
G	400mm wide Granite to lift architrave  <u>In Mild Steel;one coat red oxide primer; three coats enamel gloss paintwork to metal surfaces</u>	LM	11		
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	34		
<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	382		
	<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>				
B	12 mm thick ceiling; horizontal	SM	188		
	<u>Suspended accoustic ceiling as "Armstrong" or any other equal and approved; on and including proprietary pressed metal brandering 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>				
C	600 x 600mm ; 15mm thick Horizontal Ceiling Lining	SM	41		
	<b><u>Cornice</u></b>				
D	25 x 25mm high moulded gypsum cornince; with one labour	LM	158		
	<u>Painting and decorating</u>				
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
E	Plastered vertical wall/concrete surfaces	SM	2,118		
F	Plastered soffits	SM	382		
G	Gypsum Ceiling Soffits	SM	188		
	<u>Prepare and apply three coats polyurethane clear polish to woodwork</u>				
H	Surfaces not exceeding 100mm girth	LM	158		
J	Surfaces over 100mm but not exceeding 200mm girth	LM	148		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page FF/8					
Carried from page FF/9					
Carried from Above					
<b>ELEMENT NO. 5 INTERNAL FINISHES</b>					
<b>Carried to the Main summary</b>					



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .3. - FIRST FLOOR</b>				
	<b>ELEMENT NO. 6 - WINDOWS [REFER TO WINDOW SCHEDULES]</b>				
	<b>General Notes:</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 fasters, stays, hinges and sliding rails to Architects details and approval</u>				
A	Window Overall size 9,000 x 1,500mm high	NO	1		
B	Window Overall size 2,100 x 2,400mm high	NO	11		
C	Window Overall size 600 x 2,400mm high	NO	1		
D	Window Overall size 1,800 x 600mm high	NO	3		
E	Window Overall size 1,200 x 600mm high	NO	1		
	<u>Curtain Walling</u>				
F	Window Overall size 6,000 x 4,000mm high	NO	1		
	<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>				
G	275 x 75mm thick window cill once rebated; 20 x 20mm splaged drip and jointing in cement and sand 1:3 mortar	LM	51		
	<u>Burglar proofing</u>				
H	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		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<u>Blinds</u> Supply and fix 'Hunter Douglas' or other equal and approved hunting green colour Venetian blinds system with high quality horizontal louvers with opening and closing mechanism as per manufacturer's specifications subject to approval of sample by Project Manager	SM	91		
B	<u>Curtain rod</u> 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	51		
C	<u>In Prime Grade Wrot Cypress</u> 175 x 25mm window board, plugged, screwed and pelleted	LM	51		
D	25 x 25mm quadrant beading; plugged	LM	51		
E	<u>Finishing to reveals</u> <u>15 mm cement and sand (1:3) render, finished with woodfloat to:-</u> Concrete or masonry surfaces externally	SM	16		
F	<u>12mm (minimum) two coat lime plaster as described to</u> Concrete or masonry surfaces internally	SM	16		
G	<b>Painting &amp; derocation</b> <u>Prepare and apply one undercoat and two finishing coats first quality weatherguard emulsion paint on:-</u> Concrete or masonry surfaces externally	SM	16		
H	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u> Plastered walls internally	SM	16		
J	<u>Prepare and apply three coats polyurethane clear on woodwork</u> Window board/Beading over 100mm but not exceeding 200mm gi	LM	51		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page FF/11					
Carried from Above					
<b><u>ELEMENT NO. 6</u></b>					
<b><u>WINDOWS</u></b>					
<b>Carried to the Main summary</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .3. - FIRST FLOOR</b>				
	<b>ELEMENT NO. 7 - DOORS [REFER ALL TO ARCHITECT'S SCHEDULES]</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	100		
B	Ditto Transome	LM	18		
C	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	200		
D	Ex 25 x 25mm quadrant	LM	200		
	<u>Supply and fix softwood Frames with and including supply of low expansion polyurethane foam; in Prime Grade Wrot Cypress or equivalent softwood and approved (stained to match the colour of veneer):</u>				
E	Ex 50 x 200mm Frame with one labour and 10mm groove to detail; plugged	LM	12		
F	Ditto Transome	LM	2		
G	Ex 50 x 150mm Frame with one labour and 10mm groove to detail; plugged	LM	45		
H	Ditto Transome	LM	7		
J	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	114		
K	Ex 25 x 25mm quadrant	LM	114		
	<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>				
L	Double Door Overall Size 2,100 x 2,400mm high comprising of 2No. Equal openable door leaves size 1,050 x 2,400mm high with 100 x 50mm top and middle rails, 100 x 50mm stiles, curved mullions and mouldinas - All to the Architects Detail	NO	1		
M	Ditto Overall Size 1,500 x 2,400mm high comprising of 2No. Equal openable door leaves size 750 x 2,400mm high	NO	2		
N	Single Leaf Door Overall size 900 x 2,400mm high (see Architect's details)	NO	13		
P	DUCT LOUVERED Double Door Overall Size 1,200 x 2,100mm high comprising of 2No. Equal openable door leaves size 600 x 2,100mm high	NO	3		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<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>				
A	Double Leaf Door size 1,000mm x 2,400mm high	NO	1		
B	Single Leaf Door size 900mm x 2,400mm high	NO	2		
C	Single Leaf Door size 800mm x 2,400mm high	NO	8		
	<u>Fanlight glazing</u>				
D	4mm thick clear glass fixed with timber beads (m.s)	SM	6		
E	Ditto but obscured to washroom doors	SM	3		
	<b>Special Server Room Door</b>				
	<u>Supply and Fix the following purpose made door with a 1.25mm thick galvanised steel sheet pressed formed to provide a 100mm 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)</u>				
F	900 x 2400mm high single leaf door INCLUDING Frames; All to Engineer's Approval	NO	1		
	<b>Steel Doors</b>				
	<u>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)</u>				
G	Door overall size 900 x 2,400mm high complete with 100 x 25 x 3mm RHS framing all round; 100 x 25 x 3mm RHS middle rails; infilled with 3mm thick metal	NO	1		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Painting and decorating</u>				
	<u>Aluminium primer or other equal and approved wood primer before fixing: -</u>				
A	Frames; over 100mm but not exceeding 200mm girth	LM	52		
B	Surfaces over 300mm girth	SM	45		
	<u>Prepare and apply approved stain, sanding sealer and three coats of 'Crown Paints Solo' or other equal and approved varnish to :</u>				
C	General timber surfaces	SM	140		
D	Frames; over 100mm but not exceeding 200mm girth	LM	52		
E	Surfaces over 300mm girth	SM	45		
	<u>Prepare and apply one coat etching primer two undercoats and one coat oil paint full gloss furnish to:-</u>				
F	General surfaces of metal doors	SM	5		
	<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>				
G	Brass ball bearing hinges; 100 mm	PRS.	55.5		
H	Three lever mortice lock complete with furniture	NO	16		
J	Two lever mortice lock complete with furniture	NO	11		
K	Coat & hat hook - Rubber tipped	NO	9		
	<u>To concrete or blockwork; fixing with bolts; plugging</u>				
L	Rubber door stop	NO	39		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page FF/13					
Carried from page FF/14					
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
A	<b><u>SECTION NO .3. - FIRST FLOOR</u></b>	ITEM			
	<b><u>ELEMENT NO. 8- 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>  Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works				
	<b><u>ELEMENT NO. 8</u></b>				
	<b>BUILDER'S WORK IN CONNECTION</b>				
	<b>Carried to the Main summary</b>				

[illegible]

# BUILDER'S WORK SECOND FLOOR



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .4. - SECOND FLOOR</b>				
	<b>ELEMENT NO 1 - REINFORCED CONCRETE FRAME</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>				
	<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>				
A	Columns	CM	27		
B	Beams	CM	42		
C	150mm thick suspended slab	SM	635		
D	200mm thick lift shaft walls	SM	77		
	<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/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>				
E	25 mm Diameter bars	KG	4,424		
F	20 mm Diameter bars	KG	1,702		
G	16 mm Diameter bars	KG	4,084		
H	12 mm Diameter bars	KG	7,826		
J	10mm Diameter bars	KG	10,208		
K	8mm Diameter bars	KG	5,785		
	<u>Expansion joint</u>				
L	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	30		
M	Mastic sealant or other equal and approved filler	LM	8		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Fairface formwork as desribed to:-				
A	Sides of columns	SM	302		
B	Sides and soffits of beams	SM	504		
C	Sides of lift walls	SM	154		
D	Soffits of suspended slabs	SM	635		
E	Edges of slab not exceeding 150mm girth	LM	189		
	<b>Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	From Page SF/1				
	From Above				
	<b>ELEMENT NO. 1 REINFORCED CONCRETE FRAME</b>				
	<b>Carried to Main Summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .4. - SECOND FLOOR</b>				
	<b>ELEMENT NO. 2 STAIRCASE CONSTRUCTION &amp; FINISHES</b>				
	<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>				
A	Staircase	CM	7		
B	175mm thick staircase landing	SM	13		
	<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/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>				
C	12 mm Diameter bars	KG	294		
D	10mm Diameter bars	KG	734		
E	8mm Diameter bars	KG	441		
	<u>Fairface formwork as desribed to:-</u>				
F	Vertical Sides of bases	SM	2		
G	Soffits of staircase landing	SM	13		
H	Sloping soffits of staircase	SM	23		
J	Edges of staircase landing 150 - 225mm girth	LM	25		
K	Staircase stringers over 225mm but not exceeding 300mm wide	LM	27		
L	Staircase risers 150mm high	LM	142		
	<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	13		
B	Sloping soffits of staircase	SM	23		
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
C	30mm thick screed to Landing finished to receive ceramic tiles (m.s)	SM	13		
D	300mm wide x 30mm thick treads to receive ceramic tiles (m.s)	LM	129		
E	150mm high x 20mm thick Risers to receive ceramic tiles (m.s)	LM	142		
	<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>				
F	600 x 300 x 10mm thick Matt Porcelain Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection) to Landings- Contractor to factor this cost plus the fixing rate	SM	13		
G	Ditto to 300mm wide treads, 1200mm long; Complete with 2No. grooves	LM	129		
H	Ditto to 150mm high risers, 1200mm long	LM	142		
J	10 x 150mm high skirting	LM	14		
K	Ditto to profile of treads and risers	LM	35		
	<u>Painting and decorating</u>				
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
L	Plastered soffits of landings and staircase/ramp	SM	36		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Balustrading and Railing - (Provisional)</u>				
	<u>Staircase railing; In Stainless Steel</u>				
A	1200mm stainless steel balustrade comprising 50mm diameter x 3mm handrail : 5No 20mm diameter x 3mm horizontal rails : 800mm long x 50 x 10mm plate balusters at 1500mm centre one end fish tailed built into concrete work : To Architect detail & Approval	LM	5		
	<u>60mm diameter stainless steel handrail fixed to masonry wall solid balustrade using 200mm long 38mm diameter stainless steel brackets at 600mm centres.</u>				
B	Handrail fixed to the wall	LM	31		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page SF/3				
	Carried from page SF/4				
	Carried from Above				
	<b>ELEMENT NO. 2</b>				
	<b>STAIRCASE CONSTRUCTION &amp; FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<b><u>SECTION NO .4. - SECOND FLOOR</u></b>				
	<b><u>ELEMENT NO. 3 - WALLING</u></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>				
	200 x 200mm lintol, reinforced with and including four 12mm diameter mild steel rods and 6mm stirrups at 200mm centers	LM	10		
	<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	258		
C	Extra Over for key pointing - horizontal	SM	52		
D	<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>				
	200mm thick walling internally	SM	643		
E	100mm thick walling internally	SM	34		
<b><u>ELEMENT NO. 3</u></b> <b><u>WALLING</u></b>					Carried to the Main summary

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .4. - SECOND FLOOR</b>				
	<b>ELEMENT NO. 4 - ROOF CONSTRUCTION &amp; FINISHES</b>				
	<b><u>Preamble on ALL structural works; Tenderer to include costs associated with these specifications in their rates.</u></b>				
1	All structural steel to be grade 43A				
2	All connections to be 8mm continuous fillet weld unless shown otherwise				
3	All welds to be dislagged and wire brushed				
4	All bolts to be grade 8.8 unless otherwise stated				
5	All dimensions to be confirmed on site before fabrication				
6	Shop drawings to be approved by the structural engineer				
7	All steel work to be wire brushed and to receive one coat anti-rust zinc chromate primer before erection and touch up; and three coats of enamel gloss paint after erection				
	<u>Structural steel sections drilled, welded and bolted as necessary complete with plates, bolts, cleats etc with and including one coat zinc chromate primer, two undercoats and one coat oil paint full gloss; including all necessary cutting; to Structural Engineer's satisfaction and approval</u>				
	<u>The following in 8No. (T01) Main portal frames spanning 17Lm x 3.55m high with and including bolted connections including hoisting and fixing in position at a height not exceeding 12.0 metres above ground floor level</u>				
A	Rolled Hollow Steel sections members, size 40 x 40 x 3mm SHS Column, 3.36 Kg/lm - External Members	LM	311		
B	Rolled Hollow Steel sections members, size 30 x 30 x 3mm SHS Column, 2.42 Kg/lm - Internal Members	LM	416		
	<u>The following in 14No. (T02) Girder Truss spanning 2.725Lm x 0.5m high with and including bolted connections including hoisting and fixing in position at a height not exceeding 12.0 metres above ground floor level</u>				
C	Rolled Hollow Steel sections members, size 40 x 40 x 3mm SHS Column, 3.36 Kg/lm - External Members	LM	91		
D	Rolled Hollow Steel sections members, size 30 x 30 x 3mm SHS Column, 2.42 Kg/lm - Internal Members	LM	47		
	<u>Common structural members</u>				
E	Zed Purlins as "Brollo" or equal and approved, size - 127 x 50 x 2mm	LM	300		
F	12mm diameter CFL Anti - sagrods	LM	60		
G	50 x 50 x 6mm RSA bracings (Weight - 2.36 Kg/m)	LM	24		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Roof Covering</u>				
	<u>Box Profile Galvanised corrugated iron (G.C.I) sheet profile: 26 gauge; prepainted of Approved Color;-</u>				
A	Roof covering at a pitch of 20 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	355		
B	Matching ridge piece; 400mm girth (average)	LM	20		
C	Fair filled ridge and hip ends in coloured mortar to match	NO	20		
	<u>Wrot Softwood; treated 2nd grade cypress or equal and approved</u>				
D	Moulded fascia board cover : 290mm girth : to approval	LM	20		
E	Prepare and apply 3 coats 1st grade oil paint to surfaces not exceeding 300mm girth.	LM	20		
	<u>T &amp; G boarding in prime grade wrot cypress</u>				
F	12.5mm thick tongued and grooved moisture resistant cement fibre board secret nailed to and including 50 x 50mm softwood brandering at 600mm centres both directions; complete with three coats of approved stain including sanding & plosing and all the necessary perparations	SM	12		
	<u>Roof drainage (provisional)</u>				
	<u>2mm thick galvanised mild steel gutters and fittings</u>				
G	Purpose made 250 x 150mm box gutter jointed with mastic and bolts and fixed to fascia with brackets	LM	20		
H	Extra for outlet in gutter - diameter 150mm	NO	2		
J	150 x 150mm box rainwater downpipe fixed with and including mild steel straps at 900mm centres, plugged and screwed to wall	LM	24		
K	150mm shoe	NO	2		
L	150mm sawn neck downpipe	NO	2		
	<u>Prepare, prime and apply one undercoats and two gloss finishing coat enamel paint on the following metal surfaces</u>				
M	General surfaces of downpipes over 300mm girth	SM	15		
N	Extra over gutters for 100mm diameter outlet	NO	2		
	<b>Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	From Page SF/7				
	From Above				
	<b>ELEMENT NO. 4</b>				
	<b>ROOF CONSTRUCTION &amp; FINISHES</b>				
	<b>Carried to the Main summary</b>				



**Carried to the  
Main summary**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .4. - SECOND FLOOR</b>				
	<b>ELEMENT NO. 6 - INTERNAL FINISHES</b>				
	<b><u>Floor finishes</u></b>				
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
A	30mm thick bed finished to receive carpet (m.s)	SM	78		
B	30mm thick bed finished to receive granito tiles (m.s)	SM	472		
C	30mm thick bed finished to receive ceramic tiles (m.s)	SM	41		
	<u>Carpet - Wall to Wall</u>				
D	Provide and lay high quality executive heavy duty 15mm thick minimum 80% wool and 20% nylon (polyamide) fused in woven textile backing 1400/1040 g/sm carpet, high fade resistance suitable for heavy commercial use, anti-soiling treated, permanently anti-static, including all the necessary fixing metal clips, grippers, stoppers, complete with strip bond at the edges and all the associated accessories	SM	78		
E	Prepare surface, provide and lay underlay complete with approved adhesive as per manufacturers printed instructions	SM	78		
	<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>				
F	Supply & 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.	SM	472		
G	Ditto to 100mm high skirtings	LM	328		
H	300 x 300 x 10mm thick Matt Ceramic Tiles (Budget Supply Rate of Kshs. 1,500 per SM per the Client's Selection) - Contractor to factor this cost plus the fixing rate	SM	41		
J	Ditto to 100mm high skirtings	LM	8		
	<u>In Wrot Mahogany</u>				
K	100 x 20mm skirting, plugged, screwed and pelleted	LM	41		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>Internal Wall finishes</u></b>				
	<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	2,118		
B	15mm backing finished to receive porcelein wall tiles (m.s)	SM	207		
C	Ditto to receive granite wall tiles (m.s)	SM	2		
D	Ditto to 400mm wide architrave to receive granite (m.s) <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>	LM	11		
E	600 x 300 x 10mm thick Polished Porcelein Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection) - Contractor to factor this cost plus the fixing rate	SM	207		
F	300 x 600 x 25mm thick natural granite as Black Galaxy or equal and approved	SM	2		
G	400mm wide Granite to lift architrave	LM	11		
	<b><u>Ceiling finishes</u></b>				
	<u>12mm Thick (minimum) two coat lime plaster as described to:-</u>				
H	Concrete soffits <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>	SM	267		
J	12 mm thick ceiling; horizontal <u>Suspended accoustic ceiling as "Armstrong" or any other equal and approved; on and including proprietary pressed metal bandering 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>	SM	283		
K	600 x 600mm ; 15mm thick Horizontal Ceiling Lining	SM	41		
	<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	LM	158		
	<u>Painting and decorating</u>				
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
B	Plastered vertical wall/concrete surfaces	SM	2,118		
C	Plastered soffits	SM	267		
D	Gypsum Ceiling Soffits	SM	283		
	<u>Prepare and apply three coats polyurethane clear polish to woodwork</u>				
E	Surfaces not exceeding 100mm girth	LM	158		
F	Surfaces over 100mm but not exceeding 200mm girth	LM	41		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page SF/10				
	Carried from page SF/11				
	Carried from Above				
	<b>ELEMENT NO. 6</b>				
	<b>INTERNAL FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .4. - SECOND FLOOR</b>				
	<b>ELEMENT NO. 7 - WINDOWS [REFER TO WINDOW SCHEDULES]</b>				
	<b>General Notes:</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 fasters, stays, hinges and sliding rails to Architects details</u>				
A	Window Overall size 9,000 x 1,500mm high	NO	1		
B	Window Overall size 3,600 x 900mm high	NO	4		
C	Window Overall size 2,100 x 2,400mm high	NO	10		
D	Window Overall size 600 x 2,400mm high	NO	2		
E	Window Overall size 1,800 x 600mm high	NO	3		
F	Window Overall size 1,200 x 600mm high	NO	2		
	<u>Curtain Walling</u>				
G	Window Overall size 10,000 x 2,700mm high	NO	1		
	<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>				
H	275 x 75mm thick window cill once rebated; 20 x 20mm splaged drip and jointing in cement and sand 1:3 mortar	LM	70		
	<u>Burglar proofing</u>				
J	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		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<u>Blinds</u> Supply and fix 'Hunter Douglas' or other equal and approved hunting green colour Venetian blinds system with high quality horizontal louvers with opening and closing mechanism as per manufacturer's specifications subject to approval of sample by Project Manager	SM	127		
B	<u>Curtain rod</u> 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	70		
C	<u>In Prime Grade Wrot Cypress</u> 175 x 25mm window board, plugged, screwed and pelleted	LM	70		
D	25 x 25mm quadrant beading; plugged	LM	70		
E	<u>Finishing to reveals</u> <u>15 mm cement and sand (1:3) render, finished with woodfloat to:-</u> Concrete or masonry surfaces externally	SM	21		
F	<u>12mm (minimum) two coat lime plaster as described to</u> Concrete or masonry surfaces internally	SM	21		
G	<b>Painting &amp; derocation</b> <u>Prepare and apply one undercoat and two finishing coats first quality weatherguard emulsion paint on:-</u> Concrete or masonry surfaces externally	SM	21		
H	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u> Plastered walls internally	SM	21		
J	<u>Prepare and apply three coats polyurethane clear on woodwork</u> Window board/Beading over 100mm but not exceeding 200mm girth	LM	70		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page SF/13					
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
<b>SECTION NO .4. - SECOND FLOOR</b>					
<b>ELEMENT NO. 8 - DOORS [REFER ALL TO ARCHITECT'S SCHEDULES]</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	71		
B	Ditto Transome	LM	13		
C	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	142		
D	Ex 25 x 25mm quadrant	LM	142		
<u>Supply and fix softwood Frames with and including supply of low expansion polyurethane foam; in Prime Grade Wrot Cypress or equivalent softwood and approved (stained to match the colour of veneer):</u>					
E	Ex 50 x 200mm Frame with one labour and 10mm groove to detail; plugged	LM	29		
F	Ditto Transome	LM	5		
G	Ex 50 x 150mm Frame with one labour and 10mm groove to detail; plugged	LM	45		
H	Ditto Transome	LM	7		
J	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	148		
K	Ex 25 x 25mm quadrant	LM	148		
<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>					
L	Double Door Overall Size 2,100 x 2,400mm high comprising of 2No. Equal openable door leaves size 1,050 x 2,400mm high with 100 x 50mm top and middle rails, 100 x 50mm stiles, curved mullions and mouldinas - All to the Architects Detail	NO	1		
M	Ditto Overall Size 1,500 x 2,400mm high comprising of 2No. Equal openable door leaves size 750 x 2,400mm high	NO	1		
N	Single Leaf Door Overall size 900 x 2,400mm high (see Architect's details)	NO	9		
P	DUCT LOUVERED Double Door Overall Size 1,200 x 2,100mm high comprising of 2No. Equal openable door leaves size 600 x 2,100mm high	NO	3		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<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>				
A	Double Leaf Door size 1,000mm x 2,400mm high	NO	1		
B	Single Leaf Door size 900mm x 2,400mm high	NO	5		
C	Single Leaf Door size 800mm x 2,400mm high	NO	8		
	<u>Fanlight glazing</u>				
D	4mm thick clear glass fixed with timber beads (m.s)	SM	5		
E	Ditto but obscured to washroom doors	SM	4		
	<u>Painting and decorating</u>				
	<u>Aluminium primer or other equal and approved wood primer before fixing: -</u>				
F	Frames; over 100mm but not exceeding 200mm girth	LM	52		
G	Surfaces over 300mm girth	SM	41		
	<u>Prepare and apply approved stain, sanding sealer and three coats of 'Crown Paints Solo' or other equal and approved varnish to:</u>				
H	General timber surfaces	SM	129		
J	Frames; over 100mm but not exceeding 200mm girth	LM	52		
K	Surfaces over 300mm girth	SM	41		
	<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>				
L	Brass ball bearing hinges; 100 mm	PRS.	51.0		
M	Three lever mortice lock complete with furniture	NO	11		
N	Two lever mortice lock complete with furniture	NO	14		
P	Coat & hat hook - Rubber tipped	NO	9		
	<u>To concrete or blockwork; fixing with bolts; plugging</u>				
Q	Rubber door stop	NO	34		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page SF/15				
	Carried from Above				
	<b><u>ELEMENT NO. 8</u></b>				
	<b><u>DOORS</u></b>				
	<b>Carried to the Main summary</b>				



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b>SECTION NO .4. - SECOND FLOOR</b>					
<b>ELEMENT NO. 9- JOINERY &amp; FITTINGS</b>					
<u>Worktops</u>					
<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>					
A	4,900mm long; allow for forming holes for sink (m.s)	NO	3		
B	4,000mm long; allow for forming holes for sink (m.s)	NO	1		
C	2,100mm long; allow for forming holes for sink (m.s)	NO	1		
<u>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</u>					
D	Low level cupboard size 4,900 x 600 x 900mm high; Complete with 20mm thick granite worktop	NO	1		
E	Ditto size 4,000 x 600 x 900mm high	NO	1		
F	Ditto size 2,1000 x 600 x 900mm high	NO	1		
G	High level cupboard size 4,000 x 300 x 600mm high	NO	1		
H	Ditto size 2,1000 x 300 x 600mm high	NO	1		
<b>ELEMENT NO. 9 JOINERY FITTINGS</b>					
<b>Carried to the Main summary</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<b><u>SECTION NO .4. - SECOND FLOOR</u></b>	ITEM			
	<b><u>ELEMENT NO. 10- 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>  Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works				
	<b><u>ELEMENT NO. 10</u></b> <b><u>BUILDER'S WORK IN CONNECTION</u></b>				
	Carried to the Main summary				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b><u>SECTION NO .4. - SECOND FLOOR</u></b>					
<b><u>MAIN SUMMARY</u></b>					
1	REINFORCED CONCRETE FRAME		SF/2		
2	STAIRCASE CONSTRUCTION & FINISHES		SF/5		
3	WALLING		SF/6		
5	ROOF CONSTRUCTION & FINISHES		SF/8		
6	EXTERNAL FINISHES		SF/9		
7	INTERNAL FINISHES		SF/12		
8	WINDOWS		SF/14		
9	DOORS		SF/16		
10	JOINERY FITTINGS		SF/17		
11	BUILDER'S WORK IN CONNECTION		SF/18		
<b><u>SECTION NO. 4 - SECOND FLOOR TOTAL AMOUNT</u></b> <b><u>CARRIED TO GRAND SUMMARY</u></b>					

# BUILDER'S WORK THIRD FLOOR

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .5. - 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>				
	<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>				
A	Columns	CM	37		
B	Beams	CM	44		
C	Beams for Anchoring the Lift	CM	5		
D	Tank Bearer Beams	CM	8		
E	175mm thick suspended slab	SM	807		
F	200mm thick suspended slab	SM	137		
G	200mm thick lift shaft walls	SM	77		
H	150mm thick to Lift and Staircase Slab Overrun	SM	12		
	<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/mm2; Including all necessary cutting, bending, fixing, wastage, overlaps and provision of spacer blocks and stools to S.E's detail</u>				
J	25 mm Diameter bars	KG	5,884		
K	20 mm Diameter bars	KG	2,263		
L	16 mm Diameter bars	KG	5,431		
M	12 mm Diameter bars	KG	10,409		
N	10mm Diameter bars	KG	13,577		
P	8mm Diameter bars	KG	7,694		
	<u>Expansion joint</u>				
Q	25 mm "Flexcell" or other equal and approved joint filler with 10 years guarantee : set vertically between masonry	SM	30		
R	Mastic sealant or other equal and approved filler	LM	8		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Fairface formwork as desribed to:-</i>				
A	Sides of columns	SM	438		
B	Sides and soffits of beams	SM	536		
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	154		
G	Soffits of suspended slabs	SM	956		
H	Edges of slab not exceeding 150mm - 225mm girth	LM	254		
	<b>Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	From Page TF/1				
	From Above				
	<b>ELEMENT NO. 1</b>				
	<b><u>REINFORCED CONCRETE FRAME</u></b>				
	<b>Carried to Main Summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .5. - THIRD FLOOR</u></b>				
	<b><u>ELEMENT NO. 2 STAIRCASE CONSTRUCTION &amp; FINISHES</u></b>				
	<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>				
A	Staircase	CM	7		
B	175mm thick staircase landing	SM	13		
	<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>				
C	12 mm Diameter bars	KG	294		
D	10mm Diameter bars	KG	734		
E	8mm Diameter bars	KG	441		
	<u>Fairface formwork as desribed to:-</u>				
F	Vertical Sides of bases	SM	2		
G	Soffits of staircase landing	SM	13		
H	Sloping soffits of staircase	SM	23		
J	Edges of staircase landing 150 - 225mm girth	LM	25		
K	Staircase stringers over 225mm but not exceeding 300mm wide	LM	27		
L	Staircase risers 150mm high	LM	142		
	<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	13		
B	Sloping soffits of staircase	SM	23		
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
C	30mm thick screed to Landing finished to receive ceramic tiles (m.s)	SM	13		
D	300mm wide x 30mm thick treads to receive ceramic tiles (m.s)	LM	129		
E	150mm high x 20mm thick Risers to receive ceramic tiles (m.s)	LM	142		
	<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>				
F	600 x 300 x 10mm thick Matt Porcelain Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection) to Landings- Contractor to factor this cost plus the fixing rate	SM	13		
G	Ditto to 300mm wide treads, 1200mm long; Complete with 2No. grooves	LM	129		
H	Ditto to 150mm high risers, 1200mm long	LM	142		
J	10 x 150mm high skirting	LM	14		
K	Ditto to profile of treads and risers	LM	35		
	<u>Painting and decorating</u>				
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
L	Plastered soffits of landings and staircase/ramp	SM	36		
<b>Total Carried to Collection</b>					



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Balustrading and Railing - (Provisional)</u>				
	<u>Staircase railing; In Stainless Steel</u>				
A	1200mm stainless steel balustrade comprising 50mm diameter x 3mm handrail : 5No 20mm diameter x 3mm horizontal rails : 800mm long x 50 x 10mm plate balusters at 1500mm centre one end fish tailed built into concrete work : To Architect detail & Approval	LM	5		
	<u>60mm diameter stainless steel handrail fixed to masonry wall solid balustrade using 200mm long 38mm diameter stainless steel brackets at 600mm centres.</u>				
B	Handrail fixed to the wall	LM	31		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page TF/3				
	Carried from page TF/4				
	Carried from Above				
	<b><u>ELEMENT NO. 2</u></b>				
	<b>STAIRCASE CONSTRUCTION &amp; FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .5. - 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	LM	10		
B	250mm wide coping	LM	228		
	<i>External 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>				
C	200mm thick walling externally	SM	590		
D	200mm thick parapet wall	SM	274		
E	Extra Over for key pointing - horizontal	SM	173		
	<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>				
F	200mm thick walling internally	SM	467		
G	100mm thick walling internally	SM	34		
	<b><u>ELEMENT NO. 3</u></b>				
	<b><u>WALLING</u></b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .5. - THIRD FLOOR</u></b>				
	<b><u>ELEMENT NO. 4 - ROOF CONSTRUCTION &amp; FINISHES</u></b>				
	<u>Mineral APP/ EPDM membrane with surface finish weighing 4kg/sm; laid on primer with torch-on process from an approved manufacturer; finish to horizontal roof slab and walls executed by a specialist under 10 years guarantee from mau west or equal and approved</u>				
A	4 mm Thick mineral shield APP membrane applied to roof slabs	SM	944		
B	Ditto to skirting 300mm high	LM	263		
C	Dress membrane round 100mm rainwater outlet	NO	8		
	<u>Lightweight water proofed screeds</u>				
D	50mm average screed laid to falls and crossfalls to roof slabs	SM	944		
E	20mm ditto to walls	SM	79		
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
F	30mm thick screed to receive tiles (m.s)	SM	1,023		
	<u>Concrete tiles</u>				
G	Supply & Fix 200x200x20mm concrete tiles to floor on prepared screed (m.s) with proprietary adhesive; jointed and pointed in matching coloured proprietary grouting; including pvc spacers and expansion joint as necessary: all to Architect's approval.	SM	944		
H	20 x 100mm ditto skirting	LM	263		
	<u>Roof drainage (provisional)</u>				
	<u>2mm thick galvanised mild steel gutters and fittings</u>				
J	150 x 150mm box rainwater downpipe fixed with and including mild steel straps at 900mm centres, plugged and screwed to wall	LM	144		
K	150mm shoe	NO	8		
L	150mm sawn neck downpipe	NO	8		
	<u>Prepare, prime and apply one undercoats and two gloss finishing coat enamel paint on the following metal surfaces</u>				
M	General surfaces of downpipes over 300mm girth	SM	87		
N	Extra over gutters for 100mm diameter outlet	NO	8		
	<b><u>ELEMENT NO. 4</u></b>				
	<b><u>ROOF CONSTRUCTION &amp; FINISHES</u></b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .5. - THIRD FLOOR</u></b> <b><u>ELEMENT NO. 5 - EXTERNAL FINISHES</u></b> <b><u>External wall finishes</u></b> <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>				
A	Concrete/masonry surfaces to receive paint (m.s) <u>Painting and decorating</u> <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>	SM	971		
B	Plastered vertical wall/concrete surfaces <b><u>PERGOLA - AT THE ROOFTOP LOUNGE</u></b> <u>Structural steel sections drilled, welded and bolted as necessary complete with plates, bolts, cleats etc with and including one coat zinc chromate primer, two undercoats and one coat oil paint full gloss; including all necessary cutting; to Structural Engineer's satisfaction and approval</u>	SM	971		
C	100 X 50 X 4 mm Thick posts	LM	14		
D	100 X 50 X 3 mm Thick Rafters	LM	30		
E	100 X 50 X 3 mm Thick purlins	LM	214		
	<u>Covering</u>				
F	10 mm Thick clear Solar Glass on and including all mild steel support,installation hardware,cutting and industrial silicon jointing	SM	100		
	<b>ELEMENT NO. 5</b> <b>EXTERNAL FINISHES</b>	<b>Carried to the</b> <b>Main summary</b>			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO .5. - THIRD FLOOR</u></b>				
	<b><u>ELEMENT NO. 6 - INTERNAL FINISHES</u></b>				
	<b><u>Floor finishes</u></b>				
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
A	30mm thick bed finished to receive carpet (m.s)	SM	78		
B	30mm thick bed finished to receive granito tiles (m.s)	SM	508		
C	30mm thick bed finished to receive ceramic tiles (m.s)	SM	41		
	<u>Carpet - Wall to Wall</u>				
D	Provide and lay high quality executive heavy duty 15mm thick minimum 80% wool and 20% nylon (polyamide) fused in woven textile backing 1400/1040 g/sm carpet, high fade resistance suitable for heavy commercial use, anti-soiling treated, permanently anti-static, including all the necessary fixing metal clips, grippers, stoppers, complete with strip bond at the edges and all the associated accessories	SM	78		
E	Prepare surface, provide and lay underlay complete with approved adhesive as per manufacturers printed instructions	SM	78		
	<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>				
F	Supply & 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.	SM	508		
G	Ditto to 100mm high skirtings	LM	373		
H	300 x 300 x 10mm thick Matt Ceramic Tiles (Budget Supply Rate of Kshs. 1,500 per SM per the Client's Selection) - Contractor to factor this cost plus the fixing rate	SM	41		
J	Ditto to 100mm high skirtings	LM	8		
	<u>In Wrot Mahogany</u>				
K	100 x 20mm skirting, plugged, screwed and pelleted	LM	41		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>Internal Wall finishes</u></b>				
	<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	2,012		
B	15mm backing finished to receive porcelein wall tiles (m.s)	SM	181		
C	Ditto to receive granite wall tiles (m.s)	SM	2		
D	Ditto to 400mm wide architrave to receive granite (m.s)	LM	11		
	<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	600 x 300 x 10mm thick Polished Porcelain Tiles (Budget Supply Rate of Kshs. 2,500 per SM per the Client's Selection) - Contractor to factor this cost plus the fixing rate	SM	181		
F	300 x 600 x 25mm thick natural granite as Black Galaxy or equal and approved	SM	2		
G	400mm wide Granite to lift architrave	LM	11		
	<b><u>Ceiling finishes</u></b>				
	<u>12mm Thick (minimum) two coat lime plaster as described to:-</u>				
H	Concrete soffits	SM	281		
	<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 <u>Suspended accoustic ceiling as "Armstrong" or any other equal and approved; on and including proprietary pressed metal brandering 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>	SM	305		
K	600 x 600mm ; 15mm thick Horizontal Ceiling Lining	SM	401		
	<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  <u>Painting and decorating</u>  <u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>	LM	158		
B	Plastered vertical wall/concrete surfaces	SM	2,012		
C	Plastered soffits	SM	281		
D	Gypsum Ceiling Soffits  <u>Prepare and apply three coats polyurethane clear polish to woodwork</u>	SM	305		
E	Surfaces not exceeding 100mm girth	LM	158		
F	Surfaces over 100mm but not exceeding 200mm girth	LM	41		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page TF/9				
	Carried from page TF/10				
	Carried from Above				
	<b>ELEMENT NO. 6</b>				
	<b>INTERNAL FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .5. - THIRD FLOOR</b>				
	<b>ELEMENT NO. 7 - WINDOWS [REFER TO WINDOW SCHEDULES]</b>				
	<b>General Notes:</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 fasters, stays, hinges and sliding rails to Architects details</u>				
A	Window Overall size 9,000 x 1,500mm high	NO	1		
B	Window Overall size 2,100 x 2,400mm high	NO	11		
C	Window Overall size 2,400 x 1,500mm high	NO	1		
D	Window Overall size 600 x 2,400mm high	NO	2		
E	Window Overall size 1,800 x 600mm high	NO	3		
F	Window Overall size 1,200 x 600mm high	NO	2		
G	Window Overall size 2,100 x 1,500mm high - Vents	NO	8		
	<u>Curtain Walling</u>				
H	Window Overall size 10,000 x 2,700mm high	NO	1		
	<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>				
J	275 x 75mm thick window cill once rebated; 20 x 20mm splaged drip and jointing in cement and sand 1:3 mortar	LM	79		
	<b>Total Carried to Collection</b>				



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Burglar proofing</u>				
A	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>Blinds</u>				
B	Supply and fix 'Hunter Douglas' or other equal and approved hunting green colour Venetian blinds system with high quality horizontal louvers with opening and closing mechanism as per manufacturer's specifications subject to approval of sample by Project Manager	SM	108		
	<u>Curtain rod</u>				
C	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	60		
	<u>In Prime Grade Wrot Cypress</u>				
D	175 x 25mm window board, plugged, screwed and pelleted	LM	79		
E	25 x 25mm quadrant beading; plugged	LM	79		
	<u>Finishing to reveals</u>				
	<u>15 mm cement and sand (1:3) render,finished with woodfloat to:-</u>				
F	Concrete or masonry surfaces externally	SM	24		
	<u>12mm (minimum) two coat lime plaster as described to</u>				
G	Concrete or masonry surfaces internally	SM	24		
	<b>Painting &amp; derocation</b>				
	<u>Prepare and apply one undercoat and two finishing coats first quality weatherguard emulsion paint on:-</u>				
H	Concrete or masonry surfaces externally	SM	24		
	<u>Skim, Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
J	Plastered walls internally	SM	24		
	<u>Prepare and apply three coats polyurethane clear on woodwork</u>				
K	Window board/Beading over 100mm but not exceeding 200mm girth	LM	79		
	<b>Total Carried to Collection</b>				
	<b><u>COLLECTION</u></b>				
	Carried from page TF/12				
	Carried from Above				
	<b><u>ELEMENT NO. 7</u></b>				
	<b>WINDOWS</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO .5. - THIRD FLOOR</b>				
	<b>ELEMENT NO. 8 - DOORS [REFER ALL TO ARCHITECT'S SCHEDULES]</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	82		
B	Ditto Transome	LM	15		
C	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	164		
D	Ex 25 x 25mm quadrant	LM	164		
	<u>Supply and fix softwood Frames with and including supply of low expansion polyurethane foam; in Prime Grade Wrot Cypress or equivalent softwood and approved (stained to match the colour of veneer):</u>				
E	Ex 50 x 200mm Frame with one labour and 10mm groove to detail; plugged	LM	12		
F	Ditto Transome	LM	2		
G	Ex 50 x 150mm Frame with one labour and 10mm groove to detail; plugged	LM	45		
H	Ditto Transome	LM	7		
J	Ex 75 x 25mm Architrave with 10mm groove to detail; plugged	LM	114		
K	Ex 25 x 25mm quadrant	LM	114		
	<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>				
L	Double Door Overall Size 2,100 x 2,400mm high comprising of 2No. Equal openable door leaves size 1,050 x 2,400mm high with 100 x 50mm top and middle rails, 100 x 50mm stiles, curved mullions and mouldinas - All to the Architects Detail	NO	1		
M	Ditto Overall Size 1,500 x 2,400mm high comprising of 2No. Equal openable door leaves size 750 x 2,400mm high	NO	1		
N	Single Leaf Door Overall size 900 x 2,400mm high (see Architect's details)	NO	11		
P	DUCT LOUVERED Double Door Overall Size 1,200 x 2,100mm high comprising of 2No. Equal openable door leaves size 600 x 2,100mm high	NO	3		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<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>				
A	Double Leaf Door size 1,000mm x 2,400mm high	NO	1		
B	Single Leaf Door size 900mm x 2,400mm high	NO	2		
C	Single Leaf Door size 800mm x 2,400mm high	NO	8		
	<u>Fanlight glazing</u>				
D	4mm thick clear glass fixed with timber beads (m.s)	SM	5		
E	Ditto but obscured to washroom doors	SM	3		
	<b>Steel Doors</b>				
	<u>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)</u>				
F	Double Door overall size 2,100 x 2,400mm high complete with 100 x 25 x 2mm RHS framing all round; 100 x 25 x 2mm RHS middle rails; infilled with 2mm thick metal	NO	2		
	<u>Painting and decorating</u>				
	<u>Aluminium primer or other equal and approved wood primer before fixing: -</u>				
G	Frames; over 100mm but not exceeding 200mm girth	LM	52		
H	Surfaces over 300mm girth	SM	38		
	<u>Prepare and apply approved stain, sanding sealer and three coats of 'Crown Paints Solo' or other equal and approved varnish to:</u>				
J	General timber surfaces	SM	125		
K	Frames; over 100mm but not exceeding 200mm girth	LM	52		
L	Surfaces over 300mm girth	SM	38		
	<u>Prepare and apply one coat etching primer two undercoats and one coat oil paint full gloss furnish to:-</u>				
M	General surfaces of metal doors	SM	9		
<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.	49.5		
B	Three lever mortice lock complete with furniture	NO	13		
C	Two lever mortice lock complete with furniture	NO	11		
D	Coat & hat hook - Rubber tipped	NO	9		
	<u>To concrete or blockwork; fixing with bolts; plugging</u>				
E	Rubber door stop	NO	35		
Total Carried to Collection					
<u>COLLECTION</u>  Carried from page TF/14  Carried from page TF/15  Carried from Above					
<u>ELEMENT NO. 8</u> DOORS					
Carried to the Main summary					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<b><u>SECTION NO .5. - THIRD FLOOR</u></b>	ITEM			
	<b><u>ELEMENT NO. 9 - 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>  Cut away fittings and pipework; form all holes, chases, etc and make good after the plumber, electrician and all other specialist works				
	<b><u>ELEMENT NO. 9</u></b> <b>BUILDER'S WORK IN CONNECTION</b>				Carried to the Main summary

[illegible]

# INTERIOR WORKS SIGNAGE



**MINISTRY OF LANDS, PUBLIC WORKS HOUSING  
AND URBAN DEVELOPMENT.**

*STATE DEPARTMENT FOR PUBLIC WORKS*

**PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY  
CHAMBERS.**

<b>BILLS OF QUANTITIES OF BRANDING FOR BUNGOMA COUNTY ASSEMBLY</b>
--

**PROJECT MANAGER**

**WORKS SECRETARY**

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**CHIEF ARCHITECT**

MINISTRY OF LANDS, PUBLIC WORKS,  
HOUSING & URBAN DEVELOPMENT

P.O. BOX 30743 – 00100

**NAIROBI**

**CLIENT**

BUNGOMA COUNTY ASSEMBLY,  
BUNGOMA, KENYA

AUGUST 2023



**SCHEDULE OF REQUIREMENTS TABLE**

SN	ITEM	DESCRIPTION	QTY	UNIT PRICE	COST
<b>GROUND FLOOR</b>					
1.	Staircase Sign	300mm by 300mm, 3mm perspex	1		
2.	Fire Exit sign	300mm by 300mm, 3mm on green Perspex	1		
3.	Reception sign	80mm by 460mm illuminating signage on green perspex	1		
4.	3D logo at the reception desk	2000mm by 600mm 3D illuminating logo on 5mm Perspex.	1		
5.	Washroom Signage	150mm by 100mm gold aluco board	3		
6.	Duct	150mm by 100mm green Perspex sign	2		
7.	Office doors branding	80mm by 460mm gold aluco board	10		
8.	Boardroom sign (Meeting in progress)	SECO Sliding Aluminum Sign 10"X 2" Messaging, Vacant/Meeting in Progress	1	-	
9.	Service Charter at the reception	1500mm by 1500mm clear Perspex, 5mm thick, suspended by spacers	1	-	
10.	Mission and vision at the reception	1500mm by 1500mm clear Perspex, 5mm thick, suspended by spacers	1	-	
11.	Core values at the reception	1500mm by 1500mm clear Perspex, 5mm thick, suspended by spacers	1	-	

<b>FIRST FLOOR</b>					
12.	Staircase Sign	300mm by 300mm, 3mm perspex	1		
13.	Fire Exit sign	300mm by 300mm, 3mm on green Perspex	1		
14.	Washroom Signage	150mm by 100mm gold aluco board	3		
15.	Duct	150mm by 100mm green Perspex sign	2		
16.	Office doors branding	80mm by 460mm gold aluco board	10		
17.	Boardroom sign (Meeting in progress)	SECO Sliding Aluminum Sign 10"X 2" Messaging, Vacant/Meeting in Progress	1		
<b>SECOND FLOOR</b>					
18.	Staircase Sign	300mm by 300mm, 3mm perspex	1		
19.	Fire Exit sign	300mm by 300mm, 3mm on green Perspex	1		
20.	Washroom Signage	150mm by 100mm gold aluco board	3		
21.	Duct	150mm by 100mm green Perspex sign	2		
22.	Office doors branding	80mm by 460mm gold aluco board	10		
23.	Boardroom sign (Meeting in progress)	SECO Sliding Aluminum Sign 10"X 2" Messaging, Vacant/Meeting in Progress	1		
<b>THIRD FLOOR</b>					
24.	Staircase Sign	300mm by 300mm, 3mm perspex	1		
25.	Fire Exit sign	300mm by 300mm, 3mm on green Perspex	1		

26.	Washroom Signage	150mm by 100mm gold aluco board	3		
27.	Duct	150mm by 100mm green Perspex sign	2		
28.	Office doors branding	80mm by 460mm gold aluco board	10		
29.	Boardroom sign (Meeting in progress)	SECO Sliding Aluminum Sign 10"X 2" Messaging, Vacant/Meeting in Progress	1		
30.	Main Entrance Signage	11900mm by 784mm, 3D letters. County government logo (1000mm by 2600mm) All illuminating.	1		
<b>TOTAL AMOUNT</b>					

# INTERIOR WORKS FURNITURE - DEBATING CHAMBERS

**MINISTRY OF LANDS, PUBLIC WORKS  
HOUSING AND URBAN DEVELOPMENT.**

*STATE DEPARTMENT FOR PUBLIC WORKS*

**PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.**

<p><b>FURNITURE SCHEDULE FOR BUNGOMA COUNTY ASSEMBLY DEBATING CHAMBERS</b></p>
--

**PROJECT MANAGER**

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**NAIROBI**

**CLIENT**

BUNGOMA COUNTY ASSEMBLY,  
BUNGOMA, KENYA

**AUG 2023**

NO.	DESCRIPTION	UNIT	QTY	RATE (KES)	TOTAL (KES)
1	Ornate(moulding) leather Upholstered Speakers Chair in solid mahogany frame work	No.	1		
2	Ornate(moulding) Speakers Table in solid mahogany frame work	No.	1		
3	Ornate(moulding) leather Upholstered Deputy speaker Chair in solid mahogany frame work	No.	1		
4	Ornate(moulding) leather Upholstered Clerk's Chair in solid mahogany frame work	No.	4		
5	Ornate(moulding) Clerks Table in solid mahogany frame work	No.	1		
6	Ornate(moulding) leather Upholstered Senator Chair in solid mahogany frame work	No.	1		
7	Ornate(moulding) leather Upholstered Governors Chair in solid mahogany frame work	No.	1		
8	Ornate(moulding) leather Upholstered Presidential Chair in solid mahogany frame work	No.	2		
9	Leather Upholstered Interpreters Seat in solid mahogany frame work	No.	1		
10	Interpreters Table in solid mahogany frame work	No.	1		
11	Highly ornamented Mace	No.	1		
12	Mace box leather Padding	No.	1		
13	Ornate(moulding) Mace Table in solid mahogany frame work	No.	1		
14	MCA's Seat in PU Leather padding for seat and back. Support beam and base made of die cast aluminum. Laser cut mild steel plate in textured silver epoxy powder. Spring/ gravity seat returning mechanism. Include court of arm logo on head rest	No.	84		
15	MCA's Chamber desk (double) in Ornate(moulding) solid mahogany frame work with a plain top and pen tray, inclined writing surface inset with green leather, moulded edge over a recessed apron with two wooden drawer pulls and brass locks, panel end supports with a platform base and inclined foot rest with non-slip mat, Cable Management gromets.	No.	41		
16	MCA's Chamber desk (Single) in Ornate(moulding) solid mahogany frame work with a plain top and pen tray, inclined writing surface inset with green leather, moulded edge over a recessed apron with two wooden drawer	No.	2		

	pulls and brass locks, paneled end supports with a platform base and inclined foot rest with non-slip mat, Cable Management gromets.				
17	VIP Gallery Seat in PU Leather padding for seat and back. Support beam and base made of die cast aluminum. Laser cut mild steel plate in textured silver epoxy powder. Spring/ gravity seat returning mechanism.	No.	40		
18	Public/Press Gallery Seat in PU Leather padding for seat and back. Support beam and base made of die cast aluminum. Laser cut mild steel plate in textured silver epoxy powder. Spring/ gravity seat returning mechanism.	No.	80		
19	Leather Upholstered Sergeant at Arms chair in solid mahogany frame work	No.	3		
20	Chambers Lobby Station desk	No.	1		
21	Chambers Lobby chair in solid mahogany frame work	No.	2		
<b>TOTAL</b>					

## EXTERNAL WORKS



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO. 8 - EXTERNAL WORKS</b>				
	<b><i>Tenderer to allow for working in their rates</i></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	3,635		
B	Excavate oversite average 200mm deep to remove vegetable soil and and wheel and Load,wheel and deposit arisings away from site	SM	3,635		
	<b>ALL Excavations must include compacting and grading of final cut and fill levels to the satisfaction of the Engineer</b>				
	<b>Excavations including trimming sides and bottoms of excavations; 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; with and including compacting and grading of final cut and fill levels:</b>				
	<u>Excavate oversite to reduce levels in varying depths from existing ground levels; including leveling excavated surfaces for setting out for other works (m.s); to</u>				
C	Cut to Fill oversite to reduce and make-up levels in varying depths from existina around level	CM	5,454		
	<u>Disposal</u>				
D	Load,wheel and deposit surplus excavated material away from site to an approved county government dumping site	CM	4,363		
	<b>Backfills</b>				
	<u>Selected and approved excavated material filling to make up levels : compacted in layers not exceeding 150mm thick . All to satisfaction of the Civil Engineer</u>				
E	Selected and approved excavated material filling to make up levels in layers not exceeding 300mm thick. well rammed to 98% MDD, All to satisfaction of the Civil Engineer	CM	1,091		
	<u>Selected and approved imported material filling (murrum) to make up levels : compacted in layers not exceeding 150mm thick . All to satisfaction of the Civil Engineer</u>				
F	Approved murrum (imported) fillings; compacted in layers not exceeding 150mm thick to make up levels: well rammed to 98% MDD - provisional	CM	3,999		
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<u>Stone Pitching (Provisional)</u>  80mm thick natural stone pitching at an approved angle jointed in cement sand mortar (1:3) including all necessary excavations, blinding, trimming, compacting, shaping and brushing to ensure a neat finish to Architects detail and approval  <b>Trees - Provisional</b>  <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>	SM	2,500		
C	Cut down trees : over 600 but not exceeding 900mm girth	NO	9		
D	Trees 900 - 1200mm girth.	NO	6		
E	Trees 1200 - 1500mm girth.	NO	5		
F	Trees 1500 - 1800mm girth.	NO	3		
G	Trees 1800 - 2100mm girth.	NO	2		
<b>Total Carried to Collection</b>					
<b><u>COLLECTION</u></b>					
Carried from page EW/1					
Carried from Above					
<b><u>SECTION NO. 8 - EXTERNAL WORKS</u></b>					
<b><u>TOTAL AMOUNT CARRIED TO THE GRAND SUMMARY</u></b>					

# GUARD HOUSE

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO. 9 - GUARD HOUSE</u></b>				
	<b><u>ELEMENT NO. 1 - SUBSTRUCTURES (ALL PROVISIONAL)</u></b>				
	<p><b>Notes.</b>  <b>Tenderer to allow for working space in his rates.</b>  <b>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b></p> <p><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></p> <p><b>All excavations shall be measured net and no allowance shall be made for working space as per SMM D5(g)</b></p> <p><u>Excavations</u></p> <p>A Mass excavation to reduce levels not exceeding 1.50 metres deep [1.5 mtr deep]</p> <p>B Excavate for strip footing not exceeding 1.50 metres deep from reduced level</p> <p>C Extra over excavations for excavating in soft rock [With a Soil Bearing Pressure of 200 - 300 Kilo Newtons / M2 ]</p> <p><u>Disposal</u></p> <p>D Load,wheel and deposit surplus excavated material away from sit</p> <p>E Return, fill and ram selected excavated material around foundations.</p> <p><u>Hardcore or other approved filling, as described</u></p> <p>F 300mm thick hardcore bed : hand packed : compacted in layers not exceeding 150mm thick : to the satisfaction of the Structural Engineer:</p> <p><u>Blinding</u></p> <p>G 50mm Thick (Average) quarry dust or "equal and approved" blinding to surfaces of hardcore</p> <p><u>Filling</u></p> <p>H Providing &amp; 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</p>				
	<b>Total Carried to Collection</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Anti - termite to treatment</u>				
A	Chemical anti-termite treatment, as "BASF Termidor" or other equal and approved anti termite insecticide; applied strictly in accordance with manufacturer's printed instructions and INCLUDING providing a TEN year guarantee period, to surfaces of hardcore and vertical sides of excavated surfaces	SM	14		
	<u>Damp-proof membrane</u>				
B	1000 gauge polythene or other equal and approved damp-proof membrane, dlad over blinded hardcore (measured separately) with 300mm side and end laps (measured nett-allow for laps)	Sm	14		
	<u>Mass concrete class 10 (1.4.8) in:-</u>				
C	50mm thick blinding- Strip footing	Sm	10		
	<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>				
D	Strip foundation	CM	2		
E	10mm thick surface bed	SM	14		
	<u>Reinforcement, as described:-[PROVISIONAL]</u>				
	<b>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</b>				
F	12 mm Diameter bars	KG	33		
G	10mm Ditto	KG	82		
H	8mm ditto	KG	49		
	<u>Steel mesh fabric reinforcement to BS 4483 : including setting in concrete with 300mm laps( measured nett : no allowance for laps)</u>				
J	Mesh reference A142 weighing 2.22 kilogrammes per square metre in floor beds	SM	14		
	<u>Sawn formwork as described to:-</u>				
K	Vertical sides of strip footing	SM	7		
L	Edge of slab, over 75mm but not exceeding 150mm girth	LM	17		
<b>Total Carried to Collection</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	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:				
A	200mm thick walling  Damp-proof courses, as described, to walls	SM	23		
B	200mm wide  Plinth  Two coat external render cement sand (1:4) with a woodfloat	LM	15		
C	12mm Thick to plinths  Two coats black bitumastic paint on:	SM	9		
D	Rendered walls	SM	9		
	Carried to Collection				
	<b><u>COLLECTION</u></b>  From Page GD/1  From Page GD/2  From Above				
	ELEMENT NO. 1 SUBSTRUCTURES				
	Carried to the Main summary				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO. 9 - GUARD HOUSE</u></b>				
	<b><u>ELEMENT NO 2- REINFORCED CONCRETE FRAME</u></b>				
	<b>Reinforcement to BS 4449:1997 , Grade 460B high strength type 2 ribbed bars with proof stress of 460 N/mm2</b>				
	<b>All cement to be either Mombasa Cement or Bamburi 32.5, or equal and approved to SE approval</b>				
	<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>				
A	Beams	CM	1		
B	150mm thick suspended slab	SM	14		
	<u>Reinforcement, as described:-[PROVISIONAL]</u>				
	<b>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</b>				
C	16mm Diameter bars	KG	54		
D	12mm Ditto	KG	99		
E	10mm Ditto	KG	174		
F	8mm ditto	KG	87		
	<u>Sawn formwork as desribed to:-</u>				
G	Sides and soffits of beams	SM	12		
H	Soffits of suspended slabs	SM	14		
J	Edge of slab, over 75mm but not exceeding 150mm girth	LM	17		
	<b><u>ELEMENT NO. 2</u></b>				
	<b><u>REINFORCED CONCRETE FRAME</u></b>				
	<b>Carried to Main Summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<b>SECTION NO. 9 - GUARD HOUSE</b>				
	<b>ELEMENT NO. 3 - WALLING &amp; PARTITIONS</b>				
	<u>Precast concrete (class 20/20) coping : maximum vertical height 4mm high : edges 50mm high : weathered and throated to approval : bedded, jointed and pointed in cement sand (1:4) mortar : all to detail as described :</u>				
	250 x 50mm thick coping; throated; bevelled at 10 degrees to horizontal	LM	17		
	<u>External walling</u>				
B	<u>Natural hard machine cut Thika stone with a crushing strength of 7.5 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>				
	200mm thick walling externally	SM	31		
	200mm thick Parapet wall	SM	8		
D	Extra over for horizontal and vertical keypointing	SM	47		
E	<u>Internal walling</u>				
	<u>Natural hard machine cut natural Thika stone with a crushing strength of 7.5 N/mm<sup>2</sup>; walling bedded and jointed in cement and sand (1:3) mortar, reinforcement with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in;</u>				
	200mm thick walling internally	SM	2		
	<b>ELEMENT NO. 3 WALLING</b>				
	<b>Carried to the Main summary</b>				



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO. 9 - GUARD HOUSE</u></b>				
	<b><u>ELEMENT NO. 4 - ROOF CONSTRUCTION &amp; FINISHES</u></b>				
	<u>APP/EPDM membrane with surface finish weighing 4kg/sm; laid on primer with torch-on process from an approved manufacturer; finish to horizontal roof slab and walls executed by a specialist under 10 years guarantee form mau west or equal and approved</u>				
A	APP/ EPDM membrane applied to roof slabs; 2 layers	SM	14		
B	APP/ EPDM membrane to skirting 290mm high	LM	17		
C	Dress membrane round 100mm rainwater outlet	NO	2		
	<u>Lightweight water proofed screeds</u>				
D	50mm Average screed laid to falls and crossfalls to roof slabs to receive concrete	SM	14		
E	12mm ditto skirting 290mm high	LM	17		
F	20mm Thick screed laid over APP membrane and finished to receive concrete interlocking tiles (m.s)	SM	14		
	<u>Concrete tiles</u>				
G	Supply and fix 300 x 300 x 25mm precast concrete interlocking tiles of approved pattern jointed in cement and sand (1:3) mortar over prepared screed (m.s) - roofs	SM	14		
H	Supply and fix 25 x 100mm high ditto skirting	LM	17		
	<u>Roof drainage (provisional)</u>				
	<u>Rainwater goods; including testing the roofing system for leakages and testing the rainwater installations and connecting all rainwater down pipes to manholes including all necessary bends and fittings</u>				
J	100mm Diameter uPVC downpipe fixed with and including mild steel holderbats plugged and screwed to walls	LM	6		
K	Extra over swan neck; 100mm dia.	NO	2		
L	Ditto fulbora; 100mm dia.	NO	2		
M	Ditto shoe; 100mm dia.	NO	2		
	<b><u>ELEMENT NO. 4</u></b>				
	<b><u>ROOF CONSTRUCTION &amp; FINISHES</u></b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b>SECTION NO. 9 - GUARD HOUSE</b>					
<b>ELEMENT NO. 5 - EXTERNAL FINISHES</b>					
<b><u>External wall finishes</u></b>					
<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>					
A	Concrete/masonry surfaces to receive paint (m.s)  <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>	SM	8		
I	Plastered masonry/concrete externally	SM	8		
<b>ELEMENT NO. 5 EXTERNAL FINISHES</b>  <b>Carried to the Main summary</b>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SECTION NO. 9 - GUARD HOUSE</b>				
	<b>ELEMENT NO. 6 - INTERNAL FINISHES</b>				
	<b><u>Floor finishes</u></b>				
	<u>Cement and sand (1:3) screeds, backings, beds etc</u>				
A	40mm thick bed as finish	SM	14		
B	30mm thick bed finished to receive ceramic tile (m.s) - washrooms	SM	2		
C	Ditto to 100mm high skirtings	LM	12		
	<u>Ceramic floor tiles</u>				
D	Supply and fix 320x320 x 10mm non-slip ceramic floor tiles to floors on prepared bed (m.s) with proprietary adhesive; jointed and pointed in matching coloured proprietary grouting; including pvc spacers and expansion joint as necessary: all to Architect's approval.	SM	2		
	<b><u>Internal Wall finishes</u></b>				
	<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>				
E	Concrete/masonry surfaces internally generally	SM	30		
	<u>Cement and sand (1:4) backings etc</u>				
F	15mm backing finished to receive ceramic wall tiles (m.s) to WC	SM	11		
	<u>Ceramic wall tiles</u>				
G	Supply and fix 300x300x10mm ceramic tiles to walls on prepared backing (m.s) with proprietary adhesive; jointed and pointed in matching coloured proprietary grouting; including pvc spacers, aluminium corner strips and all other materials and cutting & laying to approved patterns and expansion joint as necessary: all to Architect's approval.	SM	11		
	<b><u>Ceiling finishes</u></b>				
	<u>12mm Thick (minimum) two coat lime plaster as described to:-</u>				
H	Concrete soffits	SM	16		
	<u>Painting and decorating</u>				
	<u>Prepare and apply a first quality universal undercoat and two finishing coats of:-</u>				
J	Silk vinyl emulsion paint to plastered surfaces	SM	46		
	<b>ELEMENT NO. 6</b>				
	<b>INTERNAL FINISHES</b>				
	<b>Carried to the Main summary</b>				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO. 9 - GUARD HOUSE</u></b>				
	<b><u>ELEMENT NO. 7 - WINDOWS</u></b>				
	<u>Steel Casement windows</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>				
A	Window Overall size 1800 x 1200mm high	NO	1		
B	Window Overall size 900 x 600mm high	NO	1		
	<u>Glazing</u>				
C	4mm obscured Sheet Glass to metal with putty in panes, girth - 0.10 to 0.50 square meters	SM	3		
	<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>				
D	275 x 75mm thick window cill once rebated; 20 x 20mm splaged drip and jointing in cement and sand 1:3 mortar	LM	3		
	<u>Finishing to reveals</u>				
	<u>15 mm cement and sand (1:3) render,finished with woodfloat to:-</u>				
E	Concrete or masonry surfaces externally	SM	1		
	<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>				
F	Concrete or masonry surfaces externally	SM	1		
	<u>12mm (minimum) two coat lime plaster as described to</u>				
G	Concrete or masonry surfaces internally	SM	1		
	<u>Prepare and apply three coats first quality silk vinyl emulsion paint on:-</u>				
H	Plastered walls internally	SM	1		
	<b><u>ELEMENT NO. 7</u></b>				
	<b><u>WINDOWS</u></b>				
	<b>Carried to the Main summary</b>				

[illegible]

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SECTION NO. 9 - GUARD HOUSE</u></b>				
	<b><u>MAIN SUMMARY</u></b>				
1	SUBSTRUCTURES		GD/3		
2	REINFORCED CONCRETE FRAME		GD/4		
3	WALLING & PARTITIONS		GD/5		
4	ROOF CONSTRUCTION & FINISHES		GD/6		
5	EXTERNAL FINISHES		GD/7		
6	INTERNAL FINISHES		GD/8		
7	WINDOWS		GD/9		
8	DOORS		GD/10		
	<b><u>SECTION NO. 9 - GUARD HOUSE</u></b>				
	<b><u>TOTAL AMOUNT CARRIED TO THE GRAND SUMMARY</u></b>	SHS			

# CIVIL WORKS

## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

WP ITEM NO. D103 WE/BUN/2202

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<b><u>BILL NO 01: ACCESS ROAD, PARKING AND FOOTPATHS</u></b>				
	<b><u>SITE CLEARANCE</u></b>				
1--01	Clear the site of all bushes, trees and grasses, grap up and cart away	SM	3,635		
1--02	Cut trees, girth length 100-300mm, grap up roots and cart away	NO	3		
	<b><u>EXCAVATIONS</u></b>				
1--03	Excavate oversite to remove vegetable soil average depth 150mm deep wheel and spread on site as directed by the PM	SM	3,135		
1--04	Excavate for driveway and parking areas to formation level, not exceeding 1.5m, average depth 0.45m and cart away	CM	1,800		
1--05	Cart away excavated material.	CM	1,294		
	<b><u>CONSTRUCTION</u></b>				
1--06	Trim and compact formation to correct levels, cross-falls, and longitudinal falls	SM	3,135		
1--07	Apply approved herbicide to the trimmed surfaces.	SM	3,135		
1--08	Provide, lay and compact 150mm thick murrum or approved equivalent as road sub-base to 98% M.D.D	SM	3,135		
1--09	Provide, lay and compact 200mm thick handpacked stones as road base to M.O.W. General Specifications.	CM	1,036		
	<b>CARRIED TO COLLECTION</b>				

CIV/2



## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

WP ITEM NO. D103 WE/BUN/2202

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
1--10	Provide and spread 50mm approved quarry dust blinding to the handpacked stones to receive concrete paving blocks.	SM	3,135		
1--11	Provide, lay and compact 60mm thick heavy duty interlocking concrete paving blocks (min. strength 49N/mm <sup>2</sup> ) and spread sand for sealing of joints.	SM	2,876		
	<b><u>ROAD KERBS ONLY</u></b>				
1--12	Excavate for kerb stone depth not exceeding 250mm, backfill and cart away the excavated material.	LM	314		
1--13	Prepare and pour 350x100mm concrete class 15, mix 1:3:6 to excavated place as bedding and haunching respectively for the kerb stone.	CM	9		
1--14	Provide all material and fix sawn timber form work to edges of haunching to the kerb stones.	LM	524		
1--15	Provide, lay and joint along the edge of the road and parking 125x250mm pre-cast concrete kerb all to detail (50) 5332A.	LM	275		
1--16	Ditto; but curved to varying radii.	LM	39		
	<b><u>KERBS AND CHANNELS</u></b>				
1--17	Excavate for kerb and channel depth not exceeding 250mm, back fill and cart away surplus excavated material.	LM	528		
1--18	Prepare and pour 350x100mm and 350x100mm concrete class 15, mix 1:3:6 to excavated place as bedding and haunching respectively for the kerb and channel .	CM	16		
1--19	Provide all material and fix sawn timber form work to edges of haunching to the kerb and channel .	LM	879		
	<b>CARRIED TO COLLECTION</b>				

CIV/3

**PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.****WP ITEM NO. D103 WE/BUN/2202****BILL OF QUANTITIES**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<b><u>ROAD CHANNELS ONLY</u></b>				
1--20	Provide, lay and joint along the edge of the road and parking 125x250mm pcc kerb and 125x100mm channel, all to detail (50) 5332 'B'.	LM	408		
1--21	Ditto but curved to varying radii.	LM	119		
1--22	Excavate for road channel depth not exceeding 300mm, backfill and cart away the surplus excavated material.	LM	9		
1--23	Prepare and pour 475x200mm concrete class 15, mix 1:3:6 to excavated place as edging and haunching respectively for road channel .	CM	1		
1--24	Provide, lay and joint 125x100mm channel all to detail (50) 5332 'C'.	LM	9		
	<b><u>ROAD MARKING</u></b>				
1--25	Prepare and apply three coats of approved reflective road marking paints on driveways, parking and road kerbs , surfaces not exceeding 100mm girth.	SM	506		
	<b><u>FOOT PATHS</u></b>				
1--26	Provide, lay and compact 100mm approved gravel filling and level ready to receive paving slabs.	SM	184		
1--27	Provide, lay and compact 60mm medium heavy duty interlocking concrete paving blocks on 50mm murram (min. strength 35N/mm <sup>2</sup> ) and spread sand for sealing of joints.	SM	184		
	<b>CARRIED TO COLLECTION</b>				

## Civil Works

PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.  
WP ITEM NO. D103 WE/BUN/2202

BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<u>COLLECTION PAGE</u>				
	Brought forward from page 1				
	Brought forward from page 2				
	Brought forward from page 3				
	Brought forward from page 4				
	CARRIED TO SUMMARY				
	CIV/6				

## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

WP ITEM NO. D103 WE/BUN/2202

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<b><u>BILL NO. 2: STORM WATER DRAINAGE</u></b>				
	<b><u>OPEN STORM WATER DRAINAGE</u></b>				
	<b><u>300mm DIAMETER INVERT BLOCK DRAIN</u></b>				
2--01	Excavate trench for 450x225mm external dim. pcc IBD n.e. 1.0m (av. depth 0.6m) from reduce level incl. trimming sides to slopes and disposal of excess material to detail (50) 5329B.	CM	24		
2--02	Ditto but not exceeding 1.5m, (av. depth 1.0m) ditto to detail (50) 5329 'B'.	CM	5		
2--03	Extra over for excavation in rock for classes	CM	2		
2--04	Provide, lay and compact 100mm approved murram bed and on sloping sides for the invert block drain width to detail (50) 5329 'B'.	SM	86		
2--05	Provide, lay and joint 450x225mm external dimensions pcc IBD to detail (50) 5329 'B'.	LM	101		
2--06	Extra over for 1x1 side slabs to detail.	LM	48		
2--07	Ditto but 2x2 side slabs ditto.	LM	35		
2--08	Ditto but 3x3 side slabs ditto.	LM	18		
	<b><u>MITER DRAINS</u></b>				
2--09	Excavate for Miter drains depth not exceeding 300mm and cart away the excavated material.	CM	2		
2--10	Provide, lay and compact 100mm murram as bedding for the miter drains.	SM	4		
2--11	Provide all materials and construct meter drains to detail (50)5353B	LM	22		
	<b>CARRIED TO COLLECTION</b> CIV/7				

## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

WP ITEM NO. D103 WE/BUN/2202

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<b><u>SHALLOW INVERT BLOCK DRAINS</u></b>				
2--12	Prepare and shape for the IBD to detail (50) 5353 including any excavation, laying of quarry dust on the road base ready to receive the IBD.	LM	71		
2--13	Provide, lay and joint 175x800mm pre-cast concrete shallow IBD on the prepared bed including all the finish work to match the paving blocks.	LM	71		
	<b><u>STEEL GRATING COVERED STORM DRAIN</u></b>				
2--14	Excavate for covered storm drain not exceeding 1.0m deep and cart away surplus excavated material all to detail (50) 5352B	CM	2		
2--15	Provide all materials and construct covered storm drain to detail (50) 5352B including 100mm thick concrete class 15 (1:3:6) as bed, 150mm thick masonry walling, rendering on the sides and base, formwork and steel cover frame and steel grating cover to detail.	LM	15		
	<b><u>PIPED STORM WATER DRAINAGE</u></b>				
	<b><u>205mm UPVC Pipe Construction</u></b>				
2--15	Excavate for 205mm UPVC pipe depth not exceeding 600mm	CM	1		
2--16	Return and ram using the excavated material	CM	1		
2--17	Cart away the surplus excavated material	CM	1		
2--18	Provide and lay 200mm diameter uPVC pipe class 41 to a slope as directed.	LM	7		
	<b>CARRIED TO COLLECTION</b>				
	CIV/8				

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
2--19	<b><u>DRAINAGE AROUND BUILDING</u></b>				
	<b><u>Storm Drain round the buildings</u></b>				
2--20	Excavate a trench for 150x750 mm shallow IBD depth not exceeding 300mm, back fill and cart away the surplus excavated material.	LM	98		
2--21	Ditto; for 125x390, ditto;.	LM	43		
2--22	Provide, place and compact 100mm thick murrum as base and to make up the necessary levels for 175x750mm IBD.	LM	98		
2--23	Ditto; for 125x390, ditto;.	LM	43		
2--24	Provide, lay and joint 150x750x600mm pcc Shallow IBD. all to detail (50) 5330.	LM	98		
2--25	Ditto; for 125x390, ditto;.	LM	43		
	<b><u>STORM WATER TESTING</u></b>				
2--26	Allow for testing the whole of the storm water 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.	ITEM	1		
	<b>CARRIED TO COLLECTION</b>				

## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

**WP ITEM NO. D103 WE/BUN/2202**

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<b><u>BILL NO. 2: STORM WATER DRAINAGE</u></b>  <b><u>COLLECTION PAGE</u></b>  Brought forward from page 6  Brought forward from page 7  Brought forward from page 8				
	<b>TOTAL CARRIED TO SUMMARY</b>				

~~CIV/10~~



## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

WP ITEM NO. D103 WE/BUN/2202

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<b><u>BILL NO. 3: FOUL WATER DRAINAGE</u></b>				
	<b><u>SEWERLINE</u></b>				
3--01	Excavation for foul water drain trenches , 1200mm wide.				
3--02	160mm internal diameter uPVC pipe, depth n.e 1.0m	CM	26		
3--03	Ditto; but depth n.e 1.5m	CM	29		
3--04	Extra over for excavation in rock in all classes	CM	1		
3--05	Backfill and ram after laying of pipe.	CM	54		
3--06	Cart away excess excavated material.	CM	1		
	<b><u>Pipe Work</u></b>				
3--07	Provide, lay 100mm murrum bed under pipe and similar surround 150mm thick after the pipe is laid to detail (50) 5310 "F".	LM	37		
3--08	Provide, lay and joint 160mm UPVC pipe (class 41 Golden brown)	LM	37		
3--09	Provide, lay 100mm concrete class 20, mix 1:2:4 as bedding under pipe and similar surround after the pipe is laid to detail (50) 5310 "B".	CM	2		
	<b><u>MANHOLES</u></b>				
	<b><u>Excavations</u></b>				
	<b><u>Manhole Type A&amp;B (2No.)</u></b>				
3--10	Excavate in pit for rectangular manhole type A&B depth not exceeding 1.5m as per detail (50)5300 and (50)5301.	CM	7		
	<b>CARRIED TO COLLECTION</b>				

CIV/11

## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

WP ITEM NO. D103 WE/BUN/2202

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<b><u>BILL NO. 3: FOUL WATER DRAINAGE</u></b>				
	<b><u>Manhole Type C (1No.)</u></b>				
3--11	Ditto but rectangular Manhole type C to detail (50)5302, depth exceeding 1m but not exceeding 1.5m.	CM	3		
3--12	Extra over excavations in rock of all classes	CM	1		
3--13	Return and ram after constructing manholes	CM	1		
3--14	Cart away the surplus excavated material.	CM	9		
	<b><u>MANHOLES CONSTRUCTION</u></b>				
	<b><u>Concrete class 15, mix 1:3:6</u></b>				
3--15	Provide all materials, mix and place 50mm thick as concrete blinding for manholes	SM	12		
	<b><u>Vibrated Concrete class 20, mix 1:2:4</u></b>				
3--16	Provide all materials, mix and place 150mm thick to base slab of manholes.	CM	2		
3--17	Ditto for 200mm thick	CM	1		
3--18	Ditto but 100mm thick to suspended cover slab of manholes and benching for 150mm UPVC pipes.	CM	2		
3--19	Ditto for 150mm thick.	CM	1		
	<b><u>Form Work</u></b>				
3--20	Provide and fix sawn timber form work to the soffit of the suspended cover slab.	SM	3		
3--21	Provide and fix sawn timber form work to edges of suspended cover slab and boxing for manhole covers not more than 150mm girth width.	LM	7		
	<b>CARRIED TO COLLECTION</b>				

CIV/12

## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

WP ITEM NO. D103 WE/BUN/2202

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<b><u>BILL NO. 3: FOUL WATER DRAINAGE</u></b>				
	<b><u>Walling</u></b>				
3--22	Provide, lay and joint 150mm thick approved natural dressed stone or concrete block as walling to manholes type A and B to details (50)5300 and (50)5301.	SM	15		
3--23	Ditto but 200mm thick for manholes type C details (50)5302.	SM	3		
	<b><u>Rendering</u></b>				
3--24	Provide 12mm thick water proof cement and sand mix 1:3, steel float finished to walls and suspended cover slab.	SM	15		
3--25	Provide 12mm thick water proof cement and sand mix 1:1, rendering trowelled smooth to surface of benchina.	SM	5		
	<b><u>C.I Manhole Cover and Frame to B.S 497 &amp; B.S 556.</u></b>				
3--26	Provide and fix 600 X 450mm medium duty double seal C.I manhole cover and frame and grease to detail (50)5313.	NO	4		
	<b><u>Step Iron.</u></b>				
3--27	Provide and fix deep galvanized malleable iron as step iron to B.S 1247 as per detail attached.	NO	4		
3--28	Allow for connection to existing manhole including making good the edges of the openings	ITEM	1		
3--29	Allow for testing the whole of the 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 to the satisfaction	ITEM	1		
	<b>CARRIED TO COLLECTION</b>				
	CIV/13				



PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.  
WP ITEM NO. D103 WE/BUN/2202

BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
4.01	<b>PROVISIONAL SUM</b>  Allow for provisional sum of Kenya Shillings One Millon Five Hundred thousands for car shades including the support poles.				1,500,000
	<b>TOTAL CARRIED TO SUMMARY</b>				

CIV/15

PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS.

WP ITEM NO. D103 WE/BUN/2202

BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Kshs.)
	<u>SUMMARY PAGE</u>				
1.00	ACCESS ROAD, PARKING AND FOOTPATHS				
2.00	STORM WATER DRAINAGE				
3.00	FOUL WATER DRAINAGE				
4.00	PROVISIONAL SUM: CAR SHADES				
	TOTAL CARRIED TO GRAND SUMMARY				

# LANDSCAPING WORKS

# SECTION 1

## SOFT LANDSCAPING



## LANDSCAPING WORKS

ITEM	TASK DESCRIPTION	QTY	UNIT	RATE	KSHS.
<b>1.00</b>	<b><u>Ground Preparation -</u></b>				
<b>1.10</b>	<b><u>Site Clearance and Excavations</u></b>				
A	Clear the site of all existing unwanted materials and scarify oversite commencing from existing ground levels, average 150 mm deep to allow for water seepage and retention remove all hardened ground, weeds and any deleterious materials; including carting away all arising wastes, raking and fine levelling of the ground.	4,170.0	SM		
<b>ASL/1a</b>	<b>Total carried to Collection</b>			<b>KSHS.</b>	
<b>2.00</b>	<b>EARTHWORKS AND SOIL PREPARATION</b>				
<b>2.10</b>	<b><u>Rough graded landscape areas</u></b>				
A	The contractor shall apply approved fertile loam soil heaped on site mixed with imported approved manure in the ratio 3:1 all to be free of tree roots and other undesirable debris larger than 50mm diameter. This shall be spread over all areas to be landscaped at an average depth 350mm.	312.8	CM		
<b>2.20</b>	<b><u>Planted Hardscape Areas</u></b>				
B	The contractor shall apply approved fertile loam soil heaped on site mixed with well rotten and approved compost in the ratio 1:3 all to be free of tree roots and other undesirable debris larger than 50mm diameter. This shall be applied to the raised insitu planters	9.5	CM		
<b>ASL/1b</b>	<b>Total carried to Collection</b>			<b>KSHS.</b>	
<b>ASL/1</b>	<b>TOTAL CARRIED TO GRAND SUMMARY</b>				

ITEM	TASK DESCRIPTION	QTY	UNIT	RATE	KSHS.
<b>2.00</b>	<b>PLANTING</b>				
<b>2.10</b>	<b><u>Installation of Lawn Grass</u></b>				
	Supply, plant, water, weed and tend well for the first 6 Months				
A	Paspalum Grass Sprigs	3,507	SM		
B	Zimbabwe Grass Sprigs	41	SM		
<b>2.20</b>	<b><u>Installation of Groundcovers):</u></b>				
A	<b><u>Pits excavation for Groundcovers</u></b>				
	Excavate circular pits, average 300mm diameter, commencing at existing ground level but not exceeding 0.5 metres depth average 350mm deep and spread arisings evenly around.	42	CM		
B	<b><u>Backfilling of Planting pits</u></b>				
	Backfill excavated planting pits with approved loam soil heaped on site mixed with approved manure at the ratio 3:1, 350mm deep.	42	CM		
C	<b><u>Planting of Groundcovers</u></b>				
	Supply, plant, weed, water and tend well under-mentioned Assorted species of groundcovers for 6 Months;				
a)	<i>Aeonium Kiwi (300mm+)</i>	22	NO		
b)	<i>Agapanthus africana (300mm+)</i>	72	NO		
c)	<i>Bulbine natalensis (250mm+)</i>	48	NO		
d)	<i>Chlorophytum comosum (300mm+)</i>	170	NO		
e)	<i>Crassula ovata (350mm+)</i>	77	NO		
f)	<i>Dietes grandiflora (350mm+)</i>	88	NO		
g)	<i>Heliconia psittacorum (450mm+)</i>	12	NO		
h)	<i>Heliconia Rostrata (900mm+)</i>	3	NO		
i)	<i>Kalanchoe longiflora (200mm+)</i>	61	NO		
j)	<i>Liriope muscari (150mm+)</i>	408	NO		
k)	<i>Neomarica caerulea (450mm+)</i>	12	NO		
l)	<i>Ophiopogon jaburan (100mm+)</i>	431			
m)	<i>Pelargonium hortorum (250mm+)</i>	39	NO		
n)	<i>Syngonium podophyllum (250mm+)</i>	59	NO		
o)	<i>Tulbaghia violacea (150mm+)</i>	100	NO		
p)	<i>Zephyranthes candida (150mm+)</i>	82			
<b>A SL/2</b>	<b>Total carried to Collection</b>	1,684		<b>KSHS.</b>	

ITEM	TASK DESCRIPTION	QTY	UNIT	RATE	KSHS.
2.40	<b>INSTALLATION OF SHRUBS, CLIMBERS / CREEPERS / TRAILING PLANTS</b>				
A	<b><u>Pits excavation</u></b> Excavate circular pits average 600mm diameter, commencing at existing ground level but not exceeding 0.75 metres depth, average 500mm deep.	331			
		47	CM		
B	<b><u>Backfilling of Planting pits</u></b> Backfill excavated planting pits with approved imported red/loam soil mixed with farmyard manure at the ratio 4:1, 350mm deep.	47	CM		
11.50					
C	<b><u>Planting</u></b> Supply, plant, weed, water and tend well under-mentioned Assorted species of creeping plants till fully established;				
	a) <i>Agave attenuata</i> (450mm+)	11	NO		
	b) <i>Anthurium andraeanum</i> (450mm+)	9	NO		
	c) <i>Beaucarnea recurvata</i> (750mm+)	2	NO		
	d) <i>Bougainvillea rosenka</i> (250mm+)	101	NO		
	e) <i>Dracaena steudneri</i> (750mm+)	3	NO		
	f) <i>Ixora coccinea</i> (450mm+)	77	NO		
	g) <i>Muraya paniculata</i> (450mm+)	98	NO		
	h) <i>Philodendron selloum</i> (900mm+)	3	NO		
	i) <i>Philodendron xanadu</i> (450mm+)	21	NO		
	j) <i>Quisqualis mussiendafolia</i> (450mm+)	4	NO		
	k) <i>Strelitzia nicolai</i> (750mm+)	2	NO		
A SL/3	<b>Total carried to Collection</b>	331		<b>KSHS.</b>	

ITEM	TASK DESCRIPTION	QTY	UNIT	RATE	KSHS.
<b>2.60</b>	<b><u>PLANTING OF TREES / LARGE SHRUBS:</u></b>				
<b>A</b>	<b><u>Pits excavation and Planting of Trees (108 No.)</u></b>  Excavate pits, 1000x1000mm, commencing at existing ground level, but not exceeding 1.5 metres depth; aver. 1000mm deep, and spread the arising soil evenly around the tree area	49	CM		
<b>B</b>	<b><u>Backfilling of Planting pits</u></b> Backfill with Approved good quality red soil mixed with farmyard manure at the ratio 3:1, 1000mm deep stabilized firmly at intervals of 300mm.  <b><u>Planting of Trees / Large Shrubs</u></b> Supply, plant, weed, water and tend well undermentioned trees/large shrubs till full establishment and support the same with strong bamboo stakes, adequate in thickness for each tree (generally between 30mm and 50mm diameter); and maintain for 6 Months;  <b><u>Ordinally Trees / Large Shrubs</u></b>	49	CM		
	a) Apple fruit tree (750mm+)	2	NO		
	b) Mulberry fruit tree (750mm+)	1	NO		
	c) Orange fruit tree (600mm+)	2	NO		
	d) Syzygium guineense (1,200mm+)	1	NO		
	e) Tamarindus indica (1,200mm+)	1	NO		
	f) Beaucarnea recurvata (750mm+)	0	NO		
	g) Calistemon citrinus (750mm+)	5	NO		
	h) Calodendrum capense (2,100mm+)	3	NO		
	i) Chrysaliidocarpus lutescens (2,400mm+)	5	NO		
	j) Delonix regia (1,500mm+)	2	NO		
	k) Filicium decipiens (2,100mm+)	1	NO		
	l) Roystonia regia (2,400mm+)	9	NO		
	m) Schinus terebinthifolia (1,200mm+)	7	NO		
	n) Spathodea campanulata (2,400mm+)	8	NO		
	o) Strelitzia nicolai (900mm+)	2	NO		
	p) Trichilia emetica (2,100mm+)	2	NO		
<b>A SL/4</b>	<b>Total carried to Collection</b>	<b>49</b>		<b>KSHS.</b>	

ITEM	TASK DESCRIPTION	QTY	UNIT	RATE	KSHS.
3.00	<p><b><u>Landscape Maintenance:</u></b></p> <p>Provide landscape maintenance service to the landscaped garden for six (6) months upon practical completion in order to monitor plants growth.</p> <p>a) Maintenance works for plants and grass shall include; watering, weeding, spraying against pests and diseases, and mowing grass to acceptable height as outlined in the Landscape Specification document.</p>		6 Months		
ASL/5	TOTAL PROVISIONAL SUMS CARRIED TO GRAND SUMMARY				

# SECTION 2

## HARD LANDSCAPING

ITEM	TASK DESCRIPTION	QTY	UNIT	RATE	KSHS.
<b>5.00</b>	<b><u>HARDLANDSCAPE</u></b>				
<b>5.10</b>	<b>River washed multi-coloured boulders</b> Provide Sum for buying and application laying of boulders of between (30-50)mm diametre to L. Arch approval	0.50	CM		
<b>5.20</b>	<b>Palisade Fence</b> Provide for supply and installation including the bases of 100X100mm 2mm thick post spaced at 2,500mm centre to centre, 2 horizontal 50x50mm 2mm thick at 250mm above the ground level for the lower member and 250mm below the post top and vertical members of 25x50mm 1.5mm thick to welded or bolted on the 50x50mm members to approval the PM.	76	LM		
<b>6.10</b>	<b><u>HARD LANDSCAPING &amp; IRRIGATION WORKS</u></b>				
A	Allow for Outdoor Garden benches made of cast Iron Frame, Cast iron legs and cast iron effect plastic back and Hardwoods Slats for seating on with Cast iron armrest. Size: 1,500mm (L) x 740mm (H) x 560mm (W).	6	No		
B	Provide Provisional Sum for supply and fixing of garden sculptural artwork	2	No.		
<b>AHL/1</b>	<b>TOTAL HARD LANDSCAPING CARRIED TO GRAND SUMMARY</b>				

# MAIN SUMMARY



LANDSCAPING MAIN SUMMARY				
BILL NO.	DESCRIPTION	FROM PAGE	TENDERERS AMOUNT Kshs	OFFICIAL USE ONLY Kshs
1	<b>GROUND PREPARATION</b>	ASL/1		
2	<b>PLANTING WORKS</b>			
	a) Grass & Ground Covers	A SL/2		
	b) Shrubs, Climbers / Creepers / Trailing plants	A SL/3		
	c) Trees / Large Shrubs	A SL/4		
3	<b>POST IMPLEMENTATION MENTAINANCE</b>	A SL/5		
2	<b>PROVISIONAL &amp; HARD LANDSCAPE WORKS</b>	AHL/1		
	<b>TOTAL CARRIED TO GRAND SUMMARY</b>			
Amount in words.....  .....  Tenderers signature and stamp.....  Address.....  Date.....  Witness Name.....  Signature.....				
GS/1				

# MECHANICAL WORKS

## **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.

### **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.
- a) The United Kingdom Institution of Electrical Engineers (IEE) Regulations for the Electrical Equipment of Buildings.
- b) The United Kingdom Chartered Institute of Building Services Engineers (CIBSE) Guides.
- c) British Standard and Codes of Practice as published by the British Standards Institution (BSI)
- e) The Local Council By-laws.
- f) The Electricity Supply Authority By-laws.
- g) Local 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 Sub-contractor

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**

### **2.08.1 General**

The Sub-contractor's attention is drawn to Part 'C' Clause 1.38 of the "Preliminaries and General Conditions".

### **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 weeks' 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 Sub-contractor.

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 pipe work 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 Sub-contractor shall give 48 hours' notice to the Engineer of his intention to carry out such tests.

Any pipe work 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.

#### **2.08.5 shop drawings**

Before manufacture or Fabrication is commenced the contractor shall submit Two copies of detailed drawings of all water tanks, fire hose reel pump, water booster pump and any other equipment 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 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.

### **2.09 Colour Coding**

Unless stated otherwise in the Particular Specification all pipe work shall be color 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 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.

# **PARTICULAR PLUMBING AND DRAINAGE SPECIFICATIONS**



**SECTION E****PARTICULAR PLUMBING AND DRAINAGE SPECIFICATIONS**

	<b>CLAUSE No.</b>	<b>DESCRIPTION</b>
3.1	General	
3.2	Materials and standards	
3.2.1	Pipework and Fittings	
3.2.2	Valves	
3.2.3	Waste Fitment Traps	
3.2.4	Pipe Supports	
3.2.5	Sanitary Appliances	
3.2.6	Pipe Sleeves	
3.3	Installation	
3.3.1	General	
3.3.2	Above Ground Installation	
3.4	Testing Inspection	
3.4.1	Site Tests – Pipework Systems	
3.4.2	Site Test – Performance	
3.5	Sterilisation of Hot and Cold Water System	

## **SECTION E**

### **PARTICULAR PLUMBING AND DRAINAGE SPECIFICATIONS**

#### **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.

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.

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.

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 tradename 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.

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	Steel Tube	Copper Tube
Nominal Bores	to B.S. 659	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

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.

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.

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.

### 3.4 **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:

- 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 sterilized 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.

PARTICULAR SPECIFICATIONS  
FOR  
PORTABLE FIRE EXTINGUISHERS AND BOOSTED  
HOSEREEL SYSTEM

## **SECTION G**

### **PARTICULAR SPECIFICATIONS FOR PORTABLE FIRE EXTINGUISHERS & BOOSTED HOSEREEL SYSTEM**

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## **PART G**

### **PARTICULAR SPECIFICATIONS FOR PORTABLE FIRE EXTINGUISHER**

#### **2.01 GENERAL**

The particular specification details the requirements for the supply and Installation and commissioning of the Portable Fire Extinguishers

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.

#### **2.02 SCOPE OF WORKS**

The Sub-contractor shall supply, deliver, erect, test and commission all the portable fire extinguishers which are called for in these specifications and as shown on the Contract Drawings.

#### **2.03 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. EN 3/BS 1449 and to the requirements of B.S.1004. 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:

Method of operation.

The words 'WATER TYPE' (GAS PRESSURE) in prominent letters.

- a) Name and address of the manufacturer or responsible vendor.  
The nominal charge of the liquid in imperial gallons and litres.

The liquid level to which the extinguisher is to be charged.

The year of manufacture.

A declaration to the effect that the extinguisher has been tested to a Pressure of 24.1 bar (350 p.s.i.).

- h) The number of British Standard 'B.S' 1004 or B.S. 1449.

## **2.04 PORTABLE CARBON DIOXIDE FIRE EXTINGUISHERS**

These shall be portable carbon dioxide fire extinguishers and shall comply with B.S. EN 3/BS 1449 and B.S. 1004.

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:-

The words "Carbon Dioxide Fire Extinguisher" and to include the appropriate nominal gas content.

Method of operation.

The words "Re-charge immediately after use".

Instructions for periodic checking.

The number of the British Standard B.S. 3326: 1960 or B.S. 5423.

The manufacturers name or identification markings

## **2.05 DRY CHEMICAL POWDER PORTABLE FIRE EXTINGUISHER**

The portable dry powder fire extinguishers shall comply with BS EN 3/BS 1449 and BS 1004. 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.

## **2.06 AIR FOAM FIRE EXTINGUISHER**

These shall be of 9 litres capacity complete with refills cartridges and wall fixing brackets and complying with B.S. EN 3/BS 1449 and BS 1004 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.

CO2 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.

## **2.07 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 to BS 1721.

## **2.08 BOOSTED HOSE REEL SYSTEM**

### **2.08.1 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.

### **2.08.2 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 2.4 lit/sec at a running pressure of 2.5 bar.

The pump casing shall be of cast iron construction with the impeller shaft of stainless steel with mechanical seal.

### **2.08.3 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:

‘On’ push button for setting the control panel to live.

Green indicator light for indicating control panel live.

Duty / Stand-by pump auto change over.

Duty pump run green indicator light.

Stand-by pump run green indicator light.

Duty pump fail red indicator light.

Stand-by pump fail red indicator light.

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.

#### **2.08.4 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 EN 671-1:1995 and EN 694 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 metres 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 at 1.5 metres centre above the finished floor level in locations shown in the contract drawings.

#### **2.08.5 Pipe Work**

The pipe work for the hose reel installation shall be galvanised wrought steel tubing heavy grade Class B to B.S 1387: 1967 with pipe threads to B.S 21.

#### **2.08.6 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.

#### **2.08.7 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.

#### **2.08.8 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

### **2.08.9 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.

### **2.08.10 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.

### **2.08.11 Finish Painting**

Upon completion of testing and commissioning the hose reel installation, the pipe work shall be primed and finish painted with 2No. coats of paints to the Engineer's requirements.

### **2.08.12 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.

### **2.08.13 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.

**PARTICULAR SPECIFICATIONS**  
**MECHANICAL VENTILATION AND AIR CONDITIONING**

## **Table of Contents**

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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

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

#### 5.1 General 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 aluminium, 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 holes 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 x 5mm 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.

## 6.0 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 BS 476 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.

## **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 tear-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 180°C to 1200°C 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 turning in the fan base plate when the nuts are tightened.

Any fan which is too large or too heavy for safe manhandling shall be 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 motor(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 being 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 self-closing 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 M<sup>3</sup>/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 plate's 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 non-ferrous 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 Louvers**

Discharge and Fresh air Intake louvers 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 non-flammable.

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 400°C 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 pre-galvanized 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 plant 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 re-circulated 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 humidity 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 25rev/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 Test Certificate:-

- 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 analyser 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.



### **23.0 PARTICULAR SPECIFICATIONS FOR AIR CONDITIONING SYSTEMS**

#### **23.1 SCOPE OF WORKS**

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 DEPT. OF PUBLIC WORKS requirements for contract works under “GENERAL MECHANICAL SPECIFICATION”.

#### **23.2 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:-

<b>PARAMETERS</b>	<b>(CONDITIONS) BUNGOMA TOWN</b>
Maximum mean outdoor dry bulb Temperature, $t_o$	29°C
Minimum Temperature	18°C
Relative Humidity	50% - 60%
Altitude	1385M ASL
Longitude	34.00°E 0.34° N
Latitude	
Max. solar radiation occurs during the month of February	

#### **23.3 SYSTEMS DESIGN DATA**

The air-conditioning systems are designed to maintain the following internal conditions with ambient conditions of 38°C DB and 55% RH

Internal Temperature	23 ± 1°C
Relative Humidity	50 ± 10%

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.

#### **23.4 SPLIT AIR CONDITIONING SYSTEM**

This shall be installed in the

The system shall be complete with;

**23.4.1 Indoor wall mounted 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.

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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 the Engineer will specify ceiling mounted as

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 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, 15mm 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  $50\pm 10\%$ .

#### **23.4.2 Outdoor Units.**

The outdoor units shall be installed and mounted on the wall using appropriate and approved mounting brackets. They 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 407 refrigerant.

The air conditioning units shall be as York 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.
- 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

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### **23.5 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.

### **23.6 VARIABLE REFRIGERANT FLOW (VRF) SYSTEM**

The VRF system shall be a dual aspect system (zone heating/cooling) 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.

#### **23.6.1 Inverter Controlled Outdoor Unit**

The three-way pipe outdoor units shall be installed and mounted in the plant room 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 48 indoor units of different capacity & types to be connected to a single refrigerant circuit. It shall have an outdoor unit capacity ratio of 50-130% 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 two outdoor units operating as duty and standby and connected to the same 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

#### **23.6.2 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 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 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, 15mm 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

### 23.6.3 Control Panel

Each system shall be provided for with a purpose made control panel fabricated from mild steel sheet of minimum SWG18 with a hinged door and then powder coated after manufacture. It shall be provided with an integral lock. It shall be complete with;

- ❖ Isolator
- ❖ Contactors
- ❖ Controlling thermostat with temp range from -10°C to +30°C
- ❖ 80mm dial thermometer with temp range from -10°C to +30°C
- ❖ Motor starters & current overload relays
- ❖ MCBs
- ❖ Phase failure relay with over and under voltage protection
- ❖ Timer switch for defrost control
- ❖ Push buttons for start and stop
- ❖ Audible and visual high temperature alarm with manual reset

The panel shall also have green light running indicators, red “door open” light and equipment circuit trip lights.

### 23.6.4 System Controls Unit

Controls Unit for each system shall incorporate complete controls to ensure continuous system services. Such controls shall include protection against any possible motor overload and over-heat, central control and monitoring for all the indoor units, individual temperature setting for each indoor unit, group control, set lock for each indoor unit and shall have self diagnosis function (display system errors).

The control unit shall control the duty and standby outdoor units to work alternately for twelve hours. This will be achieved by opening and closing of solenoid valves which will close or open the refrigerant pipes to achieve this operation.

The unit shall have a lock release to allow for control of the system by using wireless or wired remote control at the place where the indoor unit is installed. It shall also have a setup of a weekly and detailed schedule of the individual air conditioner.

The control unit shall have an open network controls designed for building management systems. It shall also have diagnostic software that will enable download of all operating parameters and instant analysis for commissioning and service

The control system shall be complete with;

- Weekly timer for a 7 day timer complete with day omit
- Infrared wireless remote controller
- Remote temperature sensor for all indoor units
- Network/protocol adaptor kit to enable integration with artificial intelligence network
- External master on/off control board
- Error output control board
- Power peak cut control board
- Touch screen controller for full control of up to 64 indoor unit including electric billing
- Intelligent server and software package to allow connection to touch screen controller
- Energy monitoring interface

### **23.7 Testing and Commissioning Standards**

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.

### **23.8 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.

### **23.9 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.

### **23.10 TESTING & COMMISSIONING**

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.

### **23.11 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.

### **23.12 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.

## **24.1 DUCTED AIR CONDITIONING SYSTEM**

### **Packaged Air Handling Units**

The air conditioning unit shall be ducted and self contained with nominal cooling load as described in the bills of quantities, with reversible heating. The unit shall be air cooled with vertical discharge. The system shall run on non-ozone depleting refrigerant such as R410A

The unit shall be encased in galvanized steel casing with polyester paint finish & shall be installed on a plinth provided by others, but the sub-contractor shall mark in advance the exact dimensioned position to the approval of the services engineer. The unit shall be finished with corrosive resistant paint and shall be suitable for marine conditions

The whole system shall be complete with the following as will be required:

- Hermetic compressor with crankcase heater and anti-recycle timer
- Centrifugal fans with variable pulley-belt drive
- Expansion valve
- Washable filters
- Filter dryers
- Reversing valve
- Unit circuit breaker
- High & Low pressure cut-out
- Direct expansion blower unit
- Discharge plenum
- Air inlet protective grille

The sub-contractor shall also be responsible for the ducting work of the rooms as described in particular specification for mechanical ventilation, drainage of condensed water from the drain pan and provision of anti-vibration mountings. The units shall be as manufactured by Trane or approved equivalent

## **24.2 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.

## **24.3 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.

## **24.4 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.

## **24.5 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.

## **24.6 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 be tested for capacity, efficiency, leakages and other human errors and shall meet standards and specifications.

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.

## **PARTICULAR SPECIFICATIONS FOR COLD ROOM AND KITCHEN VENTILATION**

## SECTION H

### **PART E: PARTICULAR CONDITION FOR COLD ROOM & FREEZER ROOM, KITCHEN VENTILATION AND FUME CUPBOARD INSTALLATIONS**

<b><u>CLAUSE</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>PAGE</u></b>
5.1 to 5.14	PARTICULAR SPECIFICATIONS FOR COLD ROOM & FREEZER ROOM	H-1 to H-4
6.1 to 6.5	PARTICULAR SPECIFICATIONS FOR KITCHEN VENTILATION	H-5
7.1 to 7.3	PARTICULAR SPECIFICATIONS FOR FUME CUPBOARD	H-6
7.4	PARTICULAR SPECIFICATIONS FOR MECHANICAL VENTILATION	H-6

## **5.0 PARTICULAR SPECIFICATION FOR KITCHEN COLD ROOM**

### **5.1 SCOPE OF WORK**

The work to be carried out comprises the supply, delivery, installation, testing and commissioning of kitchen cold room and freezer room equipment, cold room and freezer room doors, wall, ceiling, floor insulation, control panels with auxiliary equipment and wall finishes as specified in the material schedule.

The works shall be carried out at the kitchen at **Bungoma County Assembly**

### **5.2 DESIGN CONDITIONS**

#### **Cold Room**

Mean ambient temperature: 27°C DB  
Storage temperature : +2° +or- 1°C  
Storage humidity (minimum): 60% RH

### **5.3 DIMENSIONS**

The internal dimensions are as follows:

- a) Cold Room 2.5 x 2.0 x 2.5m high.

This shall have mechanically applied vapor barrier and insulation on a concrete floor slab and roof and block walls.

### **5.4 VAPOUR BARRIER & WATER PROOFING**

Before the application of the insulation to the structure a vapour barrier shall be applied to the entire internal surface. This shall consist of an even layer of Flinkote type 3 or equal and approved applied to manufactures instructions. The top surface of the floor insulation shall be water proofed using an asphalt saturated and coated vapour barrier paper of not more than 0.3 perms permeance or other equal and approved, lapped at least 80mm and tacked in place.

The vapor seal must be approved by the Engineer before insulation work is commenced.

### **5.5 INSULATION AND FINAL WALL FINISHES**

The insulating material shall be polystyrene (or equal and approved) with a conductivity of approximately 0.025 W/M°C and a density of approx. 25Kg/m<sup>3</sup> for the walls and ceiling and 40Kgs/m<sup>3</sup> for the floor. It shall be applied in two layers each 50 mm thick for the cold room and 3 layers of 50mm thick for the freezer room with each successive layer breaking joints with the previous layer.

Care must be taken to avoid breaking the vapor seal when fixing the insulation. Two more cotes of vapour seal shall then be applied after application of insulation

Hardwood battens shall be provided at regular intervals between insulation. Wall tiles shall be fixed as specified on the drawing shall be secured on the wall. The main contractor shall then finish off the floor with 75 mm reinforced concrete and plaster under supervision of the sub-contractor after which, the sub – contractor shall fix floor tiles.

### **5.6 INSULATED DOOR**

The door and frame shall be fabricated from heavy seasoned timber and insulated with two layers of 50mm thick polystyrene sand-witched between

10mm thick seasoned wood strips. It shall have a clear height of 1.85m being hinged on one side so that it opens outward. The door shall be completed with sufficient gaskets to ensure an air tight seal. The door shall be fitted with automatic plunger type switches for operating the fan motors and interior lights such that when it is open, the light shall go on and the fan shall stop, and when it is closed, the lights shall go off and the fan shall start.

**The door shall be such that it can be padlocked from outside but with an inside release such that it can be opened from inside even when padlocked. All metal parts on the door shall be chrome plated.**

#### **5.7 EVAPORATOR**

The evaporator shall consist of a cooling coil, air-circulating fan, fan guard, defrost electric heater element and a thermostatic expansion valve. The valve shall be pressure equalized and manually adjustable. A timer unit shall be mounted in the control panel to control both the de-frosting intervals and defrosting period – both of which shall be variable. The evaporators shall be of cooling load capacity as follow:

- a) Cold Room 3.0 kW

It shall be ceiling type unit with a drip tray fitted with a drain pipe to the outside of the building. The unit shall be as GUNTER or equal and approved.

#### **5.8 CONDENSING UNIT**

The condensing unit shall be of capacity to match with the evaporator-cooling load while using refrigerant R134a under specified conditions. The unit shall be air-cooled semi hermetic with automatic capacity control for evaporator demand.

It shall be provided with suitable anti-vibration mountings and an initial oil change in the compressor. The unit shall be complete with compressor, electric motor, air-cooled condenser of non-ferrous construction, liquid receiver, all mounted on a common base. The unit shall be as BITZER or equal and approved and shall be mounted in the adjoining compressor room.

#### **5.9 REFRIGERATION PIPEWORK.**

Pipework shall be approved copper tubing and fitting and shall be properly fixed in conformity with 'TRANE REFRIGERATION MANUAL'. The suction line shall be insulated with at least 25mm thickness of Armaflex or other approved material, which shall not have insulating properties inferior to those of cork. The condensing unit shall be approximately 10 meters from evaporator unit.

### **5.10    REFRIGERATION COMPONENTS**

The system shall be provided with the following components all similar to or equal to those manufactured by DANFOSS

- Filter drier
- Sight glass with moisture indicator
- Solenoid valve
- HP/LP cut out
- Suction & delivery gauges
- Room thermostat
- 100mm diameter surface mounted dial thermometer in degree Celsius

### **5.11    CONTROL PANEL**

**The control panel shall be fabricated from mild steel sheet of minimum SWG18 with a hinged door and then powder coated after manufacture. It shall be provided with an integral lock. It shall be complete with;**

1. Isolator fitted on the door
2. Controlling thermostat with temp rang from -10<sup>0</sup>C to 30<sup>0</sup>C for cold room
3. 80mm dial thermometer with temp rang from -10<sup>0</sup>C to 30<sup>0</sup>C for cold room
4. Contactors for defrosting Coils
5. Motor starters & current overload relays
6. MCB's
7. Phase failure relay with over and under voltage protection
8. Timer switch for defrost control
9. Push buttons for start and stop
10. Audible and visual high temperature alarm with manual reset

**The panel shall also have green light running indicators, red “door open” light and equipment circuit trip lights.**

### **5.12    ELECTRICAL INSTALLATION**

The electrical sub-contractor shall be responsible for providing power to the control panel and for providing a local Isolator and connecting power to it. The cold room and freezer room sub-contractor shall be responsible for the final connections to the above equipment, all control wiring and for all wiring within the control panel.

### **5.13    MEAT RAILS AND SHELVES**

The sub-contractor shall supply and fix 75 mm class 'C' GMS tubing meat rails. All steel shall be hot dip galvanized. The sub-contractor shall also supply fully fabricated 3 tier stainless steel metal shelves and set them in the cold room as shown on the drawing. Shelf size to be 2000 x 500 x 350mm high.

#### **5.14 TESTING AND COMMISSIONING**

Before insulation of the suction pipe the refrigeration system shall be tested for pressure and leaks using the combined pressure and leaks testing method. The refrigeration system shall be charged with R134a refrigerant and entire system raised to test pressure using nitrogen or other inert gas. The test pressure shall be twice the working pressure for the system.

Leaks shall be checked using soap bubble followed by using of electronic leak detector. After system is proved leak proof, it shall be maintained under test pressure for 24 hours. If at the end of this time the gauge pressure has fallen, the complete system shall be re-tested. After the successful completion of the test, the system shall be evacuated using vacuum for 24 hours. If there is loss of vacuum the system shall be dehydrated again and left under vacuum for a further 24 hrs until the system is effectively dehydrated.

After this the system shall be charged with the correct type and quantity of the refrigerant. The system shall then be set to work and adjusted to ensure that it operates correctly and design conditions are archived. It shall be left to operate for 72 Hrs and room temperatures recorded for this period using an automatic room temperature sensor/recorder.

The compressor shall be provided with identification plates stating the type of refrigerant used and the quantity required for the system

## **6.0 PARTICULAR SPECIFICATION FOR KITCHEN VENTILATION**

### **6.1 EXTRACT FAN**

1 No. extract fan shall be supplied and installed for the hood. The fans shall be of axial flow fans design and should be complete with a suitable starter and speed regulator. Fans specification shall be as specified in the price schedules.

### **6.2 GREASE FILTERS**

Grease filters of inclined double mounted vee bank design are to be fitted in the hood. The number of filter are to be as detailed in another part of this document and should be easily removable from their frames. They should be of stainless or aluminium mesh design and easily washable type.

### **6.3 EXTRACT DUCTWORK**

The extract ductwork shall be contracted from 18 SWG galvanized rolled steel sheet. The joint are to be stiffened by 38 x 38 x 3.2mm angle. Part of the duct (as specified in the drawing) is to be designed to accommodate the aerofoil fan. Seams of the duct shall be riveted with B.S.W.G rivets at 2" centers.

### **6.4 EXTRACT HOOD**

1 NO. extract hoods of sizes 5000 x 2400 mm as shown on the contract drawings are to be fitted and supported from roof using steel purlins such that the top of the hood is 2m minimum from the fixed floor.

The sides of the extract hood shall be contracted from 16 SWG aluminium sheets folded at the bottom on the inside to form a 75mm wide, 25mm deep drainage channel all around.

The top of the hood shall be constructed from 16 SWG rolled sheet galvanized after manufacture. The hood shall be supported from the roof slab by means of suitably sized chains or mild steel rods at each of the four corners.

### **6.5 EXTRACT FAN**

**Chemical resistant Fibreglass Reinforced fan directly coupled via a stainless steel shaft unto bifurcated electric motor, fan capacity to be 1m<sup>3</sup>/s at 1440 RPM at 200Pa static pressure. Three phase, 415V, 50Hz.**



## **7.0 MECHANICAL VENTILATION**

### **Extract Fans**

These shall be as WOODS 2101GP, XPELAIR WX or equal and approved. The impeller, shutters, outer grilles shall be moulded plastic with outer grilles being slim, neat and inconspicuous.

The system shall be complete with solenoid operated back draught shutters opening and closing as the fan switches on and off. The units shall be supplied complete with controllers and shall be suitable for single phase, 240v, 50Hz electrical supply.

### **Ceiling Sweep Fans**

These shall be as XPELAIR WAN 48 or equal and approved with air delivery of 10890m<sup>3</sup>/hr and 1200mm sweep diameter. The fan blades robust powder coated steel blades with a minimum of 250mm long suspension rod. The blades must never be less than 2400mm from the floor level. The fan motor shall be complete with two caged ball bearings and shall be complete with speed controllers and shall be suitable for single phase, 240v, 50Hz electrical supply.

**PARTICULAR SPECIFICATIONS  
FOR  
KITCHEN EQUIPMENT**

## **PART I**

### **PARTICULAR SPECIFICATIONS FOR KITCHEN EQUIPMENT**

The specifications cover the supply, delivery and installation of various kitchen equipment as shown on the contract drawing.

#### **1 SOLID TOP ELECTRIC COOKING RANGE**

Four-burner plate electrically heated solid top cooking range complete with

- Exterior satin finish 18/10 stainless steel, 1.6mm thick.
- 3Kw radiant plates of size 300 x 300 mm with built in thermostats
- 5 positions control switches for the plates.
- "Power on" indicator light.

The unit shall have an electrically heated thermally insulated oven as follows: -

- Oven heating elements positioned at the top and under the oven base plate with total loading of 6kw.
- Thermostatically controlled oven temperature to range from 500 C- 3500C with five settings.
- Indicator lamp to show mains on.
- Double skinned counter balanced door insulated with glass wool.
- 1 No. Chromium plated oven shelf. There shall be three levels for shelf setting.
- Adjustable legs.

The range and oven shall have a total rating of 18 KW at 415V, 50 HZ with external dimensions of 900 x 900 x 800mm high.

Ditto but 2No heating element and table top 6kw at 240V.

#### **2 HEAVY DUTY GAS COOKING RANGE.**

Four-burner L.P. gas cooking range with oven as follows: -

- Exterior satin finish 18/10 stainless steel, 1.6mm thick.
- Open burners in cast iron with double crown cover in printed brass.
- Cast iron pan supports.
- Stainless steel spillage tray, 0.8mm thick.
- Automatic burners lighting device with pilot flame.
- Flame failure device.

The oven and door shall be double walled with insulation, complete with: -

- Pipe shaped burner with automatic burner lighting device.
- Flames failure protection device.
- 1 No. Chromium plated grid shelf
- Three position shelf supports.
- Secondary drip tray below burners (in stainless steel)
- Thermostatically controlled oven temp to range from 500 C- 3500C.
- Adjustable legs.

The unit shall have a total rating of 67,000 BTU/H for the top and an oven rating of 25,000 BTU/H. it shall have external dimensions of 900 x 900 x 850mm high and shall be as MBM OF Italy.

### **3 GAS HEATED BOILING PAN**

A cylindrical Gas-boiling pan of capacity 136Litres (30 Gallons), directly heated, constructed as follows:

- Satin finished 18/10 stainless steel external plating and well, both 1.6mm thick.
- Spring balanced dome shaped lid made of satin finished 18/10 stainless steel and with chrome finished handle with a cast aluminium knob.
- 32mm outlet with tap for discharge.
- Stainless steel removable vegetable basket/ lift out inner pans.
- Heated by gas fired flame burners of total loading 40, 000Btu (12kW), fastened to the underside of the pan with manual reset safety thermostat.
- Limit thermostat with manual resetting
- It shall also have 'power on' indicator light and 5-points control switch for the elements.
- Glass wool thermal insulation of combustion chamber.
- Four 150mm legs to allow for good underneath kitchen hygiene
- Water supply connections. All as MBM (Italy) or approved equivalent.

### **4 ELECTRIC HEATED BOILING PAN**

A cylindrical Electric-boiling pan of capacity 136Litres (30 Gallons), directly heated, constructed as follows:

- Satin finished 18/10 stainless steel external plating and well both 1.6mm thick.
- Spring balanced dome shaped lid made of satin finished 18/10 stainless steel and with chrome finished handle with a cast aluminium knob.
- 32mm outlet with tap for discharge.
- Stainless steel removable vegetable basket/ lift out inner pans.
- Heated by 6 stainless steel armored electric elements of total loading 12kW, fastened to the underside of the pan with manual reset safety thermostat.
- Limit thermostat with manual resetting
- It shall also have 'power on' indicator light and 5-points control switch for the elements.
- Glass wool thermal insulation of combustion chamber.
- Four 150mm legs to allow for good underneath kitchen hygiene
- Water supply connections. All as MBM (Italy) as "E100" or approved equivalent.

### **5 STOCKPOT STOVE**

L.P. high pressure gas heated stockpot stand complete with: -

- Exterior satin finish 18/10 stainless steel, 1.6mm thick.
- Two concentric ring cast iron burners each independently controlled complete with a flame failure device.
  - Stainless steel spillage tray, 0.8mm thick.
  - Enameller cast iron pan supports.
  - Adjustable legs.

The unit shall have a rating of at least 47,000 BTU/H with external dimensions of 600 x 600 x 520mm high.

## **6 DOUBLE WELL DEEP FAT FRYER**

L.P. gas heated double well (13 litres) deep fat fryer with capable of producing 50 kg per hr of potato chips from raw with each well constructed as follows: -

- Exterior satin finish 18/10 stainless steel, 1.6mm thick.
- The fryer wells shall be of 18/10 stainless steel with oil draw off tap.
- Stainless steel 18/10 lid with **athermic handle**.
- Stainless steel oil collection bin.
- Frying steel baskets with athermic handles.
- Stainless steel frying basket supports.
- Cast iron burners with Automatic ignition device, flame failure protection device and oil temperature regulation thermostat ranging from 900C to 2000C.
- Security thermostat

The unit shall have external dimensions of 700 x 700 x 890mm high and shall be free standing with adjustable legs. It shall be as manufactured by MBM of Italy.

## **7 POTATO PEELER**

Potato peeler of capacity 12kg/charge shall be supplied and produce not less than 200 kg of peeled potatoes per hr. The peeler shall be complete with a stand, isolating switch, replaceable disc and hopper lid, suitable water inlet and drainage hose connections, **waste dilution unit**. The peeler shall have fine cutting edges to ensure perfect peeling.

Electrically run, it shall have a motor rating of ¼ hp and suitable for use with 240V, 50Hz, I phase power supply. The unit shall be as CRYPTO PEERLESS or equal and approved.

## **8 POTATO CHIPPER**

Electrically operated, bench mounted potato chipper suitable for straight and ripple chips. Output to be max.18Kg/Min. The Chipper shall be heavy duty with removable knife frame stainless steel knives, heavy-duty chromium plated spring and shall have double detachable block to produce 9mm and 12mm chips and be finished in catalyzed white enamel.

The unit to be suitable for 240v, 50Hz, and 1 phase power supply and shall be as CRYPTO PEERLESS or equal and approved.

## **9 DOUBLE BOWL DOUBLE DRAINER SINK ON STAND**

SBDD Sink size 2200x650x900mm high with 1No. bowl size 600x450x350mm deep each centrally placed, and a stainless steel grid under shelf shall be incorporated. The top shall be of 16 S.W.G. Stainless steel. Unit frame to be 32mm R.H.S. stainless steel and each leg to be equipped with an adjustable sanitary foot. The feet/stand shall have a spacing of maximum 1000mm.

Each bowl shall be fitted with a perforated removable corner strainer in full own height, a 40 mm waster outlet with stand overflow outlet fitting and a heavy duty hot/cold water sink mixer, pillar type with over arm swivel outlet.

**10     SINGLE BOWL SINGLE DRAINER SINK ON STAND**

Sink of size 1500x600x900 constructed as above.

**11     STAINLESS STEEL WORKTOP**

Stainless steel worktop of size 2000x650x860 high with a stainless steel grid shelf shall be incorporated. The top shall be of 16 S.W.G. Stainless steel sheet backed with 4 mm thick mild steel for reinforcement. The unit frame to be 32mm R.H.S. Stainless steel and each leg to be equipped with an adjustable sanitary foot, and the corners strengthened to give stability. The table top to have turned down edges in front and ends. The top shall be strengthened with the frame such that it takes heavy loads without sagging.

**12     STAINLESS STEEL WORKTOP**

Stainless steel worktop of size 1000x650x860 high constructed as above.

**13     MEAT CHOPPING BLOCK**

Chopping block size 610x610x300mm high on a 610mm high stainless steel stand. The block shall be made from reversible red beech wood or equal and approved.

It shall be securely mounted on the stand such that the top surface of the block is roughly 800mm above the finished floor.

**14     PLATE STACKING PACK**

3-tier Stainless steel plate stacking rack of size 1000x650x1675mm high. Each shelf shall be constructed in stainless steel sheet with a 50mm up stand all round. The whole unit shall be substantially constructed such that each shelf can accommodate at least 150 No.9 inch diameter earthenware plates without deflection. The unit frame shall be stainless steel, 32mm square with adjustable sanitary feet.

**15     BAINE MARIE/HOT CUPBOARD**

Electric heated upper half Bain Marie and lower half hot cupboard unit of size 1800x700x900mm high. The Bain Marie shall be of the water well type complete with food serving pots and lids.

The Bain Marie top shall be divided into suitable number of food container pots, minimum 200mm deep and to be drawn from 16 S.W.G. Stainless steel sheet. Water well to be integral with the top and filled with 20mm swivel drain.

The hot cupboard shall be equipped with stainless steel sliding doors and fitted with two stainless steel shelves. The doors shall be double cased and insulated as the panels, and the door handles to be strong and of heat resisting plastic.

The whole unit to be constructed in stainless steel on a strong angular framework with adjustable feet. Burners shall be constructed as those of the cooking range, complete with safety devices.

**16     STAINLESS STEEL HOT CUPBOARD GAS HEATED.**

Gas heated hot cupboard of size 2200x700x800 shall be constructed with polished stainless steel sheet of 14 SWG for the top and 16 S.W.G stainless steel sheet for the parts. The unit shall have two stainless steel grid shelves, removable and two insulated doors running on rollers. The external body of the unit shall also be insulated.

The whole unit shall be constructed on a strong stainless steel angular framework on adjustable feet. Gas supply and burner shall be as item above.

**17     COFFEE/TEA URN**

Electrically heated coffee/tea urn of capacity 30 litres with an infuser. It shall be of stainless steel casing with lift off cover.

The urn shall be complete with non-drip draw off tap and drain plug, and water supply arm with control valve and drain plug.

It shall have an immersion electric element of loading 3Kw single phase with selector switch and automatic safety cutout.

**18     MILK URN**

Electrically heated stainless steel milk urn of capacity 30 liters with twin jacket for indirect heating complete with stainless steel lift off cover.

It shall be complete with non-drip draw off tap, drain plugs and water supply arm.

It shall have an element of 3KW with selector switch and automatic safety cutout.

**19     COFFEE MAKING MACHINE**

Electrically heated automatically regulated coffee making machine capable of brewing a maximum of 2 liters in every 5minutes. The machine to be equipped with hot plates for the glass bowls to keep brewed coffee hot (2 glass bowls and hot plates). There shall also be a double pad keep hot unit.

The machine shall be hygienic and be efficiently insulated. Outer casing, inner tank and brewing head with filter plates shall be made of ground stainless steel 18/8.

4No glass bowls made of robust, heat-resistant borosilicate glass with non-heat conducting plastic handles secured to the neck by a ground stainless steel clamp shall also be provided.

**20     CHEST TYPE FREEZER CABINET**

A chest type freezer cabinet of capacity 600 liters net. The freezer shall have a hinged lid with a magnetic seal. The freezer cabinet shall be sealed with wear plastic material with stainless steel outer casing. There shall be a drainage port for use when cleaning or defrosting.

It shall be an automatic defrosting heat pump system. There shall be a thermostat for setting of storage temperature up to – 180C. The unit shall have a green “power on” indicator light and a red to go off when pre-set temperatures are achieved. The unit shall run on R 134a refrigerant and shall be suitable for 240V, 50Hz power supply.

**21     UPRIGHT REFRIGERATOR**

An upright refrigerator of capacity 600 liters net. The refrigerator shall be anti-corrosion treated with white enameled outer casing and with foamed in polyurethane insulation. The inside shall have aluminium inner cabinet with 5No. adjustable stainless steel wire GN1/1 shelves.

The refrigeration system shall be tropicalised hermetically sealed with thermostat control. It shall be suitable for 240v, single phase, 50Hz power supply, with R 134a refrigerant. It shall be capable of achieving a temp range of 4oc-6oc.

**22     Ditto but domestic refrigerator with double door and of capacity 36 cubic feet**

**23     GENERAL PURPOSE TROLLEY**

2 shelved general purpose trolleys shall be supplied for serving, carrying dishes and internal transportation of other items within the service area. They shall be fabricated in matt or mirror finish stainless steel with four 100mm rubber coated swivel castors and of size 900x560x900.

Each shelf to be constructed in sound proof polished stainless steel sheet with a 50mm up stand all round. The frame work shall be in chrome plated/galvanized stainless steel square tubes.

**24     HEAVY DUTY TROLLEY**

4No. heavy duty trolleys shall be supplied. Each shall be designed for carrying bulk foodstuffs and internal transportation of other items within the service area.

Each shall be constructed from stainless steel and 4No.100 diameter castor Overall size to be 900mmx560mmx750mm high with a single tier.

**25     AUTOMATIC SCALE**

Rotary scale with automatic head diameter 580mm rotating head. Gear arrangement consisting of pinion and rack of elevated module to prevent unmeshing of teeth even under the most unfavourable operating conditions. Locking carried out in single manoeuvre and acts on the entire automatic head piece. The same manoeuvre elevates the moving part housed in the base, thus ensuring maximum safety during transportation.

Spindles and bearings made of steel with a high percentage of chrome.

Painted with very resistant baked varnish in the standard color “Hammered steel”.

Platform furnished with rubber wheels two of which are caster wheels to facilitate the movement of the instrument.

Capacity 150kg with 50g divisions.

As “Avery” or equal and approved.

**26     DIAL INDICATOR BENCH SCALE**

Bench type dial indicator scale (0-25Kg) with accuracy. The unit shall be executed in enameled steel and the weighing platform to be finished in polished stainless steel suitable for weighting wet foodstuffs during preparation.



**27     WATER DISPENSER**

5 Litres cold and 5litre hot water dispenser standing at 900mm above ground

**28     MEAT SLICING MACHINE**

Gravity feed meat-slicing machine of knife size 220mm and cut capacity of 170mm for round cut, 150mm for square cut and 125x170mm for rectangular cut. The machine to have a thickness control of between 0 to 15mm shall be supplied with stainless carriage guard, 'last slice' device that minimizes wastage and a built-in self-setting knife sharpening unit.

The motor power to be 0.3 hp (224w) and suitable for 240V, single phase, 50H2 power supply. The unit construction to be of a highly polished anodized Aluminium finish and a hardened chrome steel knife. The overall machine dimension to be approx. 340 x 480 x 390mm (h x w x d). The unit to be as 'crypto peerless' or equal and approved.

**29     MEAT MINCER**

1No. Bench mounted meat mincer shall be supplied and installed. It shall be high powered machine of sturdy construction with capacity of 200kg/hr including 2 sets of large, medium and fine cutting four-bladed knives and three plates together with 3No. feed sticks.

It shall be electrically driven by a totally enclosed motor suitable for single phase 240V, 50HZ, power supply.

It shall be as "CRYPTO" Peerless model or other approved equivalent.

## **PART J**

### **PARTICULAR SPECIFICATION FOR L.P. GAS INSTALLATIONS**

#### **A     GENERAL**

The specification and sub-contract drawings detail the requirements of the Sub-contract works.

The specification and sub-contract drawings shall be read together and are meant to explain each other.

The sub-contract drawings do not purport to show minor details of equipment, fixtures, pipe work or fixings, but are intended to indicate the intent and extent of the installations as designed, together with the sufficient information for the tenderer to include in his pricing any other items he deems necessary for the satisfactory completion and correct functioning of the sub-contract works.

If in the opinion of the tenderer, there is any ambiguity or any difference in the requirements of the specifications and the sub-contract drawings, he shall clarify these with the Engineer before tendering. No claims for extra payment shall be entertained because of non-compliance of this requirement.

#### **B     REGULATIONS AND STANDARDS**

Material, equipment, installations and workmanship shall comply with the requirements of the latest Editions of the following:

- (a)     Kenya Government By-laws.
- (b)     Relevant standards published by the Kenya Bureau of Standards.
- (c)     Relevant British Standards, Specifications & Codes of Practice; referred to as B.S. & B.S.C.P respectively in this document.
- (d)     Requirements of the clients proposed local L.P Gas Supplier for the sub-contract.
- (e)     This specification and the sub-contract drawings.

#### **C     L.P.GAS BULK STORAGE TANKS**

The L.P Gas bulk storage cylinder shall be of horizontal cylindrical mild steel construction manufactured in compliance with the requirements of BS 5500 or ASME (American Society of mechanical Engineers) Codes. The storage gas cylinder shall have a nominal gas capacity of 2 ton

The storage tank shall have the following minimum pressure requirements:-

Test Pressure:                               26 bars

Working pressure:                           17.5 bars

The tank shall be supplied complete with:

- (a) Filling valve, magnetic float gauge, multi-valve and first stage regulator **all housed under a lockable hinged cover**, forming integral part of the storage gas cylinder
- (b) Safety relief valve.
- (c) Drain plug.
- (d) Main isolating Valve.
- (e) Lifting lug and mounting feet.

The tank shall be pickled and primed on the outside and painted with two coats of weather resistant paint in yellow ochre.

Apart from the above minimum specification for the bulk L.P Gas storage tank, the tenderer shall ensure that he has allowed for in his pricing of the tank any additional requirements needed by L.P. Gas supplier.

## **D     PIPEWORK**

The L.P. Gas pipe work installation shall comply with the requirements of B.S.C.P. 331: Part 3.

Pipes for L.P. Gas installations shall be galvanized mild steel tubing to B.S. 1387: Class C with Pipe threads to B.S. 21.

Pipe fittings shall be either welded or seamless wrought steel pipe fittings to B.S. 1740: Class C.

All joint in the pipework shall be made using non hardening jointing compound suitable for L.P gas. A union shall be provided on all straight runs of pipe work at a maximum interval of six meters.

Pipe work laid under ground shall be wrapped with pipe wrapping material having vapour permeability of less than  $0.11 \text{ g/m}^2/\text{d}$  at  $25^{\circ}\text{C}$  and 75% relative humidity. The pipe wrapping material shall have high resistance to mineral acids, alkalis and salts and shall be on non-cracking and non-hardening characteristics.

Under ground L.P. Gas distribution pipe work shall be laid to a slope of 1 in 200. Gas service pipes, from the gas distribution pipes to the parts of building they service, shall be laid to rise from the distribution pipe at a slope of 1 in 200. All pipes under the ground shall rest throughout their length on a 150mm deep, flue sand topping, followed by an approved backfilling.

Where the pipe passes through the building fabric, it shall be located within a galvanized steel pipe sleeve, one diameter larger than the pipe passing through it. The void between the pipe and the sleeve shall be packed with bitumen or approved equal material.

Horizontal and vertical pipes within the building shall be fixed off the walls with brass built in brackets or spacer type steel pipe clips. The pipe supports spacing intervals for both the horizontal and vertical pipe runs shall be as follows:

Pipe nominal diameter:	15mm	Interval:	1.82 metres
:	20 & 25mm	:	2.44 metres
:	32 & 40mm	:	2.75 metres
:	50mm	:	3.00 metres
:	65mm	:	3.65 metres

The pipe work underneath the tables worktops to which shall be connected the gas outlets shall be made from gas quality copper.

#### **E      CHAINLINK FENCE**

It shall be the responsibility of others to construct a concrete plinth of 150 mm thickness to support the tank and erect a 1.2m high chain link fence with lockable gates around the cylinders to protect them.

#### **F      GAS ISOLATION VALVE**

The L.P. Gas isolation valves shall be quarter turn; lever operated ball valve of stainless steel construction.

The valve shall have “open” and “closed” positions clearly marked on the valve body.

The valves shall be as ‘Saunders’ or equal and approved.

#### **G      TESTING AND COMISSIONING**

The whole pipe work system shall be pressure tested using compressed air. The test pressure shall be 7.0 bars, which shall be maintained for a period of six hours. If the pressure drops during this period, leaks in the pipe work shall be made good and the pressure test repeated for a further six hours.

The pressure test on pipe work shall be made before any part of the pipe work is concealed in any manner.

The bulk storage gas cylinder shall be pressure tested using water and compressed air. Test pressure of 25 bars shall be maintained for a period of six hours.

After completion of pressure tests and installation, the L.P. Gas installations shall be balanced to give the required gas flows at each gas user’s point.

## BILLS OF QUANTITIES

## SECTION VI - 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. 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 a 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.
- 4.4. 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.
- 4.5. 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.
- 4.6. 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.
- 4.7. 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.

#### **4. 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 be 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".

#### **PREAMBLES**

1. The method of measurement of completed work for payment shall be in accordance with *The Standard Method of Measurements for Building Works and Associated Civil Works for Eastern Africa (2<sup>nd</sup> edition) of 2008 prepared by The Architectural Association of Kenya (Quantity Surveyors Chapter)*

2. The Site is situated in **BUNGOMA COUNTY**. 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 inclement weather for this area shall be entertained.
9. The Contractor shall, upon receiving instructions to proceed with the Works, draw up a program and Progress Chart setting out the order in which the Works are to be carried out, with the appropriate dates thereof. 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 program 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 progress on 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 are 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 Sub- Contractors 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, water pipes 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 there with.
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. They are 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 then 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 safe guard and shall beheld 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 Contractors 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 sat areas 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 there with.
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 Contractors 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 Contractors 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 there from 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 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.

**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, who can be perceived as an inducement to win this tender.

Signed: ..... *for and on behalf of the Tenderer*

Date: .....

**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

**SCHEDULE OF UNIT RATES**

ITEM	DESCRIPTION	QTY/UNIT	RATE(KSHS)
1	25mm diameter CPVC pipe	Lm	
2	25mm diameter CPVC pipe	Lm	
3	32mm diameter "Flushmaster" toilet flushvalve	No.	
4	Solar water heating system comprising 100Litre cylinder, 1m2 flat plate solar panels	No	
5	1200mm long stainless steel slab urinal c/w 9Litre automatic flushing cistern, exposed flushpipe & spreaders	No	
6	Towel ring	No	
7	Close coupled toilet "Duravit" model Starck 3	No	
8	Hi wall indoor unit cooling capacity 7.1Kw complete with matching condensing unit	No	
9	5,000Litres cylindrical plastic water storage tank	No	
10	Fire Blanket size: 1800x1800mm	No	

### **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/Engineer.
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 non responsive.

**NB.** The tenderer must complete in full the technical schedule. Apart from the information required in the technical schedule, the tenderer **MUST SUBMIT LEGIBLE** comprehensive manufacturer's technical brochures and performance details for all items listed in this schedule and **CLEARLY HIGHLIGHT THE SPECIFIC REQUIRED ITEM ONLY.**

#### **TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED**

(To be completed by the Tenderer)

ITEM	DESCRIPTION	TYPE/MAKE	COUNTRY OF ORIGIN
1.	Water Closets		
2.	Toilet flush valve		
3.	Urinal bowl		
4.	Soap dispenser		
5.	Hand dryer		
6.	Shower fitting		
7.	Water booster pump		
8.	Hosereel system pressurizing pump		
9.	Hosereel		
10.	CO2 portable fire extinguisher		
11	PP-R PN 20 pipes		
12	Soil & waste pipes		
13	WC flushvalve		
14	300Litre solar water heating system		
15	VRF air conditioning system		

16	Coldroom indoor unit		
17	Server room Fire suppression system		
18	Toilet ventilation system extract fan		
19	Kitchen extract fan		

**Catalogue must be attached for all the items in the schedule of material above**



<b><u>BUNGOMA COUNTY ASSEMBLY OFFICE BLOCK</u></b>					
<b>Item</b>	<b>Description</b>	<b>Qty</b>	<b>Unit</b>	<b>Rate (Kshs)</b>	<b>Amount (Kshs)</b>
	<p><b><u>SANITARY FITTINGS</u></b></p> <p>Supply, deliver, install, test and commission the following sanitary appliances complete with all the accessories including all connections to the services, waste, jointing to water supply overflows, supports and all plugging and screwing to walls and floors.</p> <p>(i) All sanitary fittings shall be in approved colour.</p> <p>(ii) The Model and Ref No. indicated is only a guide to the type and quality of fittings.</p> <p><b>Water Closet (WC) bowl- Common Washrooms</b></p> <p>A Floor standing Close-coupled WC suite in approved colour complete with horizontal outlet to BS 3402 and heavy duty soft close plastic (thin) seat and cover with stainless steel hinges. As <i>Ideal standards - Tempo Model. T3314</i> or approved equivalent.</p> <p><b>WC Flush Valves-Common Areas</b></p> <p>B 32mm WC flush valve for the above WC pan 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 "<b>Docol</b>" model or approved equivalent.</p> <p><b>Water Closet (WC) Suite- Single User Offices</b></p> <p>C Floor standing Close-coupled WC suite in approved colour complete with horizontal outlet to BS 3402 with water saving 4.5 litre valveless ceramic cistern and fittings including siphon, 15mm diameter side inlet ball valve, 20mm diameter side overflow, plastic flush bend, inlet connection, chrome-plated dual push lever and heavy duty soft close plastic (thin) seat and cover with stainless steel hinges. As <i>Ideal standards - Tempo Model. T3314</i> or approved equivalent.</p> <p><b>Wash hand basin (WHB) - Counter Top- Common Areas</b></p> <p>D Countertop wash hand basin size 600 x 480mm with one tap hole, 32mm diameter chrome plated chain waste, chain stay hole, chrome plated non-concussive time delay press action tap as '<i>Vado</i>' Ref. <i>PRO 167</i> or approved equivalent and heavy duty plastic bottle trap (32mm 'P' trap) with 75mm seal. To be as '<i>Ideal Standard</i>' <i>Space Ref. G046001</i> or approved equivalent.</p>	No	24		
		No.	24		
		No	5		
		No	16		
<b>Total Carried Forward to Next Page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Pedestal Wash hand basin (WHB) -Single User Offices</b> Wash hand basin size 510 x 420mm with one tap holes and chain stay hole, pedestal, 32mm diameter chrome plated pop up chain waste as cat. No. WF 4330, concealed wall brackets,wash hand basin tap as <i>Docol: Deluxe Pressmatic: Timer Bacteria-Free Basin Tap, Chrome Plated Item Code: CBSTPDCDC01, Brand Reference:773838</i> or approved equivalent and chrome plated bottle trap (32mm 'P' trap) with 75mm seal,all be as Twyford or equal and approved equivalent	5	No		
B	<b>Cleaner's Sink</b> Heavy duty sink size 465 x 410 x 285mm deep in enamelled fireclay complete with hardwood pad on the front edge and fitted bucket stainless steel grating and 20mm chrome plated wall mounted inclined bricon tap, chrome plate chain and rubber stopper and heavy gauge 40mmn chrome plated bottle trap, stainless steel legs and bearers and 32mm grid waste fitting. All as Twyford "cleaners sink" or approved equivalent.	1	No.		
C	<b>Urinals bowls</b> Ceramic urinal bowl complete with 40mm heavy duty plastic bottle trap and 40mm diameter chrome plated outlet with grating, top inlet and firmly fixed on the wall with chrome plated screws. The fittings shall be as <i>'Ideal Standard' Simplicity Ref. E897701</i> or approved equivalent.	12	No		
D	<b>Urinal Bowl Divisions</b> Ceramic urinal bowl divisions separating the above described urinal bowls fixed firmly on the wall. The fittings shall be as <i>'Ideal Standard' Ref. S612001</i> or approved equivalent	12	No		
E	<b>Urinal Bowl Flush Valves</b> 25mm urinal bowl flush valve for the above urinal bowls 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 push button type. The fittings shall be as <i>Docol</i> or approved equivalent.	12	No		
	<b>Total Carried Forward to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
	<b>Disabled Persons Water Closet and Wash Hand Basin Facility</b>				
	Wheel chair accessible W.C facility Comprising of the following:-				
A	<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 ball valve, 3 /4" side overflow, plastics flush bend, inlet connector and reversible metallic chrome plated cistern lever. There shall also be a heavy duty seat (25mm high) and cover with chrome plated metal hinges, toilet roll holder, 610 x 610 x 6mm thick mirror 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 stainless steel and mounted on a wall fixing plate plate size 230x100 mm, 4 No 600mm grab rails with covered wall plates.</p> <p>The set shall be as 'Ideal Standards' wheelchair accessible W.C. facility or approved equivalent.</p>	Set	5		
	<b>Toilet Roll Holder</b>				
B	Wall mounted, chrome plated toilet roll holder with protector plate as <i>Vado life</i> or equal and approved.	No	31		
	<b>Toilet Brush and Holder</b>				
C	Toilet brush and holder as <i>Vado life</i> or equal and approved.	No	31		
	<b>Robe Hook</b>				
D	Chrome plated double robe hook mounted with concealed screws. To be as <i>Vado life</i> or approved equivalent.	No	31		
	<b>Kitchen Sink</b>				
E	Duble bowl, double drainer stainless steel kitchen sink of size 2000 x 600mm as manufactured by <b>ASL</b> . The bowl size to be 430 x 420 x 200mm deep complete with chrome plated 40mm waste fittings, plugs, chain stays, overflow, 1 No. 15mm diameter wall mounted chrome plated sink mixer with over-arm swivel spout as 'Ideal Standard' Ref.B2218.AA with carina handles, heavy duty plastic bottle trap with 75mm deep seal and chain waste fitting.	No.	6		
	<b>Total Carried Forward to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
<b>Total Brought Forward from Previous Page</b>					
A	<b>Undersink Heater</b> 10 litres capacity undersink instantaneous water heater complete with 3.0kw electric heating element, externally adjustable capillary type thermostat, polyurethane form thermal insulation, corrosion-proof moulding outer casing, mountings, water and electrical connections. The heater shall be as <i>Ariston</i> or approved equivalent with power supply 3.0kw, 240/50Hz.	No	6		
B	<b>Mirror</b> 6mm thick polished plate glass silver backed mirror with bevelled edges, size 610 x 610mm, Plugged and screwed to wall with 4No. chrome plated dome capped screws. The mirror shall rest against a layer of 5mm thick foam.	No.	15		
C	<b>Shower Fittings</b> 3 way Concealed single lever shower mixer with diverter complete with hand shower and sliding rail, shower arm, swivel/adjustable over head shower and other necessary fittings. All to be as ' <i>Ideal standard</i> ' Ref.A6585AA or approved equivalent.	No	7		
D	<b>Soap Dispenser</b> Wall mounted soap dispenser with a capacity of about one litre having a press action soap release mechanism complete with fixing screws. Allow for initial soap supply. To be as <i>Mediclinics</i> or approved equivalent.	No.	15		
E	<b>Hand Driers</b> Automatic "hands in" dual flow hand drier in white colour, operating on double infra-red automatic sensing system on both covers with heating element safety cut-out complete with a 30 seconds safety timer, plastic rawl plugs and fixing screws. The hand drier to have a heating capacity of 1.5kw and performance flow rate of 165m3/hr and air velocity of upto 410km/hr and to be of size 665x320x228mm deep It shall have a noise level below 72 dBA at 2m. It shall be as <i>Mediclinics model M14A</i> or approved equivalent.	No.	10		
<b>Total Carried Forward to Next Page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
<b>Total Brought Forward from Previous Page</b>					
	<b><u>EXECUTIVE OFFICES -SPEAKER'S AND DEPUTY SPEAKEAR'S OFFICES</u></b>				
	<b>Water Closet (WC) Suite</b>				
A	Floor standing Close-coupled WC suite in approved colour complete with horizontal outlet to BS 3402 with water saving 4.5 litre valveless ceramic cistern and fittings including siphon, 15mm diameter side inlet ball valve, 20mm diameter side overflow, plastic flush bend, inlet connection, chrome-plated dual push lever and heavy duty soft close plastic (thin) seat and cover with stainless steel hinges. As <i>Ideal standards - Connect air Aquablade Model. E010901</i> or approved equivalent.	No	2		
B	<b>Vanity Wash hand basin (WHB)</b> Vanity wash hand basin size 840 x 460mm with one tap holes and chain stay hole, 32mm diameter chrome plated pop up chain waste, concealed wall brackets and chrome plated bottle trap (32mm 'P' trap) with 75mm seal, chrome plated single tap hole basin mixer as Ideal standard -Concept 100 Ref: B0640AA, Wall hung vanity unit 800 x 440 x517mm high in approved colour with two soft closing adjustable drawers as Ideal standard -Connect air Ref: E0819PS . The wash hand basin to be as <i>Ideal standard - Connect air Ref: E027901</i> or approved equivalent.	No.	2		
	<b>Shower Cubicle with Tray</b>				
C	High quality shower cubicle of size 1200 x 900mm complete with tray, 1200 x 900mm pivot door in chrome plated frame with frosted glass, side panels, 40mm diameter grid waste fitting, frame to be screwed to the wall and sealed to shower using silicon sealant and fixing pack. The enclosure to be as <i>Ideal Standard "Tipica-R" (Corner Type) model 109.003.14</i> or an approved equivalent.	No	2		
	<b>Soap tray</b>				
D	Wall mounted chrome plated soap tray of size: 150 x 150mm in approved colour as <i>Vado life</i> or equal and approved.	No	2		
	<b>Toilet Roll Holder</b>				
E	Wall mounted, chrome plated toilet roll holder with protector plate as <i>Vado life</i> or equal and approved.	No	2		
	<b>Toilet Brush and Holder</b>				
F	Toilet brush and holder as <i>Vado life</i> or equal and approved.	No	2		
	<b>Towel Rack</b>				
G	Chrome plated 600mm long towel rack and brackets as one piece, plugged and screwed into the wall. The fitting shall be as <i>Vado life</i> or equal and approved.	No	2		
<b>Total for Sanitary fitting Works Carried Forward to Main Summary Page M50</b>					

INTERNAL PLUMBING & DRAINAGE					
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>INTERNAL PLUMBING</b>				
	<b>PPR PN20 Pipework</b>				
	Supply, deliver and install PPR PN 20 pipes, tubing and fittings as described and shown on the drawings. 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 pipes will be pressure tested before the plastering of wall commences and as per the manufacturers recommended testing pressures.				
A	20mm diameter pipework	Lm	100		
B	25mm diameter pipework	Lm	265		
C	32mm diameter pipework	Lm	195		
D	40mm diameter pipework	Lm	140		
E	50mm diameter pipework	Lm	160		
F	63mm diameter pipework	Lm	155		
	<b>Elbows/bends</b>				
G	20mm diameter bend	No.	130		
H	25mm diameter bend	No.	295		
I	32mm diameter bend	No.	75		
J	40mm diameter bend	No.	40		
K	50mm diameter bend	No.	25		
L	63mm diameter bend	No.	15		
	<b>Equal tees</b>				
M	25mm equal tee	No.	115		
N	32mm equal tee	No.	18		
O	40mm equal tee	No.	12		
P	50mm equal tee	No.	70		
R	63mm equal tee	No.	50		
	<b>Reducers</b>				
S	25 x 20mm diameter reducer	No.	165		
T	32 x 20mm diameter reducer	No.	12		
U	32 x 25mm diameter reducer	No.	16		
V	40 x 25mm diameter reducer	No.	10		
W	40 x 32mm diameter reducer	No.	15		
X	50 x 32mm diameter reducer	No.	70		
Y	50 x 40mm diameter reducer	No.	25		
Z	63 x 50mm diameter reducer	No.	50		
Total C/F to Next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
	<b>Female/Male threaded adaptors</b>				
A	20mm female/male threaded adaptor	No.	80		
B	25mm female/male threaded adaptor	No.	80		
C	32mm female/male threaded adaptor	No.	80		
	<b>Unions</b>				
D	20mm diameter union	No.	1		
E	25mm diameter union	No.	30		
F	32mm diameter union	No.	10		
G	40mm diameter union	No.	4		
H	50mm diameter union	No.	23		
I	63mm diameter union	No.	4		
	<b>Isolating Valves</b>				
J	25mm diameter approved medium pressure screw down full way non-rising stem wedge gate valve to BS 5154 PN 20 for series B rating, with wheel and head joints to steel tubing and complete with round male threaded transition fittings. The gate valve to be as PEGLER or approved equivalent.	No.	30		
K	32mm ditto	No.	15		
L	40mm ditto	No.	12		
M	50mm ditto	No.	20		
N	63mm ditto	No.	7		
	<b>Non return Valves</b>				
O	50mm diameter approved medium pressure non return valve to BS 5154 PN 20 for series B rating, with wheel and head joints to steel tubing and complete with round male threaded transition fittings. The gate valve to be as PEGLER or approved equivalent.	No.	10		
	<b>Angle Valves</b>				
P	25mm diameter approved regulating angle valve. The angle valve to be as PEX or approved equivalent.	No.	150		
	<b>Flexible Connector</b>				
Q	15mm diameter x 300mm long flexible connectors complete with chrome plated angle valve including backnut and jointing to gms pipe and sanitary fittings.	No.	150		
<b>Total C/F to Next page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
	<b>INTERNAL FOUL WATER 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.				
	<b>MuPVC and uPVC Waste and Soil pipework</b>				
A	150mm diameter heavy gauge brown mPVC pipe	Lm	100		
B	100mm diameter heavy gauge brown mPVC pipe	Lm	300		
C	100mm diameter heavy gauge grey mPVC pipe	Lm	350		
D	75mm diameter waste pipe	Lm	50		
E	50mm diameter waste pipe	Lm	315		
F	40mm diameter waste pipe	Lm	265		
G	32mm diameter waste pipe	Lm	120		
	<b>Bends</b>				
H	100mm diameter long radius bend	No.	22		
I	100mm diameter short radius bend	No.	25		
J	100mm diameter access bend	No.	15		
K	100mm diameter sweep bend	No.	15		
L	50mm diameter sweep bend	No.	22		
M	40mm diameter sweep bend	No.	90		
N	32mm diameter sweep bend	No.	50		
	<b>Tees</b>				
O	100mm diameter sweep tee	No.	62		
P	50mm diameter sweep tee	No.	22		
Q	40mm diameter sweep tee	No.	40		
R	32mm diameter sweep tee	No.	85		
	<b>Access Caps</b>				
S	100mm diameter access cap	No.	32		
T	50mm diameter access cap	No.	24		
U	40mm diameter access cap	No.	22		
V	32mm diameter access cap	No.	40		
	<b>Reducing Sockets</b>				
W	40 x 32 reducing socket	No.	40		
X	50 x 32 reducing socket	No.	15		
Y	50 x 40 reducing socket	No.	22		
	<b>Fulbora outlets</b>				
W	100mm diameter plastic fulbora outlet with straight spigot	No.	11		
	<b>Total C/F to Next page</b>				



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Single Branch</b> 100 diameter single branch	No.	42		
	<b>Boss Adaptors</b>				
B	100 x 75mm diameter boss connector	No.	2		
C	100 x 50mm diameter boss connector	No.	45		
D	100 x 40mm diameter boss connector	No.	12		
	<b>WC Connectors</b>				
E	100mm diameter WC connector	No.	45		
	<b>Laptop</b> Brand: Dell G15 . Processor: Core i9-12900H(12th Gen) Graphics: NVIDIA GeForce RTX 3070 Ti 8GB GDDR6 Storage: 1TB,m.2, Pcle , SSD. Windows 11 Home,English Condition: Brand-New Display: 15.6-inch QHD (2560x 1440); Anti-glare; 240z refresh rate. Ram: 16GB ,2x8GB,DDR5,4800MHz	No.	2		
	<b>Traps</b>				
G	100 x 50mm diameter floor trap and grating	No.	55		
	<b>Vent Cowl</b>				
H	100mm diameter weathering slate and vent cowl	No.	14		
	<b>Gulley Trap</b> 100mm “metro” Gulley trap with 300 x 300mm square top and inner grating 50mm back inlet and 100mm outlet surrounded in concrete and with loose perforated mild steel cover grating set flush to rebated edge in raised concrete 100 x 75mm high Kerb finished smooth on exposed surface including all necessary excavations and form work.	No.	10		
	<b>Grease Trap</b> 1800 x 900 x 600mm deep concrete two chamber grease trap complete with all the fittings including the grease collector basket, interconnecting pipes, gulley traps and 2No. heavy duty manhole covers. It shall be constructed with 125mm thick reinforced concrete and water proofed.	No.	1		
	<b>Grease Trap (Stainless steel)</b> 3-compartment commercial stainless steel grease trap size: 500x500x400mm. As that manufactured by "M/s Craftsman steel fabricators" or approved equivalent.	No.	1		
	<b>Total C/F to Next page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Manholes and Inspection Chambers</b> 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 heavy duty cast iron cover and frame as manufactured by E.A Foundry works. Include all necessary excavations, disposal and form work. To be as manhole type 'A'.	No.	20		
B	<b>Excavation</b> Excavate trench in soil/murram for above pipes not exceeding 2000mm deep, part return in, fill, ram and surplus cart away.	No.	200		
C	<b>Testing</b> Allow for the testing of the plumbing and drainage installation work during the progress and on completion of the work and leave in perfect working condition to the satisfaction of the Engineer.	Item	1		
	<b>ROOF PLUMBING</b> <b>PPR PN20 Pipework</b> Supply, deliver and install PPR PN 20 pipes, tubing and fittings as described and shown on the drawings. 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 pipes will be pressure tested before the plastering of wall commences and as per the manufacturers recommended testing pressures.				
A	32mm diameter pipework	Lm	200		
B	40mm diameter pipework	Lm	110		
C	50mm diameter pipework	Lm	125		
D	63mm diameter pipework	Lm	25		
E	75mm diameter pipework	Lm	20		
F	100mm diameter pipework	Lm	78		
	<b>Elbows/bends</b>				
G	32mm diameter bend	No.	30		
H	40mm diameter bend	No.	40		
	<b>Total C/F to Next page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	50mm diameter bend	No.	30		
B	63mm diameter bend	No.	25		
C	75mm diameter bend	No.	12		
D	100mm diameter bend	No.	1		
	<b>Equal tees</b>				
E	40mm equal tee	No.	25		
F	50mm equal tee	No.	20		
G	63mm equal tee	No.	15		
H	75mm equal tee	No.	15		
I	100mm equal tee	No.	2		
	<b>Reducers</b>				
J	40 x 32mm diameter reducer	No.	25		
K	50 x 32mm diameter reducer	No.	30		
L	50 x 40mm diameter reducer	No.	16		
M	63 x 40mm diameter reducer	No.	14		
N	63 x 50mm diameter reducer	No.	16		
O	75 x 50mm diameter reducer	No.	16		
P	75 x 63mm diameter reducer	No.	22		
Q	100 x 63mm diameter reducer	No.	2		
R	100 x 75mm diameter reducer	No.	2		
	<b>Female/Male threaded adaptors</b>				
S	40mm female/male threaded adaptor	No.	90		
T	50mm female/male threaded adaptor	No.	90		
U	63mm female/male threaded adaptor	No.	10		
V	75mm female/male threaded adaptor	No.	90		
W	100mm female/male threaded adaptor	No.	10		
	<b>Unions</b>				
X	50mm diameter union	No.	5		
Y	100mm diameter union	No.	6		
	<b>Isolating Valves</b>				
Z	40mm diameter approved medium pressure screw down full way non-rising stem wedge gate valve to BS 5154 PN 20 for series B rating, with wheel and head joints to steel tubing and complete with round male threaded transition fittings. The gate valve to be as PEGLER or approved equivalent.	No.	15		
A	50mm ditto	No.	2		
B	63mm ditto	No.	4		
C	75mm ditto	No.	4		
D	100mm ditto	No.	1		
<b>Total C/F to Next page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Non return Valves</b> 50mm diameter approved medium pressure non return valve to BS 5154 PN 20 for series B rating, with wheel and head joints to steel tubing and complete with round male threaded transition fittings. The gate valve to be as PEGLER or approved equivalent.	No.	4		
B	<b>Roof Water Storage Tank</b> Supply, deliver and assemble on dwarf walls prepared by others, a roof water tank, made of pressed steel sectional tank plates 6mm thick plates (type 1 and 4) and of size 1000mm x 1000mm. Capacity of Tank to be 22,500 litres and of preferred dimensions 4000mm x 3000mm x 2000mm. The Tank to come complete with tank cover, mosquito proof inspection vent, internal stays, jointing material, bolts and nuts including applying two coats of non-toxic bituminous paint on the inside and two coats of aluminum paint on the outside.	No.	1		
C	<b>Ground Level Water Tank</b> Supply, deliver and assemble on dwarf walls prepared by others, a ground water tank, made of pressed steel sectional tank plates 6mm thick plates (type 1 and 4) and of size 1000mm x 1000mm. Capacity of Tank to be 37,900 litres and of preferred dimensions 5000mm x 4000mm x 2000mm. The Tank to come complete with tank cover, mosquito proof inspection vent, internal stays, jointing material, bolts and nuts including applying two coats of non-toxic bituminous paint on the inside and two coats of aluminum paint on the outside.	No.	1		
D	<b>Booster Pumps</b> Set-of-automatic electrically driven twin booster pump. One. duty and the other one standby with automatic changeover , capable of delivering 8m <sup>3</sup> / hr against a head of 28 meters with a three phase power source. It includes float switch regulator, time delay switch, a switch to protect against dry run, timer, gate valves and non-return valves. The pump to be as PEDROLLO CPM190 or approved equivalent. Pump to be installed on mild steel platform.	Item	1		
<b>Total C/F to Next page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Associated Electrical Works</b> Allow for associated electrical works from a local isolator provided by others within one metre of the water booster pumpset.	1	Item		
B	<b>Control Panel</b> Control panel for above pumps with contactors, over voltage and undervoltage-protection relays, MCBs, timer, start/stop push buttons, internal buttons with automatic changeover, 'running' and 'trip' neon lights control system and button for change from automatic to manual operation. All these shall be housed in a lockable cabinet (with integral isolator) made from SWG 18 mild steel sheet that is oven powder coated. There shall also be an adjustable time delay switch to ensure pumping cycles are controlled to not more than 6 per hour, cables, low level water regulator. Each pump should run for twelve hours per day. Complete with interconnecting cable between the pump control panel and float switch	1	Item		
<b>Total for Plumbing &amp; Drainage Works Carried Forward to Main Summary Page M50</b>					

**FIRE PROTECTION**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>HOSEREEL AND PORTABLE EXTINGUISHERS</b> Supply, deliver and install the following fire fighting equipment in positions indicated on the contract drawings or as shall be instructed by the Engineer.				
	<b>Hose Reel</b> Swinging type hosereel fitted with 30 metres long, 20mm 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.	No.	8		
A					
	<b>GMS Pipes Class B</b>				
B	25mm diameter pipework	Lm	50		
C	50mm diameter pipework	Lm	128		
D	65mm diameter pipework	Lm	1		
	<b>Extra Over Pipework</b>				
	<b>Bends</b>				
E	25mm diameter bends	No.	62		
F	50mm diameter bends	No.	25		
G	65mm diameter bends	No.	1		
	<b>Tees</b>				
H	50mm diameter equal Tee	No.	32		
I	65mm diameter equal Tee	No.	1		
	<b>Reducers</b>				
J	50 x 25 mm diameter reducer	No.	8		
K	65 x 50 mm diameter reducer	No.	1		
	<b>Valves</b>				
	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.	No.	12		
L					
M	50mm diameter gate valves	No.	4		
N	65mm diameter gate valves	No.	1		
O	65mm diameter non-return valves	No.	1		
	<b>Painting</b>				
P	Allow for painting of the hose reel pipework as per particular specifications.	Item	1		
	<b>Fire Notices</b>				
Q	Allow for fire signage for the hose reel system, fire exits and fire instructions as directed by the Project Engineer.	No	14		
	<b>Total carried to Next page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
	<b>Unions</b>				
A	25mm diameter pipe union	No.	16		
B	50mm diameter pipe union	No.	4		
C	65mm diameter pipe union	No.	1		
	<b>Hosereel Pumpset</b>				
	Hose reel pumpset, one duty, the other standby mounted on a frame with a stainless steel base plate. Each pump shall have a duty 5m <sup>3</sup> /hr. against 35m head as Grundfos model CH4-60 or approved equivalent. In addition, there shall be a 60 litres diaphragm pressure vessel (as Varem or approved equivalent), pressure switches, a switch to protect dry run, 65mm foot valve and strainer, tank connections, gate valves and non-return valves. The pressure set to be as Dayliff SGH5/40 or equal and approved. 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.	Set	1		
	<b>Control Panel</b>				
E	Control panel for above pumps with contactors, over voltage and under voltage protection relays, MCBs, phase failure protection, timer, 10 meters long float switch control 4-core cable to the roof tanks, start/stop push buttons and indicator lights. All these shall be housed in a lockable cabinet (with integral isolator) made from SWG 18 mild steel sheet that is oven powder coated. There shall also be an adjustable time delay switch to ensure pumping cycles are controlled to not more than 6 per hour. It should include a change-over switch to enable the pumps to work alternately.	Item	1		
	<b>Portable Fire Extinguishers</b>				
	<u>Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.</u>				
	<b>Water/Carbon Dioxide Gas Fire Extinguisher</b>				
F	9 litres water/carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	No	8		
	<b>Total carried to Next page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Carbon Dioxide Gas Fire Extinguisher</b> 5 Kg carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	No	8		
B	<b>Dry Chemical Powder Fire Extinguisher</b> 6kg dry chemical powder portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	No	8		
C	<b>Manual Alarm Bell</b> 9" (225mm) manual operated alarm bell (Gong)	No	8		
	<b>DRY RISER INSTALLATION</b> Supply and installation the following fittings for dry riser				
D	<b>Sheet Metal Box</b> Inlet breeching sheet metal box with wired glass door secured with spring locks openable from inside by smashing the glass and releasing the locking devices on the lock. Approximate size to be 595 x 295 x 395mm high.	No.	1		
E	<b>Fire Brigade Breeching Inlet</b> 100mm diameter inlet breeching with twin inlets, each inlet consisting of a 65mm diameter male instantaneous coupling with a non-return valve and black cap secured with a short length of chain.	No.	1		
F	<b>Landing Valve</b> 65 mm diameter, gunmetal gate pattern landing valve with flanged inlet and female instantaneous outlet fitted with plug secured by short chains and fixed on 100mm diameter dry riser pipe.	No.	8		
G	<b>Fire Hose</b> 65mm diameter, 30 metres long canvas fire hose complete with branch pipe, nozzle, female instantaneous coupling head, hanging hook and other associated fittings for its proper functioning.	No.	8		
H	<b>Associated Pipework</b> Supply and installation of Galvanized mild steel piping and fittings with screwed & socketed joint to medium grade class "B" to BS. 1387.				
	<b>GMS Pipework</b>				
I	100mm diameter pipe	Lm	32		
J	65mm diameter ditto	Lm	5		
K	50mm diameter ditto	Lm	5		
	<b>Total carried to Next page</b>				



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
	<b>Extra over Pipework</b>				
	<b>Bends/Elbows</b>				
A	100mm diameter bends/elbows	No.	10		
B	65mm diameter bends/elbows	No.	10		
	<b>Tees</b>				
C	100 x 100 x 100mm tee	No.	2		
D	100 x 100 x 65mm tee	No.	8		
E	100 x 100 x 50mm tee	No.	1		
	<b>Reducers</b>		0		
F	100 x 65mm reducer	No.	8		
G	100 x 50mm reducer	No.	1		
	<b>Valves</b>				
H	65mm isolating valve with its associated unions	No.	8		
I	65mm diameter flange	No.	8		
J	50mm automatic air release valve	No.	1		
	<b>Painting</b>				
K	Allow for painting of the installations to the satisfaction of the Engineer.	Item	1		
	<b>Testing and Commissioning</b>				
L	Allow for testing and commissioning of the dry riser, Hosereel and portable fire extinguishers installations to the satisfaction of the Engineer.	Item	1		
	<b>SERVER ROOM FIRE SUPPRESSION SYSTEM</b>				
	Supply and install fire suppression system with the following items to the satisfaction of the Engineer. The server room area volume is 60m <sup>3</sup> . The tenderer to submit the technical brochures and working calculations together with the tender for evaluation. Alternative and approved systems utilising inert gases or a mixture of such gases may be provided.				
M	100 litre normal charged capacity 'FM 200' specified containers charged with 'FM 200' gas at 25bar with dimensions 267mm diameter and 1910mm high when fitted with valve cylinders to be complete with discharge valves gauges and hoses for connection to the manifold. All to be as "Fike" or approved equivalent.	No.	1		
N	100 litre normal charged capacity 'FM 200' specified containers charged with 'FM 200' gas at 300bar for testing.	No	1		
O	Cylinder support bracket system	Item	1		
	<b>Total carried to Next page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	50mm schedule 40 discharge manifold kit with 2 No. ports complete with end caps and a threaded port for pressure switch. All to be as "Fike" or approved equivalent.	1	Item		
B	25mm selector switch	1	No		
C	Actuation package	1	Item		
D	Solenoid valve/ manual release valve assembly inclusive of hoses, connectors etc.	1	Item		
E	50mm pressure reducing valve	1	No.		
F	20mm FM 200 discharge Nozzles V type 6 orifice, Nozzle coverage 360 degrees pattern and a radius of 3M. The Nozzle will be located less than 300mm below the ceiling as "Fike" or approved equivalent.	5	No.		
G	Relief valve	1	No		
H	Check valve	2	No		
I	Pressure gauge	2	No		
J	Pressure relief/vent	2	No		
K	Discharge pressure switch	1	No.		
L	Flexible discharge hose	2	No.		
M	Controls, addressable Control panel and wiring complete with standby batteries	1	Item		
N	Maintenance switch	1	No.		
O	Double Action manual /electric releasing switch	1	No.		
P	Abort switch	1	No.		
Q	Ionization sensors	4	No.		
R	Photo electric sensors	4	No.		
S	Audible alarms	1	No.		
T	Visual alarm	1	No.		
	<b>Pipework</b>				
U	25mm diameter seamless black pipe Schedule 40	12	LM		
V	20mm diameter seamless black pipe Schedule 40	10	LM		
W	15mm diameter seamless black pipe Schedule 40	20	LM		
X	20mm diameter pipe bend/elbow	2	No		
Y	15mm diameter pipe bend/elbow	4	No		
Z	25mmX20mm pipe reducer	2	No		
	<b>Total carried to Next page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	25mmX15mm pipe reducer	2	No		
B	20mmX15mm pipe reducer	2	No		
C	25mm equal tee	2	No		
D	20mm equal tee	1	No		
E	Allow for associated Builders work	1	Item		
F	Allow for pipework anchorage/hangers	1	Item		
G	Allow for painting system pipework	1	Item		
H	Electrical works and earthing	1	Item		
I	Labelling and warning signs inside and outside the rooms	2	No		
J	Calculations,working drawings and as installed drawings	1	Item		
	<b>Portable Fire Extinguishers</b> Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.				
	<b>Carbon Dioxide Gas Fire Extinguisher</b> 5 Kg carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	1	No		
	<b>Dry Chemical Powder Fire Extinguisher</b> 6kg dry chemical podwer portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	1	No		
	<b>Fire Notices</b> Allow for fire signage for fire systems, fire exits and fire instructions as directed by the Project Engineer.	2	No		
	<b>Testing and commissioning</b>	1	Item		
	<b>FIRE HYDRANTS</b> 65mm diameter screw down type fire hydrant conforming to BS 750: 1977 complete with Copper alloy spindle complying with requirements of BS 2874 and having a thread machined of trapezoidal form, Cast iron spindle cap secured to the spindle by an M12 hexagonal socket set screw to BS 4168, A tapered key suitable for the spindle cap, A screwed outlet with cast iron cap attached to the hydrant body by a chain. The hydrant shall have the hydrant valve, 100mm stand pipe above ground (1000mm high), plastic/metal adaptor, bends and any other necessary accessories necessary for the proper functioning of the hydrant. The hydrant to be as 'Greenfield' type or approved equivalent.	2	No.		
	<b>Total carried to Next page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Fire Hose</b> 65mm diameter, 30 metres long canvas fire hose capable of with standing 10 bar working pressure complete with branch pipe, nozzle, female instantaneous coupling head, hanging hook and other associated fittings for its proper functioning. To be as Germania single jacket fire hose model GSJ 60 or equal and approved.	No.	2		
B	<b>Fire Hydrant Markers</b> Standard precast concrete ware line marker, post marked 'FH' set in concrete (1:3:6) base, including formwork, excavations backfilling and disposal. The plate to be painted with blue gloss oil paint.	No	2		
C	<b>Indicator Plates</b> Standard precast concrete Sluice valve marker post marked 'SV' set in concrete (1:3:6) base, including formwork, excavations backfilling and disposal. The plate to be painted with blue gloss oil paint.	No	5		
D	<b>Water Line Markers</b> Standard precast concrete water line marker, post marked 'WL' set in concrete (1:3:6) base, including formwork, excavations backfilling and disposal. The plate to be painted with blue gloss oil paint.	No	10		
E	<b>Valve Chamber</b> Standard precast concrete valve chamber of size 450 x 450 x 450mm deep made of concrete (1:3:6) base, including formwork, excavations backfilling and disposal.	No	5		
	<b>FIRE HYDRANT WATER RETICULATION</b> Supply and fix GMS pipes class 'B' with screwed and socketed joints to BS 143 and 1250 of approved manufacturer. Tenderers must allow in their pipework prices for all flanges couplings, unions, connector joints, reducers, etc. as required in the running lengths of pipe, all fixing clips, and holderbats, plugged and screwed.				
F	<b>Excavations</b> Excavate trench in red soil/murram for small pipe not exceeding 1000mm deep and average 750mm deep, Part return in, fill and surplus cart away.	LM	100		
G	Allow for keeping the excavated trenches free of water either by bailing or by pumping.	Sum	1		
H	<b>GMS Pipes Class B</b> 100mm dia. Ditto	LM	1		
	<b>Total carried to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	75mm dia. Ditto	LM	1		
B	65mm dia. Ditto	LM	60		
	<b>Extra over GMS Pipework for the following:</b>				
	<b>Bends</b>				
C	100mm diameter bends/elbows	No	1		
D	75mm diameter bends/elbows	No	1		
E	65mm diameter bends/elbows	No	10		
	<b>Tees</b>				
F	100mm diameter equal tee	No	1		
G	75mm diameter equal tee	No	1		
H	65mm diameter equal tee	No	2		
	<b>Reducers</b>				
I	100 x75mm ditto	No	1		
J	100 x65mm ditto	No	1		
K	75 x65mm ditto	No	5		
	<b>Valves</b>				
L	100mm diameter high pressure approved pattern brass rising stem fullway gate valve with wheel head and jointing to tubing as "Pegler" or approved equivalent.	No	1		
M	75mm diameter ditto	No	1		
N	65mm diameter ditto	No	3		
	<b>Unions</b>				
O	100mm diameter union	No	1		
P	75mm diameter union	No	1		
Q	65mm diameter union	No	5		
	<b>Valve Chamber</b>				
R	Valve chamber size 750 x 750 x 600mm deep with 100mm concrete (1: 3: 6) base 100mm block sides rendered all round in cement and sand (1:4) and with approved hinged and flanged cast iron cover and frame including all necessary excavation, disposal and form work.	No	3		
	<b>Testing and Commissioning</b>				
S	Allow for pressure testing and commissioning of the reticulation installation to the satisfaction of the Engineer.	Item.	1		
	<b>Total for fire protection Works Carried Forward to Main Summary Page M50</b>				

**SOLAR HOT WATER HEATING**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b><u>SOLAR WATER HEATING INSTALLATION</u></b> Supply, delivery, installation, test and commission of the following solar hot water system appliances complete with all the accessories including all connections to the services, jointing to water supply, overflows, supports and all plugging and screwing to walls and frames. The hot water cylinder shall be installed inside the roof space or on the roof as shall be directed by the project manager.				
	<b><u>Solar Panels and Hot Water Storage Cylinder</u></b> A Solar water heating system comprising of 1No. 300 litres capacity hot water cylinder with 3Kw electric booster element, 3No. solar panels with selective (black chrome) 6m <sup>2</sup> dielectric nett absorbing area, safety valves and all other necessary interconnectors. The insulated cylinder shall be treated against corrosion by ceramic lining and shall be fitted with an anode. The system shall be a closed circuit type of the solar heating system as Solahart or equal and approved.	3	SET		
	<b><u>Supporting Frames</u></b> B Allow for support 3mm hollow mild steel tubes and angle line mild steel plates fixed on roof to support 3No. Solar panels to engineer's to approval.	3	No.		
	<b><u>Automatic Air Eliminator</u></b> C Air relief valve as manufactured by "Spirax Sarco" model No. AES 50 Air Eliminators for use on hot water services.	3	No.		
	<b><u>Solar Heater Controller</u></b> D The solar system shall be equipped with a heater controller wired such that when the temperature of circulating fluid goes down below a certain level, then the controller shall switch on the electric heating element.	3	No.		
	<b><u>Thermostatic mixing valve</u></b> E A 25mm diameter thermostatic mixing valve with highly sensitive thermal element with good all-round temperature sensing made of dezincification-resistant brass. The maximum operating pressure could be 10bar and maximum hot water temperature be 90 degrees centigrades. It should have automatic scald protection and be as HONEYWELL or equal and approved equivalent.	2	No		
	<b><u>Pressure gauge</u></b>				
<b>Total carried to Next Page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	Pressure gauge as manufactured by Honeywell to be fitted as instructed by the Engineer	3	No.		
	<b><u>PPR PN-20 pipework and Fittings</u></b>				
B	40mm diameter pipework	30	Lm		
C	32mm diameter pipework	20	Lm		
D	25mm diameter pipework	20	Lm		
E	20mm diameter pipework	10	Lm		
	<b>Unions</b>				
F	32mm diameter pipe union	10	No.		
G	25mm diameter pipe union	5	No.		
H	20mm diameter pipe union	4	No.		
	<b>Bends</b>				
I	40mm diameter bend	6	No.		
J	32mm diameter bend	15	No.		
K	25mm diameter bend	20	No.		
L	20mm diameter bend	10	No.		
	<b>Non return valves</b>				
M	32mm diameter non return valve	3	No.		
	<b>Reducers</b>				
N	32 × 25mm reducer	10	No.		
O	40 × 32mm reducer	5	No.		
	<b>Tees</b>				
P	40mm diameter tee	5	No.		
Q	32mm diameter tee	10	No.		
	<b>Gate valves</b>				
R	40mm diameter screwed- in bonnet, full way non-rising stem, solid wedge disk, bronze gate valve to BS 5154 PN 20 for series 'B' ratings with wheel head and transition fitting for jointing to GMS pipework.	2	No.		
	<b>Total carried to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	32mm diameter screwed- in bonnet, full way non-rising stem, solid wedge disk, bronze gate valve to BS 5154 PN 20 for series 'B' ratings with wheel head and transition fitting for jointing to GMS pipework.	6	No.		
B	25mm diameter screwed- in bonnet, full way non-rising stem, solid wedge disk, bronze gate valve to BS 5154 PN 20 for series 'B' ratings with wheel head and transition fitting for jointing to GMS pipework. <b>Ball Valve</b>	3	No.		
C	20mm diameter medium pressure ball valve as "PORTSMOUTH" type or approved equivalent with brass stem and plastic float, screwed to threaded socket of tank including union <b>Wiring</b>	1	No		
D	Allow for all wiring to booster heater from local isolator supplied by others within two meter to the solar heating systems to the switch in the kitchen. <b>Water Connection</b>	1	Item		
E	Allow for connections to rising mains for all solar heating systems and to the hot water delivery line. <b>Insulation</b>	1	Item		
F	Allow for insulation for pipework, bends, tees and other fittings with Fiberglass insulation of minimum density of 64kg/m <sup>2</sup> and a minimum thickness of 25 mm. The insulation shall be non-combustible and withstand maximum continuous operating temp of 200 <sup>0</sup> c. The insulation to be for pipes less than 50mm diameter and complete with 24 SWG aluminium <b>Hot water recirculation pump</b> Hot water recirculation pump capacity 0.5L/sec at 5m Head that operates using a wireless temperature sensor. The sensor shall keep water temperature within optimal range that is calculated every 12 hours. As "Grundfos UPS 32-80 3-speed or approved equivalent.	50	Lm		
	<b>Sterilization</b>	2	No		
G	Allow for flushing out and sterilizing the whole system with chlorine to the satisfaction of the Project Engineer. <b>Testing and commissioning</b>	1	Item		
H	Allow for testing and commissioning for all solar heating systems to the satisfaction of the engineer.	1	Item		
<b>Total amount for Solar Water Heating Works carried to Main Summary page M50</b>					



PACKAGED AIR HANDLING UNIT AND MECHANICAL VENTILATION					
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	<p><b><u>PACKAGED AIR HANDLING UNIT</u></b></p> <p>The Chamber is to be Air-Conditioned to attain the following room conditions</p> <p>Room temperature <math>22^{\circ}\text{C} \pm 1^{\circ}\text{C}</math> Relative humidity 50% <math>\pm</math> 5%</p> <p><b><u>AIR CONDITIONING UNIT</u></b></p> <p>Air cooled single package air-conditioning unit capable of a cooling load of 75KW and a supply air flow rate of <math>4.2\text{m}^3/\text{s}</math>. The system shall use outside air at a design temperature of <math>28^{\circ}\text{C}</math> DBT and recirculate 80%. The unit shall be constructed for horizontal outlet ducted air distribution and shall be complete with;</p> <p>a) Supply fan(s) capable of <math>4.2\text{m}^3/\text{s}</math> against a <math>350\text{N}/\text{m}^2</math> external system pressure drop with variable air volume (VAV) dampers</p> <p>b) Direct expansion cooling coil with copper tubes and aluminium fins.</p> <p>c) Interconnecting refrigeration pipework</p> <p>d) 9No. Washable air filters</p> <p>e) High and low pressure cut-outs</p> <p>f) Service access valves</p> <p>g) Anti-vibration mountings</p> <p>h) R134A refrigerant or any other non ozone depleting</p> <p>i) Controls and control panel unit with wiring</p> <p>The unit to be as factory assembled "York" MODEL DM 240 or equal and approved.</p>	1	No		
	<p><b><u>AIR SUPPLY SYSTEM</u></b></p> <p><b><u>Ductwork</u></b></p> <p>Galvanized mild steel ductwork 1.2mm thick, complete with bends, transformation pieces, offsets, joints, branches, gaskets, supports, sleeves, stiffeners, splitters, turning vanes, test holes, access doors and any other accessories necessary for the complete laying of the ductwork.</p>	120	SM		
Total Carried to next Page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<p><b><u>Transformation Pieces</u></b></p> <p>Allow for various sizes of transformation pieces in Galvanised mild steel thickness 1.0mm as indicated on the contract drawings and necessary for complete ductwork installation.</p> <p><b><u>Volume Control Dampers</u></b></p> <p>Variable volume control dampers suitable for the following duct sizes</p>	1	Item		
B	250mm x 250mm	12	No.		
C	350mm x 350mm	1	No.		
D	550mm x 350mm	1	No		
E	<p><b><u>Supply Air Diffusers</u></b></p> <p>4-way rectangular diffuser of size 450 x 450mm capable of supplying 0.30m<sup>3</sup>/s sound pressure levels less than NR 2.5 at 3m from the outlet. The diffuser shall have an approximate throw of 2.5m for terminal velocities of 3.2m/s respectively.</p>	12	No		
F	<p><b><u>Supply Silencer</u></b></p> <p>90° mitred bend splitter type rectangular silencer capable of providing the following attenuation due to fan sound power level within the octave mid-frequency bands 0-7-13-8-4-1-0. The silencer to be as 'WOODS' mitred type or equal and approved.</p>	1	No		
G	<p><b><u>Thermal Insulation</u></b></p> <p>Allow for supply ductwork thermal insulation to 25mm thickness and finish painting all as described in the General mechanical specification and cladding of all ductwork with SWG 24 aluminium sheet.</p>	200	SM		
H	<p><b><u>Duct Work Painting</u></b></p> <p>Allow for painting (2No coats) of the ductwork internally and externally with suitable matt black paint.</p>	1	Item		
	<b>Total Carried to next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<p><b><u>Acoustic Insulation</u></b></p> <p>Allow for the lining of the ductwork with a 25mm thick flame attenuated fiber glass, bonded with thermal setting frame. The inside lining to be done on sections of ductwork as will be pointed out by the engineer on site and shall act as the acoustic insulation.</p>	80	SM		
B	<p><b><u>Flexible Connector</u></b></p> <p>Allow for flexible connections of rubber bellows or Neoprene for connection of the Air conditioning unit to the ductwork.</p>	2	Set		
C	<p><b><u>Supply Fan</u></b></p> <p>Aerofoil axial fan capable of Supplying 4.0m<sup>3</sup>/s of air against a static pressure of 300N/m<sup>2</sup>. The fan to come complete with mounting brackets, anti vibration mountings and flexible connector. Fan to be as 'WOODS' Model or equal and approved.</p>	1	No		
	<p><b><u>EXTRACT SYSTEM</u></b></p> <p><b><u>EXTRACT DUCTWORK</u></b></p> <p>Galvanised mild steel ductwork 18 SWG, 1.2mm thick, complete with joints, bracing, gaskets, supports, sleeves, stiffness, splitters, training vanes, test holes, access doors, and any other necessities necessary for the complete laying of the ductwork.</p>	150	SM		
E	<p><b><u>Transformation Pieces</u></b></p> <p>Allow for various sizes of transformation pieces in Galvanised mild steel thickness 1.2mm as indicated on the contract drawings and necessary for complete ductwork installation.</p>	1	Item		
	<p><b><u>Volume Control Dampers</u></b></p> <p>Variable volume control dampers suitable for the following duct sizes</p>				
F	300mm x 300mm	2	No		
G	450mm x 450mm	4	No		
	<b>Total Carried to next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	600mm x 600mm <b><u>Extract Air Register</u></b>	2	No		
B	Eggcrate aluminium register size 450 x 450mm. Capable of extracting 0.5m <sup>3</sup> /s of air while producing direct noise level of less than NR 20 at 3m distance from the terminal.	4	No		
	<b><u>Thermal Insulation</u></b>				
C	Allow for supply ductwork thermal insulation to 25mm thickness and finish painting all as described in the General mechanical specification and cladding of all ductwork with SWG 24 aluminium sheet.	180	SM		
	<b><u>Duct Work Painting</u></b>				
D	Allow for painting (2No coats) of the ductwork internally and externally with suitable matt black paint.	1	Item		
	<b><u>Extract Fan</u></b>				
E	Aerofoil axial fan capable of extracting 4.0m <sup>3</sup> /s of air against a static pressure of 300N/m <sup>2</sup> . The fan to come complete with mounting brackets, anti vibration mountings and flexible connector. Fan to be as 'WOODS' Model or equal and approved.	1	No		
	<b><u>Fan Control Panel</u></b>				
F	A splash proof fan control panel complete with operational switches shall be installed in a room remote from the fan. It shall incorporate isolator, contactors, phase failure relay, overheat safety controls and fuses and pilot lamps to enable operating conditions to be checked. The panel shall be cut of mild steel and anodized after manufacture.	1	No		
	<b><u>Extract Silencer</u></b>				
G	Circular silencer casing constructed from cold formed pre-galvanized sheet steel and absorbent material of acoustic grade resin bonded mineral fibre with erosion resistant lining. The silencer shall be fitted with absorption pod and shall be of size 700mm diameter x 900mm long. To be as woods or equal and approved.	1	No.		
	<b>Total Carried to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b><u>Flexible Connections</u></b> The flexible connections shall be rubber bellows or neoprene and not canvas to isolate vibrations from the air conditioning unit or fans from the inter-connecting ductwork.	1	Set		
B	<b><u>Anti vibration mountings</u></b> Neoprene mounts for isolation of the fan's vibration from the building structure.	1	Item		
C	<b><u>Fire Damper</u></b> 600 x 600mm fire damper of the "off set hinged single blade type held in position by a fusible link, set to release at a temperature of 85°C. The damper blade shall be held in position by means of rollers. In case of fire within the auditorium, this system shall close the duct and switch off the supply fan	2	No		
D	<b><u>External Weather Louvres</u></b> 600mm x 600mm high external weather louvers with a weather resistant external cover for fresh air inlet openings complete with galvanized coated wire mesh screen on the front face and frame and blades fabricated from extruded aluminium sections. As "TROX" or equal and approved.	2	No		
E	<b><u>Room Thermostat</u></b> Room thermostat for room temperature control to maintain a temperature of 22°C±1° C.	1	No		
F	<b>DOOR REPLACEMENT GRILLE</b> 400mm x 300mm air replacement louvered grilles.	4	No.		
G	<b><u>Electrical works</u></b> Allow for electrical works including wiring and fitting from the local isolator provided by others within 2 metres on the roof slab to the packaged air conditioning units. It shall include a push and turn safety switch near the air conditioning machine on the roof for isolation during maintenance.	1	Item		
	<b>Total Carried to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b><u>Balancing of the Systems</u></b> The systems shall be balanced such that the air conditioned spaces shall be balanced as per the designed flowrates indicated in the drawings. It will be the onus of the tenderer to make sure that the inflows are adjusted to meet these requirements.	1	Item		
B	<b>Training of Maintenance Staff and Operators</b> Allow for training of three personnel on the operation and maintenance of the air conditioning installation. The training to be structured such that the personnel will undergo a course on the working of the machines, operations, settings, trouble shooting and maintenance of the machines.	1	Item		
C	Calculations and working drawings	1	Item		
D	<b>As-built Drawings and Maintenance Manuals</b> Allow for preparation of as-built drawings and maintenance manuals. All these will be handed to project Engineer in three hard copies and soft copy in 8Gb flash disk and compact disk.	1	Item		
E	<b>Provisional costs &amp; Project management expenses</b> Allow for a provisional sum of Ksh. 1,500,000 for overseas factory inspection by 2No. Engineers from State Department of Public works and 2No. Employers representatives.	1	Item.		
F	Allow for a provisional sum of Ksh. 300,000 as training Levy for the state department of Public works	1	Item.		
G	<b>Testing and Commissioning</b> Allow for testing and commissioning of the air conditioning installations to the satisfaction of the Engineer.	1	Item		
<b>Total amount for Air Conditioning for the Chambers carried to Main Summary Page M50</b>					

TOILETS VENTILATION SYSTEM					
Item	Description	Qty	Unit	Rate (Ksh)	Amount (Ksh)
	<b><u>TOILETS VENTILATION SYSTEM</u></b>				
	<b>Extract Fan</b>				
A	Extract fan capable of a volume flow rate of $110\text{m}^3/\text{Hr}$ against a pressure drop of 150 pa. Fan to be complete with supports, flexible connections and anti vibrations mountings. To be as S & P' silenced box fan or equal and approved.	5	No.		
B	Motion sensor and Timer for the above extract fan	12	No.		
	<b>Ductwork</b>				
C	Galvanized mild steel ductwork 0.8mm thick, complete with bends, transformation pieces, offsets, joints, branches, gaskets, supports, sleeves, stiffeners, splitters, turning vanes, test holes, access doors, hangers and any other accessories necessary for the complete laying of the ductwork.	150	SM		
	<b>Flexible Ducts</b>				
D	Flexible duct of diameter 150 mm	60	Lm		
E	Allow for various sizes of transformation pieces in galvanized mild steel thickness 0.8mm as indicated on the contract drawings and necessary for complete ductwork installation.	1	Item		
	<b>Volume control dampers</b>				
F	200 X 150mm oposed blade variable volume control dampers with leaf thickness of 0.8mm (SWG 20) and manual control.	4	No.		
	<b>Extract Air Registers</b>				
G	Eggcrate extract grilles with damper fitted size 150mm x 150mm capable of extracting $0.1\text{m}^3/\text{sec}$ of air.	30	No.		
	<b>External Weather Louvres</b>				
H	250 mm x 250 mm high external weather louvers with a weather resistant external cover for fresh air inlet openings complete with galvanized coated wire mesh screen on the front face and frame and blades fabricated from extruded aluminium sections. As "TROX" or equal and approved.	4	No.		
	<b>Air transfer grilles</b>				
I	300 x 600 mm wide transfer air grilles as Waterloo type DVC or equal and approved.	12	No.		
Total carried to Next Page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b><u>STRONG ROOM VENTILLATION</u></b> Extract fan capable of a volume flow rate of 110m <sup>3</sup> /Hr against a pressure drop of 150 pa. Fan to be complete with supports, flexible connections and anti vibrations mountings.To be as S &P' silenced box fan or equal and approved.	1	No.		
B	<b><u>Ductwork</u></b> Galvanized mild steel ductwork 0.8mm thick, complete with bends, transformation pieces, offsets, joints, branches, gaskets, supports, sleeves, stiffeners, splitters, turning vanes, test holes, access doors ,hangers and any other accessories necessary for the complete laying of the ductwork.	30	SM		
C	<b><u>Volume control dampers</u></b> 200 X 150mm oposed blade variable volume control dampers with leaf thickness of 0.8mm (SWG 20) and manual control.	2	No.		
D	<b><u>Extract Air Registers</u></b> Eggcrate extract grilles with damper fitted size 150mm x 150mm capable of extracting 0.1m <sup>3</sup> /sec of air.	4	No.		
E	Calculations,working drawings and as installed drawings	1	Item		
F	<b><u>Electrical Works</u></b> Allow for associated electrical works for the above extract fans,the fans shall be a motion sensor operated with a 15minutes delay time.	1	Item		
<b>Total amount for Toilet &amp; Strong room Mechanical Ventilation Carried to Main</b> <b>Summary Page M50</b>					



<b>AIR CONDITIONING WORKS</b>					
<b>Item</b>	<b>Description</b>	<b>Qty</b>	<b>Unit</b>	<b>Rate (Kshs)</b>	<b>Amount (Kshs)</b>
A	<b>SERVER ROOM - AIR CONDITIONING SYSTEM</b>				
	The system chosen is to maintain temperature conditions in a room containing electronic equipment. The equipment shall have characteristics that make it fully compatible with heat dissipation requirements of the room.				
	The AC unit having a downflow air distribution like MiniSpace EC. It should have front and rear service access with a C7000 controller for controlling and monitoring the air conditioning system.				
	The refrigerant circuit of the AC module to consist of an evaporator, an expansion valve, a scroll compressor and an external air cooled condenser. The AC unit and the external condenser to be linked by means of a closed refrigerant circuit. The unit to be capable of having a cooling capacity of 22Kw and using R134a as a refrigerant.	1	No.		
B	The air conditioning works sub-contractor should allow for future installation of AC unit matching specs of the one described in <b>Item A</b> above.	1	Item		
C	Access door <b>Server Floor</b>	1	No.		
D	Raised floor panels that will provide functions such as air conduction and load bearing capacity. It should also provide for flexible installations. It is required to have a very high free cross- section for air flow, be abrasion-resistant and non magnetic.  It should be of dimensions 600x600mm, panel thickness between 40-60mm, point load of 10,000N and to be complete with pedestal and all jointing materials. The area to be covered with the tiles is as follows 60%will have perforated tiles while 40% will have solid tiles.	16	No		
E	<b>Refrigeration Pipework</b> Refrigeration liquid line pipework including 25mm Amaflex insulation.	80	Lm		
F	Refrigeration gas line pipework including 25mm Amaflex insulation.	80	Lm		
<b>Total carried Forward to next Page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Refrigerant</b> Allow R410A refrigerant for charging air conditioning system.	1	Item		
B	<b>Drain</b> 25mm PVC condensate drainage pipework, class D, including bends, clips, joints and tees in the running lengths of the pipe.	50	Lm		
C	<b>Surge Protector</b> Power surge protector as Solatek to suite or equal and approved.	1	No.		
D	<b>Electrical Works</b> Allow for associated electrical works from the local isolator provided by others within one meter to the air conditioning units and wiring from indoor unit to outdoor unit.	1	Item		
E	Calculations, working drawings and as installed drawings	1	Item		
F	<b>Trunking</b> 75x50mm approved PVC trunking for concealing the refrigerant pipework.	50	Lm		
	<b>Total Cost for Server Air Conditioning System Carried to next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
(I)	<b><u>GROUND &amp; FIRST FLOORS - AIR CONDITIONING</u></b> <b><u>Variable Refrigerant Flow(VRF) Air Conditioning System</u></b> VRF air conditioning system consisting of a series of interconnected outdoor units serving a number of indoor units. The capacities of the units are as outlined below: <b><u>Speaker's, D/Speaker's, Majority Leader's and Hansard Offices.</u></b> Four Way ceiling cassette type direct expansion indoor unit of cooling capacity 7.1Kw (24,000 BTU/HR) & complete with the following: *Minimum air flow rate of 17 Cubic metres per minute *A wireless remote control *Refrigerant (R410a) initial charge *Thermostat to control room temperature *Inbuilt condensate pump *decoration panel *ceiling mounting Kit *Sound pressure level of 31 dBA *Neoplasma purifying filter.The indoor unit to be mounted on the ceiling with prefabricated autoelevation grill brackets or any other approved anchoring method. The indoor unit to be as LG or equal and approved.  Ditto of capacity 5.6Kw (18,000 Btu/hr). <b>Executive Boardrooms/Sergeant at Arms, Clerk, Speaker's reception</b> <b><u>Outdoor Unit - 84Kw</u></b> 1 No. Outdoor unit of capacity 84Kw and capacity control in the range of 10 - 130% according to the indoor cooling load. It shall operate on R410a refrigerant. or any other non-ozone depleting refrigerant. It shall be provided with anchoring accessories including rawl bolts complete with anti-vibration rubber mountings. To be complete with wall mounted simple controllers to be mounted in each room and the control cable. The entire system shall be able to start automatically after power failure with a 3 minute delay. The outdoor unit to be as 'LG VRF Series outdoor unit or approved equivalent	4	No		
A					
C		9	No.		
D		1	No.		
	<b>Total carried Forward to next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
	<b>PIPEWORK AND ACCESSORIES</b>				
	<b>Control Cable Installation Works</b>				
A	Allow for wiring & conduit works including but not limited to interconnecting cable between the outdoor unit, indoor units, wired remote control & control system. cable to be CVV-SB 1.25mm <sup>2</sup> x 2C Supply, deliver and instal copper tubing to BS 2871: part1 and capillary and compression fittings to BS 864: part 2. Tubing must be solid drawn round, clean, smooth and free from defects and from deleterious films in the bore. The fittings must be free from internal fins or other irregularities. Compression fittings shall be Type A (non-manipulative). Allow in pipework prices for pipe support, clips and cradles, bends, tees, insulation, branches, joining fixing and any other accessories for proper and satisfactory functioning of the system.	200	Lm		
	<b>Copper Pipework and Insulation</b>				
B	34.9m diameter insulated copper pipe	18	Lm		
C	19.05mm diameter insulated copper pipe	54	Lm		
D	28.58mm diameter insulated copper pipe	62	Lm		
E	22.225mm diameter insulated copper pipe	44	Lm		
F	15.875mm diameter insulated copper pipe	42	Lm		
G	12.70mm diameter insulated copper pipe	24	Lm		
H	9.525mm diameter insulated copper pipe	24	Lm		
I	6.35mm diameter insulated copper pipe	24	Lm		
	<b>Y-Branches</b>				
J	Copper Y-branches complete with reducers and tees to connect indoor units from/to both gas and liquid main refrigerant pipe. The Y-branches to be as Toshiba RBM- series or approved equivalent.	5	No		
	<b>Bend</b>				
K	28.875mm diameter copper bend	6	No		
L	22.225mm diameter copper bend	6	No		
M	15.875mm diameter copper bend	6	No		
	<b>Total carried Forward to next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
<b>Total Brought Forward from Previous Page</b>					
A	12.7mm diameter copper bend	6	No		
B	9.525mm diameter copper bend	6	No		
	<b>PVC Drain Pipework</b> Supply and instal uPVC pipes for drainage of the indoor units. The pipes are to B.S 5235 with fittings fixed as per the manufacturer's instructions and BS 5572. Tenderer must allow in their prices for all sizes of connectors, adapters, socket, reducers, holderbats, clips e.t.c. required for the satisfactory running of the system.				
C	25mm diameter grey uPVC pipework	64	LM		
D	25mm diameter bend and U-trap	6	No		
	<b>Simple Central Controller Unit</b> Central controller unit complete with operational switches shall be installed in the reception area or any other convinient place. The unit shall be capable of controlling 16 indoor units. The unit shall incorporate pilot lamps to enable operating conditions to be checked. The system casing shall be of mild steel and anodized and shall be complete with all other accessories necessary to automatic operations of the air conditioning system. The controls system functions shall be:- . Controlling indoor units in each floor (29No. maximum) . Individual operation and monitoring . Group Management . set lock/lock release for remote control of each indoor unit at place where its installed. . Schedule automatic operation management/energy saving . Self diagnosing function (display system errors) The controls system shall be complete with:- . Central control network interface unit (CNU) . 5No. product interface unit (PI485), . Independent built-in battery (minimum 2 hours) . Ethernet (Cross UTP Cable) . 30 meters long 0.75mm <sup>2</sup> x 2C (shield) cable The controls system shall be Simple Central Controller Unit BMS compatible as manufactured by LG or equal and approved.				
E					
		1	No.		
<b>Total carried Forward to next Page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Refrigerant</b> Allow R410A extra refrigerant for charging all the VRF air conditioning systems described above.	1	Item		
B	<b><u>Surge Protector</u></b> Power protection unit as "Solatek" or equal and approved.	1	No		
C	<b>Cleaning and Flushing the Installation</b> Allow for cleaning and flushing the whole installation with appropriate medium before charging the system with refrigerant.	1	Item		
D	<b><u>Electrical Connections</u></b> Allow electrical cabling from the isolator provided by the others, switchgear and any other items necessary for optimum functioning of the systems.	1	Item		
E	<b>Training of maintenance staff and operators</b> Allow for training of three personnel on the operation and maintenance of the air conditioning installation. The training to be structured such that the personnel will undergo a course on the working of the machines, operations, settings, trouble shooting and maintenance of the machines.	1	Item		
F	<b>As-built Drawings and Maintenance Manuals</b> Allow for preparation of as-built drawings and maintenance manuals. All these will be handed to project Engineer in three hard copies and soft copy in 4Gb flash disk and compact disk.	1	Item		
<b>Total for Ground &amp; First Floors Air Conditioning carried Forward to next Page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Total Brought Forward from Previous Page				
(II)	<b><u>SECOND &amp; THIRD FLOORS - AIR CONDITIONING</u></b> <b><u>Variable Refrigerant Flow(VRF) Air Conditioning System</u></b>  VRF air conditioning system consisting of a series of interconnected outdoor units serving a number of indoor units. The capacities of the units are as outlined below:  <b><u>Chief whip's, Minority Leader's Offices.</u></b>  Four Way ceiling cassette type direct expansion indoor unit of cooling capacity 7.1Kw (24,000 BTU/HR) & complete with the following: *Minimum air flow rate of 17 Cubic metres per minute *A wireless remote control *Refrigerant (R410a) initial charge *Thermostat to control room temperature *Inbuilt condensate pump *decoration panel *ceiling mounting Kit *Sound pressure level of 31 dBA *Neoplasma purifying filter. The indoor unit to be mounted on the ceiling with prefabricated autoelevation grill brackets or any other approved anchoring method. The indoor unit to be as LG or equal and approved.				
A		2	No		
B	Ditto of capacity 6Kw (20,500 Btu/hr).Commitee Rooms	4	No.		
B	Ditto of capacity 4.5Kw (15,300 Btu/hr).Commitee Rooms	1	No.		
C	Ditto of capacity 5.6Kw (18,000 Btu/hr). Executive Boardrooms/Sergeant at Arms	8	No.		
	<b><u>Outdoor Unit - 89.6Kw</u></b> 1 No. Outdoor unit of capacity 89.6Kw and capacity control in the range of 10 - 130% according to the indoor cooling load. It shall operate on R410a refrigerant. or any other non-ozone depleting refrigerant. It shall be provided with anchoring accessories including rawl bolts complete with anti-vibration rubber mountings. To be complete with wall mounted simple controllers to be mounted in each room and the control cable. The entire system shall be able to start automatically after power failure with a 3 minute delay. The outdoor unit to be as 'LG VRF Series outdoor unit or approved equivalent				
D		1	No.		
	Total carried Forward to next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
	<b>PIPEWORK AND ACCESSORIES</b>				
A	<b>Control Cable Installation Works</b> Allow for wiring & conduit works including but not limited to interconnecting cable between the outdoor unit, indoor units, wired remote control & control system. cable to be CVV-SB 1.25mm <sup>2</sup> x 2C Supply, deliver and instal copper tubing to BS 2871: part1 and capillary and compression fittings to BS 864: part 2. Tubing must be solid drawn round, clean, smooth and free from defects and from deleterious films in the bore. The fittings must be free from internal fins or other irregularities. Compression fittings shall be Type A (non-manipulative). Allow in pipework prices for pipe support, clips and cradles, bends, tees, insulation, branches, joining fixing and any other accessories for proper and satisfactory functioning of the system.	200	Lm		
	<b>Copper Pipework and Insulation</b>				
B	34.9m diameter insulated copper pipe	18	Lm		
C	19.05mm diameter insulated copper pipe	54	Lm		
D	28.58mm diameter insulated copper pipe	62	Lm		
E	22.225mm diameter insulated copper pipe	44	Lm		
F	15.875mm diameter insulated copper pipe	42	Lm		
G	12.70mm diameter insulated copper pipe	24	Lm		
H	9.525mm diameter insulated copper pipe	24	Lm		
I	6.35mm diameter insulated copper pipe	24	Lm		
	<b>Y-Branches</b>				
J	Copper Y-branches complete with reducers and tees to connect indoor units from/to both gas and liquid main refrigerant pipe. The Y-branches to be as Toshiba RBM- series or approved equivalent.	5	No		
	<b>Bend</b>				
K	28.875mm diameter copper bend	6	No		
L	22.225mm diameter copper bend	6	No		
M	15.875mm diameter copper bend	6	No		
	<b>Total carried Forward to next Page</b>				



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
<b>Total Brought Forward from Previous Page</b>					
A	12.7mm diameter copper bend	6	No		
B	9.525mm diameter copper bend	6	No		
	<b>PVC Drain Pipework</b> Supply and instal uPVC pipes for drainage of the indoor units. The pipes are to B.S 5235 with fittings fixed as per the manufacturer's instructions and BS 5572. Tenderer must allow in their prices for all sizes of connectors, adapters, socket, reducers, holderbats, clips e.t.c. required for the satisfactory running of the system.				
C	25mm diameter grey uPVC pipework	64	LM		
D	25mm diameter bend and U-trap	6	No		
	<b>Simple Central Controller Unit</b> Central controller unit complete with operational switches shall be installed in the reception area or any other convinient place. The unit shall be capable of controlling 16 indoor units. The unit shall incorporate pilot lamps to enable operating conditions to be checked. The system casing shall be of mild steel and anodized and shall be complete with all other accessories necessary to automatic operations of the air conditioning system. The controls system functions shall be:- . Controlling indoor units in each floor (29No. maximum) . Individual operation and monitoring . Group Management . set lock/lock release for remote control of each indoor unit at place where its installed. . Schedule automatic operation management/energy saving . Self diagnosing function (display system errors) The controls system shall be complete with:- . Central control network interface unit (CNU) . 5No. product interface unit (PI485), . Independent built-in battery (minimum 2 hours) . Ethernet (Cross UTP Cable) . 30 meters long 0.75mm <sup>2</sup> x 2C (shield) cable The controls system shall be Simple Central Controller Unit BMS compatible as manufactured by LG or equal and approved.				
E					
		1	No.		
<b>Total carried Forward to next Page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b>Refrigerant</b> Allow R410A extra refrigerant for charging all the VRF air conditioning systems described above.	1	Item		
B	<b>Surge Protector</b> Power protection unit as "Solatek" or equal and approved.	1	No		
C	<b>Cleaning and Flushing the Installation</b> Allow for cleaning and flushing the whole installation with appropriate medium before charging the system with refrigerant.	1	Item		
C	<b>Electrical Connections</b> Allow electrical cabling from the isolator provided by the others, switchgear and any other items necessary for optimum functioning of the systems.	1	Item		
D	<b>Training of maintenance staff and operators</b> Allow for training of three personnel on the operation and maintenance of the air conditioning installation. The training to be structured such that the personnel will undergo a course on the working of the machines, operations, settings, trouble shooting and maintenance of the machines.	1	Item		
E	<b>As-built Drawings and Maintenance Manuals</b> Allow for preparation of as-built drawings and maintenance manuals. All these will be handed to project Engineer in three hard copies and soft copy in 4Gb flash disk and compact disk.	1	Item		
F	<b>Testing and Commissioning</b> Allow for testing and commissioning of the air conditioning installations to the satisfaction of the Engineer.	1	Item		
<b>Total for Second &amp; Third Floors Air Conditioning carried Forward to Main Page</b>					

**KITCHEN COLDROOM AND KITCHEN EXTRACT**

Item	Description	Qty	Unit	Rate (Kshs)	Total (Kshs)
	<b><u>KITCHEN COLDROOM</u></b>				
A	3.0KW Evaporator	No.	1		
B	Semi-hermetic condensing unit to match A above	No.	1		
C	Insulated door	No.	1		
D	Control panel	No.	1		
E	Thermostat	No.	1		
F	Digital Thermometer	No.	1		
G	Solenoid valve	No.	1		
H	LP/HP Cut out switch	No.	1		
I	Vapour seal	SM	45		
J	Thermal insulation 100mm thick	SM	45		
K	SWG 20 Aluminium Sheet	SM	45		
L	1.5 mm thick Chequered Aluminium plates	SM	10		
M	Electrical works/wiring including cables and conduits	Item	1		
N	65W vapour proof light fittings	No.	1		
O	2.8m meat rail	No.	3		
P	Meat hooks	No.	6		
Q	3 Tier stainless steel food rack 1800mm long	No.	1		
R	Filter drier	No.	1		
S	Sight glass	No.	1		
T	Refrigeration pipe work	Item	1		
U	High pressure gauge	No.	1		
V	Low pressure gauge	No.	1		
W	15mm diameter copper tubing	Lm.	26		
	<b><u>KITCHEN MECHANICAL VENTILATION</u></b>				
	<b><u>Supply, deliver, install and fix the following equipment/items as described.</u></b>				
	Where trade names are mentioned the tenderer must provide the same materials as other brands shall not be accepted without a written authority to supply alternative brands by the mechanical Engineer.				
	<b><u>Fan</u></b>				
X	Purlin mounted centrifugal fan as "COLCHESTER ROOF UNITS' Model DSM / 500', or equal and approved equivalent capable of extracting $5\text{m/s}^3$ of air against 250 Pa static pressure. The fan will run at a maximum speed of 1400 revolutions per minute and be driven by 2.3KW, single phase, and 240V 50 Hz motor. The fan shall be installed complete with roof cowl, inlet and bird guards and isolators in accordance with the manufacturer's printed instructions.	No.	1		
	<b>Total Carried Forward to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	<b><u>Control panel</u></b> Control panel for above fan	No	1		
B	<b><u>Duct</u></b> Extract duct constructed from 18 S.W.G. rolled galvanized steel sheet and connected to the fan by flexible connections and flanged joints. All joints and seams shall be sealed with mastic to make them airtight. The duct shall be of size 650 x 650	SM	15		
C	<b><u>Extract hood</u></b> The extract hood size shall be 2500mm wide by 4500mm long by 600mm deep and shall be constructed out of 16 S.W.G. anodized aluminium sheets and stiffened by a frame of 38 x 38mm galvanized mild steel R.H.S. The hood shall have a 75mm wide by 25mm deep grease drainage channel all round. The hood shall taper to approximately 500mm wide and 3000mm long at the top.	No.	1		
D	<b><u>Filter</u></b> The filter shall be composed of folded woven metal material interspersed with layers of expanded metal mesh of stainless steel and shall be capable of filtering a total of 11088m <sup>3</sup> /hr. The filter panels shall be easily removable for washing as and when necessary.	No.	8		
E	<b><u>Hood lights</u></b> Warm white hood down lights suitable for humid environment with uniform light distribution. The lights be of LED source, anti-glare design of 100-240V input voltage and 8-12W with over 3500 hours lifetime. It and shall be as "RAYCONN" or approved equivalent.	4	No.		
F	<b><u>Anti-vibrations mounting</u></b> Anti-vibrations mounting to isolate vibrations between the fan and the roof structure shall be able to withstand a load range of upto 23 Kg per mounting and shall be as "WOODS" part No. 76518.	1	Item		
G	<b><u>Electrical works</u></b> All electrical wiring, fan/motor starters and connecting power from the local isolator to the fan and any necessary electrical works.	1	Item		
	<b>Total Carried Forward to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	Calculations,working drawings	1	Item		
B	<b><u>As-built Drawings and Maintenance Manuals</u></b> Allow for preparation of as-built drawings and maintenance manuals. All these will be handed to project Engineer in three hard copies and soft copy in 8Gb flash disk and compact disk.	1	Item		
C	<b><u>Testing</u></b> Testing and commissioning, setting to work to the requirements of the specification and to the satisfaction of the Mechanical Engineer.	1	Item		
	<b>Total amount for Kitchen Coldroom and Kitchen Extract System carried forward to Main Summary page M50</b>				

**Kitchen L.P Gas Installation and Kitchen Equipmenmt**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b><u>Supply, Install, test and commission the following:</u></b>				
	<b><u>Kitchen L.P Gas Installation</u></b>				
	<b><u>L.P G cylinders</u></b>				
A	50kg cylinder L.P gas cylinders complete with initial L.P Gas charge,15mm isolating regurator and connecting hose.	4	No.		
B	First stage gas pressure regulator	1	No.		
C	Second stage gas pressure regulator	1	No.		
D	L.P. Gas pressure gauge	2	No.		
	<b><u>L. P. Gas Isolating Valve</u></b>				
E	20mm diameter L.P gas isolation valve shall be quarter turn, lever operated ball valve of stainless steel construction complete with unions and threaded adaptor	4	No.		
	<b><u>Manifold for the Main Kitchen</u></b>				
F	1500mm long 50mm Seamless schedule 40 pipe manifold with 15mm diameter tapings to equipment complete with mounting legs and 3meters long 6/8 copper gas pipes.	1	No		
	<b><u>Switch over Manifold</u></b>				
G	L.P gas manifold complete with quarter turn valves and automatic change - over valve for switching from twin 50kg LPG cylinders to the two standby cylinders.	1	No.		
	<b><u>Pipe work</u></b>				
	Supply, installation, testing and commissioning of the following L.P. Gas Installations works. Supply, deliver and install Schedule 40 seamless steel pipes. Allow in pipe-work prices for pipe welding, pipe support clips and cradles, sockets, threaded nipples, bitumen seal, joint compound, joining, fixing and any other accessories for proper and satisfactory functioning of the system. All buried pipes shall be coated with bitumen coating to reduce corrosion and this shall be allowed for in the prices.				
H	20mm diameter seamless schedule 40 steel pipework	18	Lm		
	<b><u>Bends</u></b>				
I	20mm diameter Schedule 40 bend	6	No		
	<b><u>Tees</u></b>				
J	20mm diameter Schedule 40 tee	4	No		
	<b><u>Adaptor</u></b>				
K	20x15mm adaptor/reducer	6	No		
L	15x8mm adaptor/reducer	8	No		
	<b>Total Carried Forward to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				<b>0</b>
A	<b><u>Painting</u></b> Allow for painting of the L. P.Gas installation with 2 coats of yellow super gloss paint on a primer coat to the approval of the Project Engineer.	1	Item		
B	<b><u>Warning Label</u></b> Allow for laminated labels for the L. P. Gas installation and "No smoking" label and signs to the approval of the Project Engineer.	1	Item		
C	Calculations,working drawings and as installed drawings	1	Item		
D	<b><u>Testing and Commissioning</u></b> Testing and commissioning, setting to work the L.P.Gas installation to the requirements of the specification and to the satisfaction of the Project Engineer.	1	Item		
	<b><u>KITCHEN EQUIPMENT</u></b>				
	<b><u>Cooking Island</u></b>				
E	4 Burner high pressure gas cooking range with oven	1	No.		
F	4 Burner electrically heated solid top cooking range with oven	1	No.		
G	4 Burner L.P gas heated stockpot stand	1	No.		
H	Gas Chicken Grille(15-20 birds)	1	No.		
I	Gas Double well Deep fat Fryer	1	No.		
	<b><u>Vegetable preparation</u></b>				
J	Stainless Electric Potato peeler	1	No.		
K	Potato chipper	1	No.		
L	Knife sharpener	1	No.		
M	Teflon chopping block	2	No.		
N	Vegetable preparation machine	1	No.		
	<b><u>Meat Preparation</u></b>				
O	Meat slicing machine	1	No.		
	<b>Total Carried Forward to Next Page</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
<b>Total Brought Forward from Previous Page</b>					
A	Meat Mincer	1	No.		
B	Wooden meat chopping block	1	No.		
	<b><u>Pastry</u></b>				
C	Bench Electronic weighing scale (1 - 25Kg.)	1	No.		
D	Universal mixing Machine	1	No.		
E	Salamander	1	No.		
	<b><u>Wash - up</u></b>				
F	Double bowls Stainless Steel pot wash Sink on a movable Stand with cabinets of size 3500mm	2	No.		
G	Plate rack-three tier	1	No.		
H	Glass rack-three tier	1	No.		
I	Insectocutor	3	No.		
J	General purpose trolley	2	No.		
	<b><u>Grease Trap</u></b>				
K	600 x 450 x 400mm deep stainless steel two chamber grease trap complete with all the fittings including the grease collector basket, interconnecting pipes, gulley traps and 2No. heavy duty covers. It shall be constructed with 16. S.W.G stainless steel.	No.	2		
L	Electric heated Brain Marie	1	No.		
M	Tea urn	2	No.		
N	Coffee Maker	1	No.		
O	Milk Urn	2	No.		
P	Juice dispenser	1	No.		
Q	Hot water urn	1	No.		
	<b><u>Cold area</u></b>				
R	Chest freezer	1	No.		
S	Double door Upright refrigerator	1	No.		
	<b><u>General Items</u></b>				
T	General Purpose Trolley	2	No.		
U	Mobile refuse bin	1	No.		
<b>Total Carried Forward to Next Page</b>					



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total Brought Forward from Previous Page</b>				
A	Ice cube Maker	1	No.		
B	Double Plate Griller /Toaster	1	No.		
C	Movable Stainless steel worktop with cabinets below-2100mm long	1	No.		
D	Movable Stainless steel worktop with cabinets-2600mm long	2	No.		
E	Movable Stainless steel worktop with cabinets-3700mm long	1	No.		
	<b><u>Store</u></b>				
F	Digital platform weighing scale (0-150kg)	1	No.		
G	3-tierVegetable rack	2	No.		
<b>Total amount for L.P. Gas Installation and Kitchen Equipment Carried to Main Summary M50</b>					

**MECHANICAL WORKS SUMMARY PAGE**

<b>Item</b>	<b>Description</b>	<b>Total Cost</b>
1	Total carried forward from Collection Page for Sanitary Fittings.....	
2	Total carried forward from Collection Page for Plumbing and drainage.....	
3	Total carried forward from Collection Page for Fire protection.....	
4	Total carried forward from Collection Page for Solar water heating works.....	
5	Total carried forward from Collection Page for Air Conditioning for the Chambers	
6	Total carried forward from Collection Page for Ventilation	
7	Total carried forward from Collection Page for VRF & Single Split Air conditioning for Server	
8	Total carried forward from Collection Page for Kitchen Coldroom and Extract	
9	Total carried forward from Page for L.P.Gas installation and Kitchen Equipment	
10	<b>Contingency Sum for authorised variations</b>	<b>1,500,000</b>
<b>Total Cost for Mechanical Services Carried Forward to Form of Tender</b>		

Amount in words.....

.....

.....

Tenderer's Name and Stamp .....

.....

.....

Signature ..... Date.....

Tenderer's P.I.N No ..... VAT Certificate No.....

Witness. ....Address.....

Tenderer's Signature..... Date.....

# ELECTRICAL WORKS

SECTION A  
GENERAL SPECIFICATIONS  
OF  
MATERIALS AND WORKS

## **GENERAL SPECIFICATIONS OF MATERIALS AND 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, 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 (CA).

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 trip free 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.

### **A/5**

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.

### **A/6**

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 to be 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.

### A/7

- (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 sub-main 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 rawlbolts.

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 backstraps shall also be used for securing cables in vertical ducts.

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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

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).

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#### **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 Heller man 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

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) <b>Main and Sub-Main</b>		
a) Phase	Red	Red
b) Neutral	Black	Black
2) <b>Sub-Circuits Single Phase</b>		
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 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 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.

The cooker control units shall be as manufactured by "M.K. Electrical Company Ltd", or other approved equal KS 04 – 247: 1988

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## **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 lamp holders 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.

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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 non-compliance 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 Sub-Contractor 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 fuse boards, 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 enamelled 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 15mm. 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 galvanised 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 Subcontractor 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/Commission of Kenya (CAK/CCK) requirements or any other supplementary Regulations as may be produced by the engineer.

- (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 Sub-contractor 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.

## **GENERAL SPECIFICATIONS FOR LIFTS INSTALLATION WORKS**

### **1. REGULATIONS**

All Apparatus and materials supplied and work carried out shall comply with the provisions of the following documents: -

- (a) The latest Edition of I.E.E Regulations
- (b) The Kenya Power and Lighting Co. Ltd By-laws
- (c) The Electric Power Act and the Rules made there under.
- (d) EN81 and C.P 407 (1972)
- (e) The requirements of the Chief Inspector of Factories for the Kenya Government, Factories Act Chapter 514 SECTION 30. **The contractor shall avail all the certificates.**
- (f) Any other regulations governing lift and escalator installations in Kenya
- (g) Kenya Bureau of Standards (KBS) lifts standard KS 2169 – 1

### **2. BUILDER'S WORK BY LIFT CONTRACTOR**

#### **A. Lifts Shaft**

- (i) The dimensions of the lifts shafts are 1950mm (width) by 1950mm (depth) for the 1No. Double-Sided VIP Lift C and 2700mm (width) by 1510mm (depth) for the other 2No. Single-sided Lifts A & B – It shall be the responsibility of the lifts Contractor to verify the dimensions of the lifts shaft (In consultation with Architectural and Structural Engineer's drawings) before placing any orders for importation. The Employer/employer's representative will bear neither responsibility nor liability for any approximate dimensions issued – as a guide to the Contractor.
- (ii) The lifts Contractor shall provide cut-outs for hall buttons, hall position indicators, hall lanterns, shaft ventilations and fire man's switch.  
  
It shall be the responsibility of the lifts Contractor to provide, properly position and fix the hall buttons, hall indicators, hall lanterns, fire man's switches, door frames, sills and architraves.
- (iii) The lifts Contractor shall provide the necessary scaffolding for erection of equipment and hoarding to secure the work area from general public and maintain safety of the people and other installations in the building.
- (iv) The lifts Contractor shall provide temporary electricity supply for erection and shaft lighting, and thereafter a permanent supply from an appropriate isolator.

**B. Lifts Pits**

The lifts contractor shall provide and fix ladders where such facility may be required as stipulated in BS 5655, and terminal and over travel limit switches.

**C. Lift Motor Room**

The lifts Contractor shall provide the following in the lifts motor room:

- (i) Cut-outs for roping, safety gear ropes, selector tapes (where provided) cabling etc. in the lift room floor.
- (ii) Lifting beam in the form of a rolled steel joist if required.
- (iii) General lighting cable ducts and conduits and power and ventilation equipment.

**D. Access**

The lifts Contractor shall provide stairway access with lockable doors to the lifts motor room. On the outer side of the door shall be written in red letters:

“DANGERS 415 VOLTS – LIFT MOTOR ROOM – NO UNAUTHORISED PERSON ALLOWED INSIDE”

**E. Builder's Work**

The lifts Contractor shall provide for:

- (i) All chasing, shaft ventilation and making good
- (ii) All drilling and plugging of holes in floors, walls, ceiling and roofs for security services, and for equipment requiring screw or bolt fixing.
- (iii) Any purpose made fixing brackets

**3. FIREMAN'S SWITCH FOR THE LIFTS**

A fireman's control switch shall be provided in the down terminal floor, main entrance lobby. The Fireman's switch shall be of the type approved by the Engineer.

Operation of the Fireman's switch shall stop the lift car on the next landing but without opening the car and landing doors and immediately return the lift to the ground floor irrespective of any other calls and park lift with doors open. The car will then become in-operative with the exception of the 'Fireman's Lift' which shall operate in answer to the car buttons until only the fireman's switch is reset.

**4. EMERGENCY ALARM SYSTEM**

An emergency alarm system and an intercom shall be installed between the car, the motor room, and the reception desk on the ground floor.

The alarm system shall be clearly labeled "Emergency Alarm". On pushing an alarm button, the system should ring simultaneously in the car, motor room (top floor at the controller for MLR lifts) and the reception desk.

The lifts Contractor shall carry out the wiring in the lift car and between machine and the reception desk. The power supply for the alarm system shall be derived from a self-recharging unit.



**5. EMERGENCY DOOR KEYS**

It shall be possible to open every lift-landing door by the use of a release key whether or not the lift car is in the landing zone. The key hole shall be unobtrusive and located at high level.

**6. CALL STATION AND OPERATING PANEL BUTTONS**

The call station, distributed between the lifts on each landing, and operating panel buttons shall be micro-motion push button.

**7. INTERFERENCE SUPPRESSION**

The lift motor and auxiliary controls shall be suppressed so as not to interfere with local radio and television reception and closed circuit television or Electro mechanical equipment within the building. The suppression shall be carried out in accordance with B.S. 800 and all suppression devices incorporated shall comply with B.S. 5655.

**8. PROTECTION PADS**

The lifts Contractor shall supply one set of protective quilted cover pads to approval for passenger lift cars.

**9. CAR EMERGENCY LIGHTING**

The lift car shall be provided with an emergency light fitting operating from a self-recharging battery unit. The emergency light will be built in the car-operating panel.

**10. TEST**

Both on completion of his work on the lift and at the end of the guarantee period, the lift Contractor shall carry out all the tests as required and in accordance with B.S 5655 part 7 in the presence of the Engineer and shall provide all the necessary instruments, labour and materials to do so at his cost.

Damage occurring, as a result of these tests will be made good by the Lifts Contractor to the Engineer's satisfaction at his expense.

4No. (Four) copies of the test certificates for each lift should be forwarded to the Engineer within 4 days of completion of the last test.

**11. TRAINING**

The tenderer shall provide in his tender for the attachment on site, for training in the maintenance of the lifts, of 2No.technicians during the dismantling, installation, testing and commissioning period.

**12.0 PROTECTION AGAINST POWER/VOLTAGE FLUCTUATIONS, SURGE AND TRANSIENT CURRENTS****12.1** The lift equipment and all its controls shall be protected against power/ voltage fluctuations, surges and transient currents. The contractor shall provide for and install all the necessary equipment for this protection.

The protective switchgear shall be verified by the Engineer during the overseas factory inspection.

### **13.0 INITIAL STATUTORY INSPECTION**

- 13.1 The tenderer shall allow in his tender for the initial statutory inspection of the lifts by an Approved Government Lift Inspector during the commissioning of the new lifts, and thereafter for inspection at intervals of six (6) months periodic time during the 12 months defects liability period. One of the inspections shall be done after the expiry of the defects liability period on confirming that all the defects (if any) have been corrected by the lifts contractor.
- 13.2 The employer and the contractor shall, at each inspection, each retain a copy of the lift inspection certificates while the original will be submitted to the Ministry of Labour and Human Resources Development.

### **14.0 INITIAL MAINTENANCE**

- 14.1 The tenderer shall allow in his tender for the initial routine service maintenance of the new lifts once a month during the 12 months defects liability period and shall carry out all necessary adjustments and repairs, cleaning, greasing and oiling of moving parts.
- 14.2 During the initial maintenance of the new lifts, the tenderer shall also allow in his tender for all tools, instruments, plant and scaffolding and the transportation thereof, as required for the correct and full execution of these obligations and the provision, use or installation of all materials or parts which are periodically renewed such as brake linings etc., or parts which are faulty for any reason whatsoever excepting always acts of God such as storm, tempest, flood, earthquake and civil revolt, acts of war and vandalism.
- 14.3 The contractor shall also provide a 24 -hour break-down service to attend to faults on or malfunctioning of the installation between the routine visits of the defects liability period.
- 14.4 A monthly report of any works done upon the installation shall be supplied to the Engineer.

### **15.0 REGISTRATION OF THE NEW LIFTS**

- 15.1 The tenderer shall allow in his tender for the registration of the new lifts with the Ministry of Labour including payments of any fees that may be required. It is the responsibility of the Contractor to avail the registration certificate to the client once the registration has been done.

### **16.0 INTERIOR LIFT CAR FINISHES**

- 16.1 The interior lift car finishes including ceiling, floor, cabin panels, car door, landing door and architraves shall be to the Engineers approval in liaison with the Client. The approval will be within the range of the manufacturers' range of finishes in their brochures. The tenderer must therefore allow for this in their bid.

### **17.0 FACTORY INSPECTION**

- 17.1 The employer shall be entitled to have the quantity and quality of the imported lifts materials inspected by two number (2No.) engineers appointed by the Project Manager, and one (1No.) representative for the employer.

- 17.2 The said inspection shall be carried out at the factory of manufacture of the lifts materials during normal working hours and the successful tenderer shall give written notice to the Project Manager at the latest thirty (30) calendar days in advance of the date that the lifts materials are ready for inspection.
- 17.3 Travel (including ground, air travel and airport passage taxes) and full board accommodation expenses in at least a three (3) star hotel incurred by the engineers appointed by the Project Manager, and the employer's representative shall (see clause 17.1) be borne by the contractor. The contractor shall also meet out of pocket expenses for the officers at Government of Kenya rates for the duration of the factory inspection. The costs incurred shall be reimbursed to the contractor from the provisional sum allowed in page (E/88) of the Bills of Quantities.
- 17.4 The inspection period shall be seven (7) working days excluding travelling time.
- 17.5 If as a result of the inspection any of the lift materials are found to be defective, the successful tenderer shall replace the defective materials and determine a new date as when a new inspection shall be performed at the expense of the contractor.
- 17.6 The successful tenderer shall only ship the lift materials after the said factory inspection.

#### 18.0 LIFTS MONITORING SYSTEM

This is to be a software based system with two 24" colour HD monitors and key boards (in parallel – **two locations - for the client**) to monitor and control security functions at all times. They shall be located at – security area – and at maintenance/ICT office. It shall monitor the 2No. Lifts in the premises.

#### 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 Company Limited, and Communications Authority of Kenya (CA).

## **SECTION B**

### **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, 5<sup>th</sup> Floor Hill Plaza Building, Community area, Nairobi along Ngong road, during normal working hours.

**SECTION C**  
**PARTICULAR SPECIFICATIONS**  
**OF**  
**MATERIALS AND WORKS**

# **PARTICULAR AND TECHNICAL SPECIFICATIONS OF MATERIALS AND WORKS FOR ELECTRICAL, STRUCTURED CABLING & IP PBX, CCTV & ACCESS CONTROL AND LIFTS INSTALLATION WORKS**

## **CLAUSE**

## **DESCRIPTION**

### **PART 1**

1.00	Particular specifications
1.01	Description of the site
1.02	Description of the project
1.03	Scope of the works
1.04	Climatic conditions
1.05	Materials for the works
1.06	Minimum Technical Specifications for LED Lighting Fittings/Lamps
1.07	Brochures for electrical equipment, fittings and accessories
1.08	Bond for I.P. P.B.X with provisional type
1.09	Regulations
1.10	Position of Services and Equipment
1.11	Setting to work and Regulating Systems
1.12	Identification of plant Components
1.13	Working with drawings
1.14	Record Drawings
1.15	Tests
1.16	Quality materials
1.17	Training
1.18	Equipment guarantee
1.19	Patent rights

### **PART 2 – STRUCTURED CABLING & IP PBX**

2.0.0	Technical Specification for I.P. P.B.X
2.0.1	Scope of the Work
2.0.2	Minimum requirements
2.0.3	Equipment finish
2.0.4	Interference suppression
2.0.5	Door keys
2.0.6	Equipment Hardware
2.0.7	Equipment Software
2.0.8	System features
2.0.9	Barring and route restriction
2.0.10	Class of service
2.0.11	Attendant console
2.0.12	Telephone instruments
2.0.13	Numbering system
2.0.14	Exchange lines
2.0.15	Tie lines
2.0.16	System Maintenance
2.0.17	Power supply
2.0.18	List of main requirements for the I.P. P.B.X
2.0.19	Other requirements for the I.P. P.B.X
2.0.20	Digital enhanced cordless Telephony (DECT)

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2.0.21	Items to be stated by the Tenderer.
2.0.22	Statement of compliance

### **PART 2 – CCTV & ACCESS CONTROL**

2.1.0	Technical Specifications
2.1.1	Extent of Works for IP based Security Surveillance System
2.1.2	Minimum allowable Technical Specifications for the CCTV System
2.1.3	PC work stations
2.1.4	Control room
2.1.5	Control room equipment
2.1.6	Cables and connectors
2.1.7	Uninterruptible Power Supply (UPS)
2.1.8	Turn stiles
2.1.9	Electromagnetic Lock
2.1.10	Electric Bolt Lock
2.1.11	Walk through metal detector
2.1.12	X-ray baggage scanners
2.1.13	Software licences
2.1.14	Statement of Compliance



**PART 1****1.00 PARTICULAR SPECIFICATIONS****1.01 DESCRIPTION OF THE SITE**

The site of the proposed works is at **Bungoma County – Bungoma Town.**

**1.02 DESCRIPTION OF THE PROJECT**

The works entail the Supply, Installation, Testing and Commissioning of Electrical, Fire Detection & Alarm, Structured Cabling & IP PBX, CCTV & Access Control works and Lifts Installation works.

**1.03 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 conducting, cabling, fittings and accessories.

**b) Fire Detection & Alarm System**

This shall include fire alarm control panel, smoke/heat detectors, sounders, break glass and earthing.

**c) Structured Cabling & IP PBX**

This shall include office telephone network infrastructure: fully accessorised IP PBX and telephone equipment, patch panels, active networking components (Edge switches etc.) and Wireless Networking equipment (Wi-Fi Routers/Range Extender etc.) and earthing.

**d) CCTV & Access Control**

**CCTV System** – This shall include CCTV camera surveillance system and networking infrastructure: infrared cameras, UPS, PDUs, UTS & Fiber Optic Cabling, Patch Panels and equipment cabinets, Monitors, Server and Data Storage (NVR) Systems and earthing.

**Access Control System** – This shall include Access control & desktop computer equipped with software module, door input controller interface unit, door controller card, proximity card readers, biometric fingerprint readers and keypads, magnetic door locks, UPS, Walkthrough metal detector, baggage scanner etc. and earthing.

**e) Lifts installation**

This shall include conducting, cabling, lift (car) installation, machine (drive) mechanisms and accessories.

**1.04 CLIMATIC CONDITIONS**

Mean Maximum Temperatures: 30°C

Mean Minimum Temperature: 14°C

Range of Relative humidity: 57% - 79%

Salt in the atmosphere: 0.09%

Altitude: 1385m above sea level

Solar Radiation, February Mean Max 575 Langleys

Extremely heavy rains fall at certain periods of the year (May/June) and the contractor shall be deemed to have taken account of this factor both in his prices and his planning of the execution of the contract works.

Equipment de-rating factors for the temperature and altitude shall be stated.

#### 1.05 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 Electrical Engineer.

#### 1.06 MINIMUM TECHNICAL SPECIFICATIONS FOR LED LIGHTING FITTINGS/LAMPS

LED LIGHT FITTING TECHNICAL SPECIFICATIONS		
IEC Compliant		
Item	Minimum Specifications	Proposed solution
Brand	State the brand, model and attach Technical Brochure (Mandatory)	
Operating	<ul style="list-style-type: none"> <li>➤ voltage range: 130-300 V ac</li> <li>➤ frequency range: 50-60Hz</li> <li>➤ Power factor <math>\geq 0.9</math> lagging</li> <li>➤ Total Harmonic Distortion (THD) <math>&lt; 15\%</math></li> <li>➤ Ambient temperature range -10 to +35 °Operating</li> <li>➤ Colour Consistency <math>\leq 5\text{SDCM}</math></li> </ul>	
Performance	<ul style="list-style-type: none"> <li>➤ System efficacy <math>\geq 90\text{lm/W}</math></li> <li>➤ Lamp colour temperature: Offices/Task areas: 4000K - 6500K Residential areas: 3000K – 4000K</li> <li>➤ Correlated Colour Temperature (CCT) <math>\geq 6000\text{K}</math></li> <li>➤ Colour Rendering Index <math>\geq 80</math></li> <li>➤ Median useful life (Operating Hours) <math>\geq 50,000</math> hours</li> </ul>	
Standards Compliance	CB/EMC/CE	
General	<ul style="list-style-type: none"> <li>➤ Driver/power unit/transformer - PSU-E</li> <li>➤ Backlit type</li> <li>➤ Protection class IEC - Safety class II (II)</li> </ul>	

Bidders must provide technical brochures of the LED lighting fittings/Lamps to evaluate their technical compliance.

#### 1.07 BROCHURES FOR ELECTRICAL EQUIPMENT, FITTINGS AND ACCESSORIES

For consideration and qualification, tenderers shall; at their own cost, provide coloured manufacturer's brochures detailing technical literature and specifications where applicable.

**1.08 BOND FOR I.P. P.B.X WITH PROVISIONAL TYPE APPROVAL**

Where the I.P. P.B.X offered for this tender does not possess full type approval from C.A.K but has provisional type approval, the tendered will be required to submit the name of a separate surety who will be willing to be bound to the Kenya Government in an amount equal to the full value of the I.P. P.B.X project for a period of 18 months from the date the I.P. P.B.X is commissioned into service. The surety will be subject to the approval of the government.

**1.09 REGULATIONS**

The subcontractor shall, in the execution and completion of the works in the detailed design for which he is responsible comply with the provisions of the following as necessary and relevant:

- Communication Authority of Kenya (CAK)
- The Kenya Communications Act
- The Electronic Power Act and the Rules made there under.
- The Kenya Power and Lighting Company Limited's Bye-Laws.
- The current edition of the "Regulations for the Electric Equipment of Buildings" issued by the Institution of Electrical Engineers.
- The requirements of the Chief Inspector of Factories for the Kenya Government.
- Kenya Bureau of Standards (KBS) Standard Specifications and Codes of Practice, or other equal and approved standard specifications and codes.
- The Bye-Laws of the Local Authority.
- Any other regulations applicable to Electric and Electronic Installations or Communications systems in Kenya.
- The Employer's Safety Regulations.

**1.09 POSITION OF SERVICES AND EQUIPMENT**

The route services and approximate positions of apparatus are shown on the contract drawings but their exact positions shall be determined by approved dimensional details on working drawings or on site by the Engineer.

The subcontractor shall ascertain on site that his work will not foil other services or furniture and all services through the ducts must be readily accessible for maintenance and arranged to allow maximum access along the ducts. Any work which has to be redone due to negligence in this respect will be the sub-contractor's responsibility.

**1.10 SETTING TO WORK AND REGULATING SYSTEMS**

The subcontractor shall carry out such tests of the contract works as are required by KeBS Standard Specifications and Codes of Practice, I.E.E Regulations or equal and approved codes, or the competent Authority.

No testing or commissioning shall be undertaken except in the presence of and to the satisfaction of the Engineer unless approved otherwise by him (subcontractor's own preliminary and proving tests are exempted).

The subcontractor shall include in his tender for the costs for testing and commissioning the subcontract works as herein described. He shall submit for approval to the Engineer a suitable programme for testing and commissioning. The Engineer and the Employer shall be given ample warning as to the dates on which testing and commissioning will take place.

The proving of any system of plant or equipment as to compliance with the specification shall not be approved by the Engineer except at his discretion until tests have been carried out under operating conditions appertaining to the most onerous conditions specified except where the time taken to obtain such conditions is unreasonable or exceeds 12 months after practical completion of the contract works.

#### **1.11 IDENTIFICATION OF PLANT AND COMPONENTS**

The contractor shall supply and install identification labels to all plant and to all switches and items of control equipment with, where no excessive heating is involved, white Traffolyte or equal labels engraved in block lettering denoting the name/function and/or section controlled. Where heating is likely to distort Traffolyte approved aluminium labels with stamped or engraved lettering shall be used.

The labels shall be mounted on equipment and in most suitable positions. They shall be in English or in internationally understood symbols capable of being read without difficulty. The labels shall conform to descriptions used on record drawing. Details of the lettering of the labels and the method of mounts or supporting shall be forwarded to the P.M. for approval prior to manufacture.

#### **1.12 WORKING DRAWINGS**

The contractor shall prepare such working Drawings as may be necessary. The working Drawings shall be completed in such detailed not only that the contract works can be executed on site but also that the P.M. can approve the contractor's designs and intentions in execution of the contract works.

Approved working drawings shall not be departed from except where provided for.

Approval by the P.M. of working Drawings shall neither relieve the contractor of any of his obligations under the contract nor relieve him from correcting any errors found subsequently in the approved working Drawings or elsewhere associated therewith or with the works.

#### **1.13 RECORD DRAWINGS**

During the execution of works on site the contractor shall, in a manner approved by the P.M. record on working or other Drawings at site all information necessary for preparing Record Drawings of the installed contract Works. Marked-up working or other Drawings and other documents shall be made available to the P.M. as he may require for inspection and checking.

Record Drawing shall include but are not restricted to the following drawings or information:-

- Working Drawings amended as necessary but titled "Record Drawings" and certified as a true record of the as installed" contract works.
- Fully dimensioned drawings of all plant and apparatus.
- System Schematic and trunking diagrams showing all salient information relating to control and instrumentation.
- Wiring diagrams of individual plant, apparatus and switch and control boards. These diagrams to include these particular to individual plant or apparatus and elsewhere applicable those applicable to system operation as a whole.

One reproducible copy of the Record Drawings of the contract works and Schematic Diagrams shall be provided not later than one month afterwards.

Notwithstanding the contractor's obligation referred to above, if the contractor fails to produce to the P.M.'s approval of the Record Drawings, within one month of partial or Practical Completion the Employer shall be at liberty to have these drawings produced by others. The cost of obtaining the necessary information shall be deducted from the out-standing payments due to the contractor.

#### **1.14 TESTS**

Both on completion of his work and at the end of the guarantee period the contractor shall carry out such tests as may be required in the presence of the P.M. or his representative, or the competent Authority and shall provide all necessary Instruments, labour and materials to do so. The Contractor shall pay such charges related to such tests if any.

#### **1.15 QUALITY OF MATERIALS**

Materials and apparatus required for the complete installation as called for in the specifications or Contract Drawings shall be supplied by the contractor unless specified otherwise.

Unless otherwise specified all materials (including equipment, fittings, cables) shall be new, of the best quality and approved origin.

#### **1.16. TRAINING**

In the direction and to the satisfaction of the Engineer the contractor shall arrange for the training of the attendant console operators, users and the administrators at the site or the sub-contractor's office on the workings of the CCTV & Access Control System and I.P. P.B.X System. The cost of such training shall be included in the subcontractor's prices.

#### **1.17 EQUIPMENT GUARANTEE**

The subcontractor shall undertake in writing to rectify free of charge, all faults arising from faulty components, materials, design or workmanship by the manufacturer or sub-contractor whichever is applicable. This liability shall be for a minimum period of one calendar year from the date of acceptance of the equipment. Twelve months limitation notwithstanding, the period of liability shall not end until all defects which appear during the liability period have been rectified.

#### **1.18 PATENT RIGHTS**

The subcontractor shall fully indemnify the Government of Kenya, against any action, claim or proceeding relating to infringement of any patent or design rights, and shall pay any royalties which may be payable in respect of any article or any part thereof which shall have been supplied by the sub-contractor to the Engineer and in like manner the government of Kenya shall fully indemnify the contractor against any such action, claim or proceeding for infringement or alleged infringement under the works the design thereof which shall have been supplied by the Engineer to the sub-contractor, but this indemnity shall apply to the works only, and any permission or request to manufacture to the order of the Engineer shall not relieve the sub-contractor from liability should he manufacture for, or supply to other buyers.

### **A. PARTICULAR SPECIFICATIONS FOR STRUCTURED CABLING**

#### **1.0 SITE LOCATION**

The site of the proposed works is located at **Bungoma County – Bungoma Town.**

#### **2.0 SCOPE OF WORKS**

The works to be carried out comprise the following:

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- Proposed supply, installation, testing and commissioning of a structured cabling system to cater for computer data points and telephone points.
- Configure and set up the structured cabling system to be used on LAN,
- Produce test result, warranty certification, reports and as installed drawings.

- The Network will be capable of supporting approximately 132 data/voice points.
- Supply, install appropriate telephone cables to interconnect the data cabinets to the I.P.P.B.X (*to be supplied by others*). The works shall include inter-wiring, programming and activating all voice points.

### 3.0 REGULATIONS

The contractor shall, in execution and completion of the works in the detailed design for which he is responsible, comply with the provisions of the following as necessary and relevant;

- ISO/IEC, CCK, ATM CENELEC 11801
- ANSI/EIA/TIA 56
- Latest Edition of IEE Regulation
- Kenya Bureau of Standards
- Electric Power Act and Rules made there under.

### 4.0 WORKING DRAWINGS

The Contractor shall submit to the Project Manager working drawings for the proposed system for approval. The drawings will show the locations of and identifiers for all cable routing and terminations, telecommunication outlets/connectors. Location of core switch and Edge switches.

### 5.0 NETWORK CABINETS

- To be located on each floor in designated rooms as indicated in the electrical drawings.
- Must be metallic (appropriately sized as specified in the BQ) with a front clear glass, free standing, 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

### 6.0 ACTIVE CONTROL EQUIPMENTS AT THE NETWORK CORE

The active control equipment at the core should have the following features:

- Backplane/switch fabric Bandwidth Capacity of 150 GBPS or more.
- IEEE 802.3 compliant for power over Ethernet
- IEEE 802.1 based security compliant
- SNMP compliant for security
- Layer 2/3/4 switch
- Should support Gigabit Ethernet to the desktop

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- Should have at least 10-slots or higher chassis
- The core switches should have two links to each floor configured in active/active configuration. The links should deliver 2GBPS throughput when all ports are active.
- The core switch should have redundant power supply, redundant fan tray and redundant CPU/ supervisor engine installed
- Fiber cable linking stacks on each floor to the core should be connected to 1000Base X(GBIC) port on the core switch.

- k. Should be installed with the latest version of system software at the time of delivery.
- l. Should support Quality of service for various applications.

## 7.0 ACTIVE CONTROL EQUIPMENTS AT THE LAN EDGE

Active control equipment at the LAN Edge should have the following features

- a) Active control equipment at the LAN Edge should support 10/100/1000 MBPS on all ports (RJ45) and Gigabit to the desktop connectivity
- b) The equipment should have at least two 1000BaseXGigabit uplink ports for terminating backbone Fiber.
- c) The equipment should support layer 3 routing.
- d) Should support IEEE 802.1, SSH, SNMP.
- e) Switch Fabric forwarding Bandwidth of 64GBPS or more.
- f) More than 12,000MAC addresses should be available on each switch.
- g) The switches should have 24/48 ports of 10/100/1000 MBPS.
- h) Each stack on the edge will have two links of Fiber to the core switch, totaling two fiber terminations from the core switch to the stack.
- i) Should support Jumbo frames.
- j) Total stack throughput bandwidth of 64 GBPS or more.
- k) Active Equipment at the LAN Edge should be quoted with a minimum of **One year of warranty** covering free replacement of parts and units.

## 8.0 NETWORK MANAGEMENT SYSTEM

Bidders must propose the manufacturers Network Management system for centralized configuration, maintenance and troubleshooting of active equipment. Third party standalone systems should not be offered as part of the solution. Features and functionalities of the system should include the following:

- a) Should be compatible with Microsoft windows/Linux operating systems
- b) Graphical User Interface for central Management and network viewing
- c) Network discovery and inventory management
- d) VLAN, multicast, security and load-balancing/fail over configuration
- e) Downloading and saving of log file from the device flash memory
- f) Centralized upgrade/backup and archiving of active devices
- g) Export of network topology to JPEG or other standard formats.

## 9.0 CABLES

### UTP CABLE

The UTP cable must be CAT 6/6E compliant UTP 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 polyolefin insulation
- d) Pulling force should support up to 50N/mm<sup>2</sup>

### OPTICAL FIBRE CABLE

The fibre cable must be 8 core multimode fibre with the following specifications:-

- a) Cable size: 8 cores.
- b) Termination: SC Duplex connectors.

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- c) Graded Index: Nominal 62.5/125 micron

## 10.0 CAT 6 PATCH PANELS

The Contractor shall provide factory made patch panels, cat 6 complete with rear cable management and front designation strips, 110 PCB mounted connectors and integral RJ mounted jack sockets.

## 11.0 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.

## 12.0 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-ons' for future expansions. Hence enough capacity shall be allowed for future expansion.

### **13.0 EDGE/FLOOR SWITCHES**

These shall be per floor and have enough capacity for expansion

### **14.0 ADDITIONAL NOTES**

Tenderers should take note of the following:-

- The network should be capable of carrying data, voice and video. QoS should be considered as part of installation and configuration of the network.
- All active LAN equipment should be from the same manufacturer for seamless integration, management and maintenance.
- Each floor should have a telecommunication Closet to house the necessary structured cabling components and active equipment.

### **15.0 BROCHURES AND TECHNICAL LITERATURE**

Tenderers **must** enclose together with their submitted bids brochures detailing technical Literature and specifications of the active components of the structured cabling system. The brochures shall be used to evaluate the suitability of these components.

**Any bid submitted without the brochures shall be considered technically non-responsive, and may subsequently be disqualified.**



## **TECHNICAL SPECIFICATIONS**

### **A. STRUCTURED CABLING**

#### **1. SCOPE OF WORKS**

- a) Section Includes: Equipment, materials, labor, and services to provide telephone and data distribution system including but not limited to:
- 1) Telephone and data cabling terminations
  - 2) Optical fiber and terminations
  - 3) Data/voice outlets
  - 4) Terminal blocks/cross-connect systems
  - 5) Equipment racks and cabinets
  - 6) System testing
  - 7) Documentation and submissions
  - 8) Surface trunking, cable ladder,
  - 9) Core switch, edge switches
- b) Provide all equipment, materials, labor, and services, not specifically mentioned or shown, which may be necessary to complete or perfect all parts of the installation. Ensure that they are in compliance with requirements stated or reasonably inferred by the contract documents.

#### **2. REFERENCES/STANDARDS**

Design, manufacture, test, and install telecommunications cabling networks per manufacturer's requirements and in accordance with NFPA-70 (*National Electrical Code®*)/IEE Regulations, state codes, local codes, requirements of authorities having jurisdiction, and particularly the following standards: ANSI/NECA/BICSI-568 -- Standard for Installing Commercial Building Telecommunications Cabling ANSI/TIA/EIA Standards.

1. **ANSI/TIA/EIA-568-B.1** – Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements
  2. **ANSI/TIA/EIA-568-B.2** – Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components
  3. **ANSI/TIA/EIA-568-B.3** – Optical Fiber Cabling Components Standard
  4. **ANSI/TIA/EIA-569-A** – Commercial Building Standard for Telecommunications Pathways and Spaces
  5. **ANSI/TIA/EIA-606(A)** – The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
  6. **ANSI/TIA/EIA-607(A)** – Commercial Building Grounding and Bonding Requirements for Telecommunications
  7. **ANSI/TIA/EIA-526-7** – Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
  8. **ANSI/TIA/EIA-526-14A** – Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant
  9. **ANSI/TIA/EIA-758(A)** – Customer-Owned Outside Plant Telecommunications Cabling Standard
  10. **ISO/IEC 1101** Amendment 2
- b) Local codes, rules, regulations, and ordinances governing the work, are as fully part of the specifications as if herein repeated or hereto attached. If the contractor should note items in the drawings or the specifications, construction of which would be code violations, promptly call them to the attention of the Project Manager in writing. Where the requirements of other sections of the specifications are more stringent than applicable codes, rules, regulations, and ordinances, the specifications shall apply.

### 3. PERMITS, FEES, AND CERTIFICATES OF APPROVAL

- a) The Contractor to include the cost of application and pay for building permit.
- b) As prerequisite to final acceptance, supply to the client certificates of inspection from an inspection agency acceptable to the owner and approved by local municipality and utility company serving the Project Manager.

### 4. SYSTEM DESCRIPTION

- a) A telecommunications cabling system generally consists of one telecommunications outlet in each workstation, wall telephones in common and power socket outlet.
- b) The typical work area consists of a single-gang plate with two standards compliant work area outlets.
- c) One work area outlet consists of one (1) four-pair data Category 6 cables or above, installed from work area outlet to the data cabinet. Terminate data cables on modular patch panels located in the appropriate data cabinet.
- d) One work area outlet consists of one (1) four-pair screened (ScTP) cable installed from work area outlet to the data termination rack in the cabinet. Terminate data cables on rack mounted modular patch panels.
- 4.1. Vertical/horizontal copper backbone cabling consists of multiple pair unshielded twisted-pair installed from the main cross-connect (MC) to the horizontal cross-connect (HC) and/or from the MC to the intermediate cross-connect (IC) to the HC.
- 4.2. Vertical/horizontal backbone cabling consists of 62.5/125  $\mu$ m multimode optical fiber cable installed from the MC to the HC and/or from the MC to the IC to the HC.
- g. Vertical/horizontal backbone cabling consists of 50/125  $\mu$ m multimode optical fiber cable installed from the MC to the HC and/or from the MC to the IC to the HC. *Specification Note: State what this backbone will be utilized for. Examples are voice telecommunications service, premises switching equipment, data communications, etc.*

### 5. SUBMITTALS

- a) Submit to the Project Electrical Engineer (PEE) shop drawings, product data (including cut sheets and catalog information), and samples required by the contract documents. Submit shop drawings, product data, and samples with such promptness and in such sequence as to cause no delay in the work or in the activities of separate contractors. The engineer will indicate approval of shop drawings, product data, and samples submitted to the engineer by stamping such submittals "APPROVED" with a stamp. Submitted shop drawings shall be initialed or signed by the contractor, showing the date and the contractor's legitimate firm name.
  - 1. By submitting shop drawings, product data, and samples, the contractor represents that he or she has carefully reviewed and verified materials, quantities, field measurements, and field construction criteria related thereto. It also represents that the contractor has checked, coordinated, and verified that information contained within shop drawings, product data, and samples conform to the requirements of the work and of the contract documents. The engineer/designer remains responsible for the design concept expressed in the contract documents as defined herein.
  - 2. The PEE approval of shop drawings, product data, and samples submitted by the contractor shall not relieve the contractor of responsibility for deviations from requirements of the contract documents, unless the contractor has specifically informed the engineer/designer in writing of such deviation at time of submittal, and the engineer/designer has given written approval of the specific deviation. The contractor

shall continue to be responsible for deviations from requirements of the contract documents not specifically noted by the contractor in writing, and specifically approved by the engineer in writing.

3. The PEE approval of shop drawings, product data, and samples shall not relieve the contractor of responsibility for errors or omissions in such shop drawings, product data, and samples.
4. The PEE review and approval, or other appropriate action upon shop drawings, product data, and samples, is for the limited purpose of checking for conformance with information given and design concept expressed in the contract documents. The engineer's review of such submittals is not conducted for the purpose of determining accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the contractor as required by the contract documents.

The review shall not constitute approval of safety precautions or of construction means, methods, techniques, sequences, or procedures. The PEE approval of a specific item shall not indicate approval of an assembly of which the item is a component.

b) Shop drawings: Submit the following:

*Coordinate with Part 2.Backbone (riser) diagrams*

1. System block diagram, indicating interconnection between system components and subsystems
2. Interface requirements, including connector types and pin-outs, to external systems and systems or components not supplied by the contractor Fabrication drawings for custom-built equipment

c) Product Data – Provide catalog cut sheets and information for the following:

*Coordinate with Part 2.*

1. Wire, cable, and optical fiber
2. Outlets, jacks, faceplates, and connectors
3. All metallic and nonmetallic raceways, including surface raceways, outlet boxes, and fittings
4. Terminal blocks and patch panels
5. Enclosures, racks, and equipment housings
6. Over-voltage protectors
7. Splice housings

d) Samples – Submit samples as required by the Engineer.

e) Project record drawings:-

- 1) Submit project record drawings at conclusion of the project and include:-
  - (a) Approved shop drawings
  - (b) Plan drawings indicating locations and identification of work area outlets, nodes, data cabinet rooms, and backbone (riser) cable runs
  - (c) Cross-connect schedules including entrance point, main cross-connects, intermediate cross-connects, and horizontal cross-connects.
  - (d) Labeling and administration documentation
  - (e) Warranty documents for equipment.
  - (f) Copper certification test result printouts and diskettes.
  - (g) Optical fiber power meter/light source test results.
  - (h) Operation and maintenance manuals:

## 6. QUALITY ASSURANCE

6.1. The contractor shall have worked satisfactorily for a minimum of five (5) years on systems of this type and size.

- 6.2. Upon request by the P.M, furnish a list of references with specific information regarding type of project and involvement in providing of equipment and systems.
- 6.3. Equipment and materials of the type for which there are independent standard testing requirements, listings, and labels, shall be listed and labeled by the independent testing laboratory.
- 6.4. Where equipment and materials have industry certification, labels, or standards (i.e., NEMA - National Electrical Manufacturers Association), this equipment shall be labeled as certified or complying with standards.
- 6.5. Material and equipment shall be new, and conform to grade, quality, and standards specified. Equipment and materials of the same type shall be a product of the same manufacturer throughout.
- 6.6. Subcontractors shall assume all rights and obligations toward the contractor that the contractor assumes toward the client and P.M.

## **7. WARRANTY**

- 7.1. Unless otherwise specified, unconditional guarantee shall be in writing for the materials, equipment, and workmanship for a period of not less than fifteen (15) years from date of commissioning of the project for active components.
- 7.2. Transfer manufacturer's warranties to the owner in addition to the General System Guarantee. Submit these warranties on each item in list form with shop drawings. Detail specific parts within equipment that are subject to separate conditional warranty. Warranty proprietary equipment and systems involved in this contract during the guarantee period. Final payment shall not relieve you of these obligations.

## **8. DELIVERY, STORAGE, AND HANDLING**

- 8.1. Protect equipment during transit, storage, and handling to prevent damage, theft, soiling, and misalignment. Coordinate with the client for secure storage of equipment and materials. Do not store equipment where conditions fall outside manufacturer's recommendations for environmental conditions. Do not install damaged equipment; remove from site and replace damaged equipment with new equipment.

## **9. SEQUENCE AND SCHEDULING**

- 9.1. Submit schedule for installation of equipment and cabling. Indicate delivery, installation, and testing for conformance to specific job completion dates. As a minimum, dates are to be provided for bid award, installation start date, completion of station cabling, completion of riser cabling, completion of testing and labeling, cutover, completion of the final punch list, start of demolition, owner acceptance, and demolition completion.

## **10. USE OF THE SITE**

- 10.1. Access to building wherein the work is performed shall be as directed by the P.M.  
The client will occupy the premises during the entire period of construction for conducting his or her normal business operations. Cooperate with the client to minimize conflict and to facilitate the owner's operations.

Schedule necessary shutdowns of plant services with the main contractor, and obtain written permission from the client.

Proceed with the work without interfering with ordinary use of streets, aisles, passages, exits, and operations of the client.

## **1. MANUFACTURERS**

Provide products of manufacturers as named in individual articles. Where no manufacturer is specified, provide products of manufacturers in compliance with requirements.

## **2. FABRICATION**

Fabricate custom-made equipment with careful consideration given to aesthetic, technical, and functional aspects of equipment and its installation.

## **3. SUITABILITY**

Provide products that are suitable for intended use, including, but not limited to environmental, regulatory, and electrical.

## **4. VOICE/DATA TELECOMMUNICATIONS SERVICE BACKBONE CABLE**

- a) Solid copper, 24 AWG, 100  $\Omega$  balanced twisted-pair (UTP) backbone cable, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.2
- b) Multimode 62.5/125  $\mu\text{m}$  diameter tight-buffered optical fiber, with fiber counts as indicated on drawings, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.3

## **5. VOICE TELECOMMUNICATIONS STATION CABLE**

a. Solid copper, 24 AWG, 100  $\Omega$  balanced twisted-pair (UTP) Category 6e cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 up to 100 MHz.

## **6. DATA STATION CABLE (Copper)**

- a) Solid copper, 24 AWG, 100  $\Omega$  balanced twisted-pair (UTP) Category 6e cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 up to 100 MHz.
- b) Solid copper, 24 AWG, 100  $\Omega$  balanced twisted-pair, screened (ScTP) cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 (Annex K) up to 100 MHz

## **7. DATA STATION CABLE (Optical Fiber)**

a. Multimode 62.5/125  $\mu\text{m}$  diameter tight-buffered optical fiber, with the required number of fiber counts, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.3

## **8. UNDERGROUND TELECOMMUNICATIONS CABLE (Copper)**

If you have copper cables installed outside between buildings, be certain to specify overvoltage protectors on both ends of the cable. See article, OVERVOLTAGE PROTECTORS.

Solid copper, 24 AWG 100  $\Omega$  balanced twisted-pair, gel-filled duct cable, in sizes as indicated on the drawings, which meet or exceed the mechanical and transmission performance specifications listed in ANSI/TIA/EIA-568-B.2 and ANSI/TIA/EIA-758(A).

## **9. UNDERGROUND TELECOMMUNICATIONS CABLE (Optical Fiber)**

Single mode 8.7  $\mu\text{m}$  to 10  $\mu\text{m}$  diameter, armored, gel-filled optical fiber, with number of usable fibers as shown on drawings, which meet or exceed the mechanical and transmission performance specifications listed in ANSI/TIA/EIA-568-B.3 and ANSI/TIA/EIA-758(A).

**10. VOICE/DATA – COPPER & OPTICAL FIBER WORK AREA OUTLETS**

Edit for items that will actually be used on the project.

Pick a color for the faceplate and each type of jack, or make them all one color.

Determine which pinning standard is to be used, T568A, T568B, or USOC. If not otherwise specified, specify T568A. Use either 10c with SC connectors or 10d (1) for ST connectors. SC connectors are preferred. Use ST Connectors to match existing cable plant if required.

Single-gang mounting plate with two (2) openings containing the following devices:

- a) Data Outlet - 8-pin modular, category 6e, unkeyed, black, pinned to either T568 (A or B) standards.
- b) Optical Fiber Connectors – simplex ST - ST adapter.

Provide two optical fiber adapters for each faceplate

**11. VOICE/DATA WORK AREA OUTLETS (Copper only)**

Single-gang mounting plate with four (4) openings containing the following devices:

Data Outlet - 8-pin modular, Category 6e, unkeyed, black, pinned to either T568 (A or B) standards.

**12. VOICE ONLY WORK AREA OUTLET**

Single-gang faceplate with 8-pin modular, category 6e, unkeyed, ivory telephone jack, pinned to either T568 (A or B) standards

**13. TERMINATION BLOCKS**

For items that will actually be used on the project: Coordinate with MC, IC and HC layout drawing.

- a) Product(s) as approved by the P.M: Wiring blocks are to be in following configurations:-
  - 1) List dimensional configurations
  - 2) ER – List pairs categorized for PBX portion of ER and pairs field terminated for backbone and CO portion of ER
- b) Provide wiring troughs between ER frame sections.

**14. PATCH PANELS**

Specification Note: Alter quantities to match job requirements.

19 in. rack mountable, 24-port 8-pin modular to insulation displacement connector (IDC) meeting Category 6e performance standards, and pinned to either T568 (A or B) standards. Typical examples of IDC connections are the 110, BIX, and Krone.

**15. WALL MOUNTED OPTICAL FIBER PATCH PANELS**

Specification Note: Alter quantities to match job requirements

Wall-mounted optical fiber termination panel with 12-fiber capacity, hinged door, cable strain relief, slack storage, and two 6-port SC or approved alternative connector panels with adapters and provisions for two splice trays.

**16. RACK MOUNTED OPTICAL FIBER TERMINATION PANEL**

Specification Note: Alter size to match job requirements. Coordinate with connector type.

*19 in. rack mounted 72-port rack-mounted optical fiber termination panel with cable strain relief, grounding lugs, slack storage and three 12-port duplex SC or approved alternative connector panels with adapters and provisions for six (6) splice trays.*

**17. SPLICE TRAYS**

Sized for single mode and multimode fibers, nonmetallic with clear plastic cover, 12-fiber splice capacity and compatible with splice enclosure and splicing method.

**18. OPTICAL FIBER CONNECTORS**

Ceramic tipped field installed 568SC connectors, which meet or exceed the performance specifications in ANSI/TIA/EIA-568-B.3. Various alternative field installed connector designs, which meet or exceed the performance specifications in ANSI/TIA/EIA-568-B.3 (Annex A).

**19. OPTICAL FIBER JUMPERS**

Dual 62.5/125- $\mu\text{m}$  (*and/or single mode*) optical fiber jumper cable, 1 m long with 3.0 mm Duplex 568SC optical fiber connectors on each end.

Dual 62.5/125- $\mu\text{m}$  (*and/or single mode*) optical fiber jumper cable, 1 m long with approved alternative duplex optical fiber connectors on each end.

**20. OPTICAL FIBER PIGTAILS**

62.5/125  $\mu\text{m}$  (*and/or single mode*) optical fiber pigtail 1 m long with 3.0 mm single 568 SC optical fiber connectors on one end

**21. OPEN FRAME EQUIPMENT RACK**

Open frame, 19 in. equipment rack, 7 foot 6 in. overall height with flange base, mounting rails drilled front and back and tapped to EIA standards, and a front-rack mountable 10 outlet multiple outlet electrical strip or 42u enclosed glazed.

**22. EQUIPMENT RACKS/CABINETS**

Specification Note: Use 19 in. or change to 23 in. as required. If using wall-mounted racks or cabinets, add required specifications here. Add and delete features as required.

a) The 19 in. equipment rack shall have the following minimum requirements:

- 77 in. (44 rack spaces) of panel space
- Welded frame construction
- Locking front and rear doors
- Adjustable front and back equipment mounting rails drilled and tapped to EIA standards
- 10 position electrical outlet strip
- Removable side panels
- Top mounted, thermostatically controlled exhaust fan
- Smoked acrylic front door.

**23. LISTED BUILDING ENTRANCE PROTECTORS**

Use when copper cables are run outside of building.

Use appropriate protector modules.

Building entrance terminal utilizing a two (2) foot fuse link between the outside cable plant splice and the protector module with IDC type input and output terminals, 100-pair capacity and female mounting base, equipped with 230 volt solid state protector modules. Provide sufficient protector modules to completely populate all building entrance terminals.

**24. SPLICE HOUSING**

Use this or something else. Delete splice modules if used for optical fiber cables.

- a) Encapsulated, re-enterable splice housing, sized as required with bonding straps, accessories, end caps and encapsulant as required
- b) Splice modules (such as 710 series or MS<sup>2</sup>) for use within splice housing

**25. SPARES**

Change quantities to suit job size. Edit to match that which is actually specified.

a) Furnish the following spare equipment and parts:

Terminal block connectors, if required

Test set cords, if required

Install one test cord set in each telecommunications closet

Five (5) percent of base bid quantity of each type of jack shall be provided

Five (5) percent of base bid quantity of each type of outlet

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Five thousand (5000) ft of each type of station cable

One thousand (1000) ft of one-pair cross-connect wire for each telecommunications closet

One thousand (1000) ft of two-pair cross-connect wire for each telecommunications closet

Five (5) percent of base bid quantity of protector modules

**EXECUTION****1. PRE-INSTALLATION SITE SURVEY**

- a. Prior to start of systems installation, meet at the project site with the P.M and representatives of trades performing related work to coordinate efforts. Review areas of potential interference and resolve conflicts before proceeding with the work. Facilitation with the Client will be necessary to plan the crucial scheduled completions of the equipment room and telecommunications closets.
- b. Examine areas and conditions under which the system is to be installed. Do not proceed with the work until satisfactory conditions have been achieved.

**2. HANDLING AND PROTECTION OF EQUIPMENT AND MATERIALS**

- a. Be responsible for safekeeping of your own, such as equipment and materials, on the job site. The client assumes no responsibility for protection of above named property against fire, theft, and environmental conditions.

**3. PROTECTION OF OWNER'S FACILITIES**

- a. Effectively protect the client's facilities, equipment, and materials from dust, dirt, and damage during construction.
- b. Remove protection at completion of the work.

**5. INSTALLATION**

Receive, check, unload, handle, store, and adequately protect equipment and materials to be installed as part of the contract. Store in areas as directed by the owner's representative. Include delivery, unloading, setting in place, fastening to walls, floors, ceilings, or other structures where required, interconnecting wiring of system components, equipment alignment and adjustment, and other related work whether or not expressly defined herein.



Install materials and equipment in accordance with applicable standards, codes, requirements, and recommendations of national, state, and local authorities having jurisdiction, and *National Electrical Code®* (NEC) and with manufacturer's printed instructions.

Adhere to manufacturer's published specifications for pulling tension, minimum bend radii, and sidewall pressure when installing cables.

Where manufacturer does not provide bending radii information, minimum-bending radius shall be 15 times cable diameter. Arrange and mount equipment and materials in a manner acceptable to the P.M and the client.

- a. Penetrations through floor and fire-rated walls shall utilize intermediate metallic conduit (IMC) or galvanized rigid conduit (GRC) sleeves and shall be fire stopped after installation and testing, utilizing a fire stopping assembly approved for that application.
- b. Install station cabling to the nearest telecommunications room (TR), unless otherwise noted.
- c. Installation shall conform to the following basic guidelines:
  - 1) Use of approved wire, cable, and wiring devices
  - 2) Neat and uncluttered wire termination
- d. Attach cables to permanent structure with suitable attachments at intervals of 1200-1500mm. Support cables installed above removable ceilings.
- e. Install adequate support structures for 10 foot of service slack at each TR.
- f. Support riser cables every floor and at top of run with cable grips.
  - 1) Limit number of four-pair data riser cables per grip to fifty (50)
- g. Install cables in one continuous piece. Splices shall not be allowed except as indicated on the drawings or noted below:
- h. Provide over voltage protection on both ends of cabling exposed to lightning or accidental contact with power conductors.

**Specification Note:** *Insert any other specific installation requirements here, such as hook and latch fasteners instead of cable ties, etc.*

## 6. GROUNDING

Edit as required.

- a. Grounding shall conform to ANSI/TIA/EIA 607(A) - *Commercial Building Grounding and Bonding Requirements for Telecommunications*, *National Electrical Code®*, ANSI/NECA/BICSI-568 and manufacturer's grounding requirements as minimum.
- b. Bond and ground equipment racks, housings, messenger cables, and raceways.
- c. Connect cabinets, racks, and frames to single-point ground which is connected to building ground system via #6 AWG green insulated copper grounding conductor.

## 7. LABELING

Use 6d if the type of termination block permits labels. Otherwise use 6e.

Use 6g if the owner does not have a standard for outlet numbering.

Use 6h if required. Alter time as requested.

Labeling shall conform to ANSI/TIA/EIA-606(A) standards. In addition, provide the following:

- a) Label each outlet with permanent self-adhesive label with minimum 3/16 in. high characters.
- b) Label each cable with permanent self-adhesive label with minimum, 1/8 in. high characters, in the following locations:
  - 1) Inside receptacle box at the work area.
  - 2) Behind the communication closet patch panel or punch block.
- c) Use labels on face of data patch panels. Provide facility assignment records in a protective cover at each telecommunications closet location that is specific to the facilities terminated therein.
- d) Use color-coded labels for each termination field that conforms to ANSI/TIA/EIA-606(A) standard color codes for termination blocks.
- e) Mount termination blocks on color-coded backboards.
- f) Labels shall be machine-printed. Hand-lettered labels shall not be acceptable.
- g) Label cables, outlets, patch panels, and punch blocks with room number in which outlet is located, followed by a single letter suffix to indicate particular outlet within room, i.e., S2107A, S2107B. Indicate riser cables by an R then pair or cable number.
- h) Mark up floor plans showing outlet locations, type, and cable marking of cables. Turn these drawings over to the owner two (2) weeks prior to move in to allow the owner's personnel to connect and test owner-provided equipment in a timely fashion.
- i) Three (3) sets of as-built drawing shall be delivered to the owner within four (4) weeks of acceptance of project by the owner. A set of as-built drawings shall be provided to the owner in magnetic media form (3.5" floppy disks) and utilizing CAD software that is acceptable to the owner. The magnetic media shall be delivered to the owner within six (6) weeks of acceptance of project by owner.

## 8. TESTING

Testing shall conform to ANSI/TIA/EIA-568-B.1 standard. Testing shall be accomplished using level IIe or higher field testers.

Test each pair and shield of each cable for opens, shorts, grounds, and pair reversal. Correct grounded, and reversed pairs. Examine open and shorted pairs to determine if problem is caused by improper termination. If termination is proper, tag bad pairs at both ends and note on termination sheets.

- 1) Perform testing of copper cables with tester meeting ANSI/TIA/EIA-568-B.1 requirements.
- 2) If copper backbone cable contains more than one (1) percent bad pairs, remove and replace entire cable.

Use 2 or 3 as required.

- 3) If copper cables contain more than the following quantity of bad pairs, or if outer sheath damage is cause of bad pairs, remove and replace the entire cable:-

CABLE SIZE	MAXIMUM BAD PAIRS
<100	1
101 to 300	1 – 3
301 to 600	3 – 6
>601	6

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- 4) If horizontal cable contains bad conductors or shield, remove and replace cable. Initially test optical cable with a light source and power meter utilizing procedures as stated in

ANSI/TIA/EIA-526-14A: *OFSTP-14A Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant* and ANSI/TIA/EIA-526-7 *Measurement of Optical Power Loss of Installed Single mode Fiber Cable Plant*. Measured results shall be plus/minus 1 dB of submitted loss budget calculations. If loss figures are outside this range, test cable with optical time domain reflectometer to determine cause of variation. Correct improper splices and replace damaged cables at no charge to the owner.

- 5) Cables shall be tested at 850 and 1300 nm for multimode optical fiber cables. Cables shall be tested at 1310 and 1550 nm for single mode optical fibers.
- 6) Testing procedures shall utilize "Method B" – One jumper reference.
- 7) Bi-directional testing of optical fibers is required.
- 8) Perform optical time domain reflectometer (OTDR) testing on each fiber optic conductor. Measured results shall be plus/minus 1 dB of submitted loss budget calculations.
- 9) Submit printout for each cable tested.
- 10) Submit 3.5 in. disks with test results and program to view results.
- 11) Where any portion of system does not meet the specifications, correct deviation and repeat applicable testing at no additional cost.

### **FIELD QUALITY CONTROL**

a) Employ job superintendent during the course of the installation to provide coordination of work of this specification and of other trades, and provide technical information when requested by other trades. This person shall maintain current RCDD® (Registered Communications Distribution Designer) registration and shall be responsible for quality control during installation, equipment set-up, and testing.

b) At least 30 percent of installation personnel shall be *BICSI Registered Telecommunications Installers*. Of that number, at least 15 percent shall be registered at the *Technician Level*, at least 40 percent shall be registered at the *Installer Level 2*, and the balance shall be registered at the *Installer Level 1*.

Specification Note: Use this or insert manufacturer's requirements for installer qualifications to meet extended warranty program requirements.

c) Installation personnel shall meet manufacturer's training and education requirements for implementation of extended warranty program.

## **B. IP PBX**

### **2.0.0 TECHNICAL SPECIFICATIONS**

#### **2.0.1 SCOPE OF THE WORK**

The sub-contractor shall supply, deliver, unload, test, commission, guarantee and be liable for defects, and be responsible for the initial maintenance, all as specified herein, of I.P. P.B.X, Telephone instruments and structured cabling works. The I.P. P.B.X will be entirely I.P., ISDN native and with time multiplexing architecture.

The sub-contractor shall supply and install associated items of plant equipment other than those clearly stated to be supplied by others. He shall supply and install all accessories, whether described in the specification or not, essential to the completion of the works to the satisfaction of the Engineer.

All equipment supplied shall be type approved by Communication Authority of Kenya and the installation shall be approved by the Communications Authority of Kenya (the competent Authority). The tenderer shall be responsible for all negotiations with and payments to the

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authority. He shall also pay all fees.

#### **2.0.2 MINIMUM REQUIREMENTS**

This specification defines minimum requirements, but tenderers who offer superior facilities will be considered.

Any tender, which does not comply with the minimum requirements, will be rejected.

### 2.0.3 EQUIPMENT FINISH

The equipment finish shall be the responsibility of the contractor, who shall be responsible for its protection during erection and in the course of making good to the building finishes after equipment erection.

### 2.0.4 INTERFERENCE SUPPRESSION

The equipment and all its accessories shall be suppressed so as not to interfere with any communications, radio, T.V, Security or electro-medical equipment, recording or computer systems.

### 2.0.5 DOOR KEYS

The sub-contractor shall keep the I.P. P.B.X suite locked at all times when his staff are not present and shall at the conclusion of the contract hand over all keys to the P.M.

### 2.0.6 EQUIPMENT HARDWARE

The tenderer shall quote for multimedia applications digital I.P. P.B.X .The equipment shall operate on duplicated processor.

### 2.0.7 EQUIPMENT SOFTWARE

The equipment shall be preloaded with core software for driving it and giving it full operating flexibility. The list of features and services should be comprehensive and extensive and comprising of;-

- Open Source Asterisk IP PBX
- Interactive Voice Response(IVR)
- Video Conference
- Built in call recording
- Voice Mail to Email
- Distributed office set up
- Centralized Administration
- Call Detail Report
- FOP-Web Based Receptionist Console
- GSM Integration
- Parallel Ringing
- Voice Logger
- Audio Conference Bridging
- Fax Support
- Logical Partitioning

### 2.0.8 SYSTEM FEATURES

The system features shall include but not limited to the following facilities;-

- ✚ Direct inward dialing
- ✚ Direct outward dialing
- ✚ Dial pulse signaling
- ✚ DTMF to dial pulse conversion (Tone to pulse conversion)
- ✚ Direct Trunk access
- ✚ Class of Service

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- ✚ Flexible assignment of printer ports
- ✚ Flexible numbering of extensions
- ✚ Flexile tone plan
- ✚ Group Hunting
- ✚ Multiple operator console
- ✚ Music on hold
- ✚ Tandem trunks
- ✚ Tie trunks
- ✚ Extension features e.g. call forwarding, busy override, conference, (up to 8 conferences) camp on etc.

## 2.0.9 BARRING AND ROUTE RESTRICTION

It shall be possible at will to bar any extension from access to the public exchange network. Selective route Restriction equipment is required on all both way and outgoing exchange lines to prevent any or all extensions from reaching certain areas of the public telephone network including all areas outside the borders of the Republic. The equipment shall prevent a user, after receiving main exchange dial tone, dialing any number of pre-selected 4 digit codes. It shall be possible to change such pre-selected codes easily and at will without the addition of further equipment, but a security system must prevent this being done by unauthorized persons. It shall not be possible to defeat this equipment from an extension by non-standard dialing, switch hook flashing, enquiry or transfer use, tie line transfer, switch follow on calls after an outside caller has disconnected, or in any other way except that which may be used especially for extensions entitled to full access.

It shall not be possible for an extension to receive public exchange dial tone without the route restriction devices being in circuit.

A follow-on call trap is required on the exchange lines, and this must not prevent the operator from flashing the main exchange.

It shall not be possible for an extension to originate a new outside call following the disconnection of an established call until the public exchange and local subscribers auto equipment has released, and the route restriction and barring equipment has been reset and re-connected to the circuit.

Camp-on-busy, Trunk offer, "call back" and automatic transfer facilities must not de-activate the barring and route restriction circuit.

The exchange should be suitable for the future addition of direct dialing-in facilities, ring back when free absent extension transfer.

## 2.0.10 CLASS OF SERVICE

It is required to group subscribers at will into and/or more of the following categories;

- **Full Access**

Those permitted incoming calls, tie line calls, internal calls, and outside access to exchange lines and STD but not to the international codes.

- **Trunk Route Restriction**

Those permitted incoming call, tie line calls, internal calls, and outside access to local codes permitted by the trunk barring equipment.

- **Trunk Barred**

Those permitted incoming call, tie line calls, internal calls, and outside access via the operator.

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- **Restricted Access**

Those permitted incoming calls and internal calls only.

- **Barred Access**

Those permitted tie line and internal calls only.

It should not be possible to transfer an exchange line from category (i) extension or from the switchboard to a category (ii) extension without activating the route restriction equipment to prevent the barred extension dialing, unauthorized codes. It shall not be possible to transfer an exchange line to a category (iv) or (v) extension.

There shall be a means of re-allocating subscriber access to the various I.P.P.B.X facilities which shall be promoted by a security system that will prevent unauthorized alterations.

The contractor will be responsible for programming the I.P.P.B.X to incorporate the clients initial wishes regarding extension access to facilities, and for reprogramming it to incorporate such changes as the client wishes to make up to the end of the guarantee period. He will also be responsible for training such staff as the employer shall nominate to undertake reprogramming.

## **2.0.11 ATTENDANT CONSOLE**

One or more operator attendant consoles shall be computer based and shall be supplied, together with two operators' handsets and two operators' lightweight headsets per position. They shall be fitted with suitable lightweight plugs and jacks.

Each console shall be equipped with all necessary facilities for controlling, connecting and monitoring the progress of calls and shall display alarms as necessary.

Night service facilities will normally be provided such that the operator can route in-coming calls to pre-selected extensions when the console is not manned.

Attendant consoles will be multiplex so that the connecting cable will comprise a minimum number of pairs, with little restriction on the siting of the consoles and positions shall be so common that any operator can attend to any call.

Call presentation, chaining process, call back will be entirely managed by the I.P.P.B.X; however it will be possible to put certain call on individual hold, on keys which have been reserved to that effect.

The information displayed on the terminal give maximum details about the communication (normal call, urgent call, queue status, internal called-party, status of the terminal etc.).

## **2.0.12 TELEPHONE INSTRUMENTS**

The acquiring of telephone instruments has been liberalized. However, they must be type-approved by the CAK and the tenderer must obtain the necessary approval.

### **(a) IP Executive Telephone Instruments**

The **Executive Telephone** instruments shall have but not limited to the following operating characteristics:-

- Standard telephone facilities
- Abbreviated dialing
- Automatic ring back indication

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- Calling number display
- Calls indication
- Call waiting display
- Do-not disturb indication
- Extension status indication
- Hands free
- Individual speed dialing
- Intercom
- LCD display (16 characters)
- Microphone unit.
- On hook dialing
- Password protection
- Repeat last number
- Ringing level and tune selection
- Store and redial
- Single key access to line features

**(b) IP Standard Telephone Instruments**

The ordinary telephone instruments shall be of IP push button type. They shall at least have the following operating characteristics:-

- Standard telephone facilities
- Automatic ring back indication
- Extension status indication
- Individual speed dialing
- On hook dialing
- Repeat last Number
- Ringing level and tune selection
- Store and redial.

**2.0.13 NUMBER SYSTEM**

The number scheme will be:-

Level 9	Access to the main exchange
“ 8	Night service
“ 7	spare for future tie line access
“ 6	Tie line access
“ 5	spare for extensions
“ 4	Extensions
“ 3	Extensions
“ 2	Extensions
“ 1	Spare for special facilities.
“ 0	Access to IP PBX Telephone Operator

**2.0.14 EXCHANGE LINES**

Exchange lines shall be arranged for first party release. The IPPBX must be capable of processing the number of digits required for international calls in accordance with CCITT and CCIL recommendations.

A device shall be fitted to sense main exchange dial tone as there may be considerable delay in receiving this after the seizure of a tree exchange line.

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**2.0.15 TIE LINES**

The lines will provide access to all extensions and the operator. They are to be for auto-auto working through signaling and first party release. Tones are to be returned over to tie lines.

Disconnect loop signaling is at present employed with a maximum loop resistance of 2000 ohms.

**2.0.16 SYSTEM MAINTENANCE**

- **Test Equipment and Tools**

An IPPBX routine test set and a set of maintenance tools are to be supplied. The tools are to be listed in schedule D.

- **Maintenance Features**

The IPPBX shall have the following system maintenance features:-

- Line status monitoring device
- Station message data recording port

- System Working report
- On site system administration using a compatible terminal and attendant console.
- Remote system administration capability
- Automatic on-line diagnostic testing

Maintenance diagnostic software programmes shall be provided which can be run as required whilst the IPPBX is in normal service.

- **Maintenance and Operating Manuals**

On practical completion of the works, the contractor shall furnish two sets of copies each of maintenance and operating manuals relating to the IPPBX installed. The manuals shall be legibly written in English and properly bound with hard cover.

They will include but not limited to:-

- System description
- Fault finding procedure
- Maintenance and servicing periods and procedures
- Schematic and wiring diagrams of the equipment
- Record drawings

## **2.0.17 POWER SUPPLY**

### **Rectifier**

The I.P.P.B.X shall be fed through rectifier and a DC –DC converter fed from 240V A.C. 50Hz power supply. The rectifier will be equipped with the following devices:-

Security device to monitor the minimum and maximum authorized values of the output voltage. When one of the thresholds is reached, the power supply to the I.P.P.B.X must cut itself automatically “Floating” and automatic “Equalization” device with manual command of the “Equalization” mode and automatic switch back to “floating” mode once the battery is loaded.

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The rectifier will be sized to supply power to the I.P.P.B.X and simultaneously allow re-loading of the battery within 10Hours maximum.

### **Battery**

A stationery battery is required to supply power during peak hours and mains supply failures and to provide smoothing for DC output from the rectifier.

The battery shall be “Maintenance Free” and shall have sufficient capacity when fully charged to supply power to the IPPBX in the event of mains supply failure for minimum of 8 hours. The minimum DC output shall be 48V DC = 10% and its life expectancy shall be 20 years. Automotive or Traction battery will not be accepted.

### **Voltage stabilizer**

A voltage stabilizer of suitable rating is required. It shall have a response time of NOT more than 0.1 second and a correction range from -12% to +12% with surge/spike protection

### **Earthing**

An independent telecommunication earth shall be provided for the I.P.P.B.X and the MDF (*if available*). The earth lead cable shall not be less than 6mm<sup>2</sup> and shall terminate to copper earth electrode(s) in a concrete manhole (300mm x 300mm) with a suitable concrete cover.



FACILITY	INITIALLY EQUIPPED	ULTIMATE SIZE
No. of IP Extensions	32	64
No. of Trunk lines	4	6
No. of ISDN lines	1	1
Tie Lines	2	4
No. of GSM modules complete with Lines	4	6
No. of Operator's Computer based Consoles	1	2
No. of Operator's Head sets	1	2
No. of Operators' Hand sets	1	2

## 2.0.19 OTHER REQUIREMENTS FOR THE IP PBX

The I.P.P.B.X shall:-

- ✓ Be fully digital with a redundant processor with its own power supply
  - ✓ have remote maintenance interface MDF and lightning protection;
  - ✓ be of compact modular design with sub-lines pre-wired and easily removable;
  - ✓ have at least 50% power failure trunk transfer facility;
  - ✓ be able to support both digital and analogue circuits;
  - ✓ have a UPS of at least 8 Hours autonomy;
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- ✓ have direct inward system access facilities and data communication services;
  - ✓ be equipped with flexible music on hold;
  - ✓ be ISDN equipped;
  - ✓ be equipped with station Hunt groups facility;
  - ✓ be complete with a maintenance terminal facility with VDU and Key board;
  - ✓ have call forwarding automatic call transfer, three party conference among other standard features;
  - ✓ be equipped with mains power supply Anti-surge, over-voltage and under-voltage protection devices and lightning protectors for all cards;
  - ✓ have facility for selection for night service/special night answer point;
  - ✓ have on screen fault indication facility;
  - ✓ have computer-telephone inter-face for digital instruments capability;
  - ✓ be ready to accommodate either or all E1 and ISDN cards which include but are not limited to BRA ,PRA BPRA and LIOx;
  - ✓ be **type approved by the CA**. The tenderer must indicate the type approval references for the various parts that constitute the equipment. Photostat copies of type approvals must be attached and
  - ✓ be **compatible** for connection to Telkom Kenya Telecommunication network.

## 2.0.20 ITEMS TO BE STATED BY THE TENDERER

Delivery period from date of award of contract.....weeks

Period required for installation from receipt of equipment .....weeks

What is the name and model number of the I.P.P.B.X for which you have tendered?

.....

In which countries is the I.P.P.B.X and its PCB's manufactured.....

.....

With what standard does the I.P.P.B.X comply? .....

Is a full stock of spares available in Kenya? .....

For how many years is the continuity of spare parts guaranteed? (A minimum of 10 years is required).....years

What is the busy hour traffic capacity of the I.P.P.B.X assuming no delay in main exchange dial tone?

.....

What is the maximum ambient temperature in which the I.P.P.B.X will function satisfactorily?

.....

Is air conditioning required for the I.P.P.B.X? .....

Is protection against high transient line voltage incorporated? .....

How many pairs are required per extension line? .....

Is the operator's console suitable for a blind operator? .....

What is the guarantee period offered? .....

(Note: 12 months is the minimum)

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Is an MDF incorporated in the I.P.P.B.X? .....

Capacity of the standby battery in A.H.....

Output of charger in Amps .....

## PARTICULAR AND TECHNICAL SPECIFICATIONS FOR CCTV & ACCESS CONTROL

### PART 1

#### A. CCTV SURVEILLANCE SYSTEM

##### PARTICULAR SPECIFICATIONS

###### 1.1 Location of site

The site of the proposed works is located at **Bungoma County – Bungoma Town.**

###### 1.2 Extent of the works

The works to be carried out include the supply, delivery, installation, testing, commissioning and leaving in servicing condition the Closed Circuit TV network INTEGRATED with an Automatic Access Control systems in the proposed chambers and office block facility as herein described in this specification. The works shall include, but not limited to the supply and installation of the following:

- a) **Fixed IP Cameras (Bullet, Dome and PTZ)**

b) Colour Network Video Recorder

c) Cabling

d) Colour LED Monitors

### 1.3 Regulation and Standard

The subcontractor shall, in the execution and completion of the works in the detailed design for which he is responsible comply with the provisions of the following as necessary and relevant:

- Communication Authority of Kenya (CAK)
- The Kenya Communications Act
- The Electronic Power Act and the Rules made there under.
- The Kenya Power and Lighting Company Limited's Bye-Laws.
- The current edition of the "Regulations for the Electric Equipment of Buildings" issued by the Institution of Electrical Engineers.
- The requirements of the Chief Inspector of Factories for the Kenya Government.
- Kenya Bureau of Standards (KBS) Standard Specifications and Codes of Practice, or other equal and approved standard specifications and codes.

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- The Bye-Laws of the Local Authority.
- Any other regulations applicable to Electric and Electronic Installations or Communications systems in Kenya.
- The Employer's Safety Regulations.

## PART 2

### 2.1.0 TECHNICAL SPECIFICATIONS

#### **2.1.1 EXTENT OF WORKS FOR SECURITY SURVEILLANCE SYSTEM**

The security surveillance system shall consist of the following:-  
Supply, installation, testing and commissioning of video surveillance system complete with cameras, Video monitors, NVR. The work also includes ducting and laying of cables.

**Fixed IP Cameras.** The cameras specified should be able to cover the intended areas with clear images displayed on the video monitor. The cameras shall be linked to Video Monitors and the control room equipment. Highly sensitive areas should be covered with more cameras able to take pictures of any person coming in both from the front and the rear. The resolution of the cameras should be able to give pictures that are clear.

**Color TV Monitors.** The color monitors must be of high resolution and preferably of LCD screen. The size of the monitor should be big enough to allow the operators make correct deductions both in real time operation and during playbacks.

**Network Video Recorder.** The Network Video Recorder resolution has to be equally high for the monitor to display images with a high resolution.

The IP based Surveillance system should be able to support the following:-

- ✚ IP based recording system with motion detection.
- ✚ Digital zooming into recorded images/live view
- ✚ Multi-level password protection and logging facilities
- ✚ Integrates with access control, burglar control, burglar alarms and Fire alarm system and other building management systems as may be specified by the engineer.

Image compression for remote web live and playback viewing in case of IP.

Multi display monitors

Automatic daily archiving to hard drive or optical drive.

Fully adjustable digital video motion detection with exclusion/inclusion multi regions per camera.

Efficient video collection, storage and retrieval.

Advanced and instant search capability

Digitally signed recordings, with audit trails of all operator actions and system event.

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**Storage capacity of the Network Video Recorder** should be a minimum of Thirty Two Terabytes (32TB) NVR space to provide back up and redundancy.

Infra-red illuminators in poor lighting conditions

Able to interface with other systems on the ground

Support IP connectivity.

## 2.1.2 MINIMUM ALLOWABLE TECHNICAL SPECIFICATIONS FOR THE CCTV SYSTEM

### POWER REQUIREMENTS

The equipment to be supplied shall be capable of being operated from 240V AC, 50Hz power supply.

### CCTV SYSTEM SETUP

- ❖ The proposed Video Surveillance System shall be open standard type integrated system with IP protocol function and management architecture.
- ❖ The system should provide inter-operability of hardware , operating system software, networking , data base connectivity , reporting and communication protocols, system expansion should be possible through off-self available hardware.
- ❖ The offered system will cover all entrances and exits (external and floor level), general areas and will give a detailed view of all the targeted areas.
- ❖ All designated area will be covered by fixed high resolution indoor cameras as well as Outdoor fixed Day/Night cameras and where specified PTZ cameras in order to get a comprehensive view of the activities in the buildings and areas surrounding them. The offered system will allow recording for all cameras at any time at 30 FPS and 4CIF.

- ❖ The system will allow for at least 1 month storage of the recording from all cameras.

### **SYSTEM DESIGN**

- ✚ The offered System will be based on NVRs that allow connectivity of cameras through CAT 6 as well as other IP infrastructure. Should be to interface with other existing infrastructure.
- ✚ The offered system will allow viewing of any camera from the control room.
- ✚ Cameras will be connected using UTP cables and fiber optic infrastructure.
- ✚ The offered system should have an open architecture that will allow unlimited expansion for any number of cameras.
- ✚ The offered system will allow for secure mode of communication.
- ✚ The system will be operated through a central video console station.
- ✚ The controller will be able to view and control all cameras from one control room.

### **NETWORK VIDEO RECORDER (NVR)**

- ❖ Should be installable on a Linux/Windows PC.
- ❖ The NVR/NAS should have no limitations on the kind of storage to be used (RAID 5 & 6, NAS, etc.).
- ❖ The NVR/NAS must be capable of recording 100 cameras simultaneously.
- ❖ The NVR/NAS must be providing for a disk management system which will automatically reap old recordings to overwrite with new ones when max disk usage is reached.
- ❖ Should support ENVR-F16S, ECMS-DVR, PowerCon, 4series and NVR software
- ❖ Industrial Grade NVR designed
- ❖ Gigabit LAN
- ❖ Dual-Monitor support with one VGA, one DVI-I, one D-USB and one HDMI port
- ❖ HDAS with two-way audio
- ❖ 4Xusb2.0. 1Xrs232
- ❖ Windows software compatible

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### **SPECIFICATIONS:**

ITEM	DESCRIPTION	REQUIREMENT
1.0	Video Compression	H.264,MPEG4,MJPEG
2.0	Supported No. of Channels	64
3.0	Minimum Storage capacity	30TB Expandable to 48TB
4.0	Ethernet	2GB
5.0	Display	1xVGAport,1xDVI/1xD-SUB/1xHDMI port
6.0	USB	4* USB2.0
7.0	Serial port	1*RS232
8.0	Audio	HAD with Mic-in/Line/Line output
9.0	Power Input	240Vac
10.0	Chassis Construction	Heavy duty Metal
11.0	Indicators	Power LEDs, HDD, LAN
12.0	Operating System(OS)	Windows based

13.0	Operating Temperature	0° C to 45 ° C (10% to (90%) Humidity
14.0	Mounting	Rack Mount
15.0	EMC/Safety	FCC class B, CE
16.0	WARRANTY	2 Years parts and labour

## **RAID STORAGE**

- ❖ RAID-5 & 6 compliant
- ❖ Up to fifteen (15) 1-inch-by-3.5-inch SATA II hot-pluggable 3.0 Gbps hard drives at speeds of 7200 rpm
- ❖ Loaded with 12TB usable storage (after RAID 5 implementation) with hot-pluggable drives and minimum one spare drive. Maximum capacity up to 32TB using fifteen 1TB drives.
- ❖ Upgradable for dual host support providing direct connectivity to drives 0 through 6 and a separate connectivity to drives 7 to 14
- ❖ LED indications for systems status, power, split mode, activity, drive indicator per drive, fan fault, SAS ports etc.
- ❖ Configured with RAID 5 support for RAID levels 0,1,5,10,50
- ❖ Operating temperature up to 35 degree Celsius

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### **CAT 6 CABLE**

- ✚ Operating temperature up to 35 degree Celsius
- ✚ 23 AWG Annealed bare solid copper, CAT-6 UTP Cable, Channel optimized to 350 Mhz
- ✚ Meets EIA/TIA 568-B.2-1 Category 6 specifications, Passed UL 444 test and meets CM and CMR ratings
- ✚ Worst Case Cable Skew : 45 nsec/100 meters
- ✚ Characteristic Impedance : 100(+/- 3 ) Ohms 500MHz , Tested till 700 Mhz
- ✚ Conductor Annealed copper wire Diameter 0.52 mm (nominal)
- ✚ Insulation High Density polyethylene, Diameter 0.94 mm (nominal)
- ✚ Support for Fast Ethernet and Gigabit Ethernet IEEE 802.3/5/12, Voice, ISDN, ATM 155 & 622 Mbps and Broadband
- ✚ DC Resistance Max: 6.6 Ohms/100m
- ✚ UL Listed and Third Party verified by ETL to “ANSI/TIA/ EIA-568-B-2.1” specifications
- ✚ Zero Bit Error verified by ETL
- ✚ Sheath Fire retardant PVC Compound (FRPVC) Flame Rating : 60 deg. C As per UL 1685 CM
- ✚ PAIRS Color code: Blue / White-Blue, Orange / White-Orange Green / White-Green, Brown / White – Brown
- ✚ Outer Sheath PVC compound Thickness Diameter 0.5 mm (nominal) Outer diameter 6.5 mm (nominal)
- ✚ ELECTRICAL CHARACTERISTICS at 20° C Input Impedance (0.772-100 MHz) : 100 + 15 Ohms, (125-250 MHz) : 100 +/- 22 Ohms
- ✚ Mutual Capacitance : 5.0 nF/100m Capacitance, unbalance (Max.) : 330pF/100m
- ✚ Standard length: 305 Mtrs (1000 ft.)

### **NETWORK CABINETS**

To be located on each floor in designated rooms as indicated in the electrical drawings.

Must be metallic (appropriately sized as specified in the BQ) with a front clear glass, free standing, 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

### ACTIVE CONTROL EQUIPMENT AT THE NETWORK CORE

The active control equipment at the core should have the following features:

- a) Backplane/switch fabric Bandwidth Capacity of 150 GBPS or more.
- b) IEEE 802.3 compliant for power over Ethernet
- c) IEEE 802.1 based security compliant
- d) SNMP compliant for security
- e) Layer 2/3/4 switch
- f) Should support Gigabit Ethernet to the desktop
- g) Should have at least 10-slots or higher chassis
- h) The core switches should have two links to each floor configured in active/active configuration. The links should deliver 2GBPS throughput when all ports are active.
- i) The core switch should have redundant power supply, redundant fan tray and redundant

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CPU/ supervisor engine installed

- j) Fiber cable linking stacks on each floor to the core should be connected to 1000Base X(GBIC) port on the core switch.
- k) Should be installed with the latest version of system software at the time of delivery.
- l) Should support Quality of service for various applications.

### ACTIVE CONTROL EQUIPMENT'S AT THE LAN EDGE

Active control equipment at the LAN Edge should have the following features

- a) Active control equipment at the LAN Edge should support 10/100/1000 MBPS on all ports (RJ45) and Gigabit to the desktop connectivity
- b) The equipment should have at least two 1000BaseXGigabit uplink ports for terminating backbone Fiber.
- c) The equipment should support layer 3 routing.
- d) Should support IEEE 802.1, SSH, SNMP.
- e) Switch Fabric forwarding Bandwidth of 64GBPS or more.
- f) More than 12,000MAC addresses should be available on each switch.
- g) The switches should have 24/48 ports of 10/100/1000 MBPS.
- h) Each stack on the edge will have two links of Fiber to the core switch, totaling two fiber terminations from the core switch to the stack.
- i) Should support Jumbo frames.
- j) Total stack throughput bandwidth of 64 GBPS or more.
- k) Active Equipment at the LAN Edge should be quoted with a minimum of **One year of warranty** covering free replacement of parts and units.

### NETWORK MANAGEMENT SYSTEM

Bidders must propose the manufacturers Network Management system for centralized configuration, maintenance and troubleshooting of active equipment. Third party standalone systems should not be offered as part of the solution. Features and functionalities of the system should include the following:-

- a) Should be compatible with Microsoft windows/Linux operating systems
- b) Graphical User Interface for central Management and network viewing
- c) Network discovery and inventory management
- d) VLAN, multicast, security and load-balancing/fail over configuration
- e) Downloading and saving of log file from the device flash memory

- f) Centralized upgrade/backup and archiving of active devices
- g) Export of network topology to JPEG or other standard formats.

#### **HIGH DEFINITION INDOOR FIXED DOME IP CAMERAS**

1. The indoor fixed mini dome system with camera and lens shall be quick and easy to install.
2. The indoor fixed mini dome system shall provide multiple methods of installation including: surface mounting onto ceiling or wall, recessed mounting in ceiling or wall, and pendant mounting with an optional parapet mount.
3. The indoor fixed dome Camera shall meet or exceed the following design and performance Specifications:-
  - a) Resolution: 3Megapixels (Minimum)
  - b) Focus: Automatic
  - c) Lens type: Varifocal 3-8mm
  - d) Scanning System: progressive scan
  - e) Minimum illumination: 0.01lux
  - f) Selectable H.264, MPEG4, MJPEG compressions with dual streaming
  - g) Vandal resistant
  - h) POE enabled 12vDC/24vAC
  - i) Infra-Red range : Minimum 30metres

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#### **HIGH DEFINITION OUTDOOR BULLET TYPE CAMERA**

- a) Resolution: 3Megapixels ( Minimum)
- b) Focus: Automatic
- c) Lens Type: Varifocal 3-8mm
- d) Scanning System: progressive scan
- e) Minimum illumination: 0.01lux
- f) Selectable H.264, MPEG4, MJPEG compressions with dual streaming
- g) Vandal resistant
- h) POE enabled
- i) Housing: Must be to IP 66 rating
- j) Infra-Red range: Minimum 30metres

#### **HIGH DEFINITION IP 360° PANORAMIC/FISH EYE CAMERA**

- 5Megapixels
- Surface mount
- Digital PTZ
- Auto switching with manual override
- Coverage: No blind Spots
- IP66 Rated
- POE Enabled
- H264, /MJPEG Multi stream camera

#### **HIGH DEFINITION IP PTZ CAMERA**





- a) Resolution: 2Megapixels (Minimum)
- b) Focus: Automatic 32X Optical and 16 Digital Zoom



- c) Lens Type: Varifocal3-8mm
- d) Scanning System: progressive scan
- e) Pan /Tilt Speed: Pan Speed; Preset 700 ° /sec, Manual: 0 , 024° /sec to 120 ° /sec ( Proportional Zoom ratio) : Tilt Range 190 ° (-5 ° to 185 °: Tilt Speed250 °/sec: manual: 0.024 °/sec
- f) Minimum illumination: 0.01lux
- g) Selectable H.264, MPEG4, MJPEG compressions with dual streaming
- h) Vandal resistant
- i) POE enabled
- j) Infra-Red Minimum viewable range 150metres

## FIXED THERMAL IP OUTDOOR CAMERAS

Fixed thermal Imaging camera

-  **38Microns**
-  **2xZoom**
-  **Weather proof Maximum rain protection, IP 66Rated**
-  **Sun Shroud**

### 2.1.3 PC WORKS STATIONS

- This shall be work station-class personal computer with USB ports, Key board and mouse.
- Shall be able to process high quality video streams simultaneously and MPEG4 Video.

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- Shall have plug and play installation and detection of cameras and devices.
- Shall interface and allow user to view live video, control cameras record video, search, play back and export video.
- Shall allow authorised officers to configure devices, set up users adjust network settings.
- Operating system: At least Windows 10or equal and approved equivalent, Core i7 , 8GB RAM and 4TB SSD/DVD/RW win10/21" Screen of MultiMonitor Support complete with a printer for central monitoring.

### 2.1.4 CONTROL ROOM

- The control room set up should include furniture and air conditioning equipment. If possible the control room should be partitioned to allow major equipment to be inaccessible to user personnel or operators unless specifically authorized to do so.
- Secure doors and controlled access.

### 2.1.5 CONTROL EQUIPMENT

The control equipment shall be computer and screen based

Features to include:

- On screen level meter for setting up VMD.
- On screen scope function to set up camera video level.
- PTZ CAMERA Control macros to enable auto start and control via single keystroke 2 levels of menu of share user level functions.
- "covert mode" for secret recording • Keyboard lockout
- Innovative.
- On screen engineer's overview of machine set up and parameters with prints out capability via RS232 port.
- Individual dwell times.
- Alarm log.

## 2.1.6 CABLES AND CONNECTIONS

- All the cabling shall be carried out in conduits or trunking. Basically cables carrying video signal between cameras and TV monitoring via video control equipment shall be Optic fibre and four pair Cat 6 cables. The positions for connectors and the equipment shall be identified by the contractor on site.
- Bidders shall be required to visit the proposed site to ascertain cable routes and cable lengths before pricing the Bills of Quantities in this document. **In this regard, the bidders shall be required to get in touch with the Chief Engineer-Electrical at Hill Plaza Building, along Ngong Road, Nairobi, during official working hours.**
- It shall be the responsibility of the contractor to provide wiring and connection diagrams for approval by the Engineer.
- All cables to be terminated neatly and with appropriate flex conduits where necessary. No loose, hanging or exposed cables will be allowed.

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## 2.1.7 UNINTERRUPTIBLE POWER SUPPLY (UPS)

This shall be an on-line Un-interruptible power supply with output rating of 1KVA, 2KVA, 5KVA & 10KVA, 240V, 50HZ single-phase supply. It shall provide power to the security surveillance system.

It shall be microprocessor- based so that both output voltage and frequency are closely regulated and continuously monitored and also provide system diagnostic and shut down protection functions. It shall feature a maintenance by-pass to enable normal routine maintenance operations to be performed without interruptions to the system.

It shall be fitted with both visual and audible alarms to indicate any change in equipment status such as:-

- ✓ input power problems
- ✓ ups faults
- ✓ ups overload
- ✓ battery discharging

### Other parameters are:

Input supply:	240V AC 50Hz
Power factor:	0.7 lag at full load
Current limit:	125% of the normal
Output voltage:	240V AC 50 Hz
Output voltage tolerance:	2.5%
Output frequency tolerance:	0.05%

## PART 1

### B. ACCESS CONTROL SYSTEM

#### PARTICULAR SPECIFICATIONS

##### I.1 Location of site

The site of the proposed works is located at **Bungoma County – Bungoma Town.**

## **1.2 Extent of the works**

The works to be carried out include the supply, delivery, installation, testing, commissioning and leaving in servicing condition the Automatic Access Control systems in the proposed office space as herein described in this specification. The works shall include, but not limited to the supply and installation of the following:

- a) **Access Control Systems**
- b) **Cabling of the Access Control System**
- c) **Integration of the CCTV and Access Control Systems**

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## **1.3 Regulation and Standard**

The subcontractor shall, in the execution and completion of the works in the detailed design for which he is responsible comply with the provisions of the following as necessary and relevant:

- Communication Authority of Kenya (CAK)
- The Kenya Communications Act
- The Electronic Power Act and the Rules made there under.
- The Kenya Power and Lighting Company Limited's Bye-Laws.
- The current edition of the "Regulations for the Electric Equipment of Buildings" issued by the Institution of Electrical Engineers.
- Current recommendation of CCITT and CC1R
- The requirements of the Chief Inspector of Factories for the Kenya Government.
- Kenya Bureau of Standards (KBS) Standard Specifications and Codes of Practice, or other equal and approved standard specifications and codes.
- The Bye-Laws of the Local Authority.
- Any other regulations applicable to Electric and Electronic Installations or Communications systems in Kenya.
- The Employer's Safety Regulations.

## **1.4 Electrical Requirements**

The equipment to be supplied shall be capable of being operated from 240V AC 50Hz power supply.

## **1.5 Mandatory Requirements**

- a) All equipment and materials used shall be standard components that are regularly manufactured and used in the manufacturer's system.

- b) All systems and components shall have been thoroughly tested and proven in actual use.
- c) All systems and components shall be provided with the availability of a, 24-hour technical assistance program (TAP) from the manufacturer. The TAP shall allow for immediate technical assistance for either the dealer/installer or the end user at no charge.
- d) All systems and components shall be provided with a one-day turn around repair express and 24-hour parts replacement. The repair and parts express shall be guaranteed by the manufacturer on warranty and non-warranty items.
- e) The supplier shall be the manufacturer, or the manufacturer appointed agent (proof to be submitted).
- f) The Offered system has been installed and commissioned by the supplier in other locations.

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- g) **The proposal will include operators training in Kenya and system manager factory training (at the manufacturer training facility).**

## **PART 2**

### **2.1.0 TECHNICAL SPECIFICATIONS**

#### **2.1.2 EXTENT OF WORKS FOR ACCESS CONTROL SYSTEM**

The access control system shall consist of the following:-

Supply, installation, testing and commissioning of access control system integrated with CCTV system the following key components:-

- a) Intelligent System Controller and Server,
- b) The proximity card reader,
- c) The proximity cards,
- d) The magnetic locks,
- e) Biometric readers,
- f) Turnstiles,
- g) Electro-magnetic door lock,
- h) Electric bolt lock,
- i) Walk-through metal detector,
- j) X-ray baggage scanner and;
- k) Requisite programming software package etc.

#### **2.1.3 THE IP BASED INTELLIGENT SYSTEM CONTROLLER**

The controller is the main item for control access system.

The controller shall have a built in power supply, with a battery backup facility and sufficient power to drive the number of doors with access control.

The control should be able to provide time zoning, extensive door monitoring, logging of all events and hardware alarms – output. User's parameters shall be done locally in the stand alone via a portable and easy to use compact programme using the English Languages Software.

The controller should be able to use the proximity cards, biometric readers or the magnetically encoded keys as identifiers as specified by the engineer.

It shall have the following features:-

- ✚ Bi- processor Central Processing Unit
- ✚ With lead battery backup with four (4 hrs.) hours autonomy in case of network failure.
- ✚ Autonomous clock/calendar chip with automatic management of regular/daylight saving time with autonomy of one hour.
- ✚ Management of peer to peer connection with other servers and as a consequence a high decision making capability and full operative autonomy.
- ✚ Up to 2500 transactions stored on a removable cartridge with a flash EPROM memory.
- ✚ The controller shall be capable of controlling 1No.(one) or 2 No.(two) doors in a stand-alone mode and shall have IP based access functionality.
- ✚ Should Have TCP/IP RS485 communication compatibility
- ✚ The controller shall have a built in power supply, with a battery backup facility and sufficient power to drive two locks.
- ✚ Minimum 4-relays output, 4 readers interface support and Wiegand reader support
- ✚ 8 input port for door open sensor monitoring and exit button and minimum 2 user defined input port for link with alarm system.

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- ✚ 12C Bus Expansion Slot
- ✚ In built surge protection
- ✚ Control software with access to alarm monitoring, time zones, supervision, activity reports etc.
- ✚ The control should be able to provide time zoning, extensive door monitoring, logging of all events and hardware alarms – output, and also real time monitoring.
- ✚ User's parameters shall be done locally in the stand alone via a portable and easy to use compact programme using the English Languages Software.
- ✚ The controller should be able to use the magstripe cards or the magnetically encoded keys as identifiers.
- ✚ The card readers shall have a Pin-pad.
- ✚ The power for the reader and for the electric lock shall be supplied via the controller.
- ✚ **MUST** have a staff attendance Management System capability.

The server as specified by the Engineer should be able to store the transactions for a minimum of up to two months. The speed of the server to be such that the programming and communication between the card readers and other interface units is fast.

#### 2.1.4 PROXIMITY CARD READER

Proximity card readers shall conform to the following:

- Shall Be Bi-directional and meets requirements for HID Proximity cards (standard ISO/ABA 125 KHz, up to 4cm of distance).
- Have Alphanumeric Liquid Crystal Display (LCD), back lit, with two lines of 16 characters each, for the visualization of time data, guide messages for the user, and service messages.
- Should have 2 multicolor LED: Green for the access granted, Red for invalid transaction, Yellow for Echelon Service function.
- Variable Tones for valid/invalid transactions.
- Lon Works cabling Interface should be done using unshielded twisted pair cable in free topology. (Transceiver FTT10A, 78Kbps)
- Meets IP31 level of protection
- It should be able rated to operate within 0°C – +50°C temperature range
- It should be rated to operate up to a relative humidity 95% without condensation or as otherwise specified by the engineer for special cases.
- Must meet all laid down international Electromagnetic Compatibility standards

### 2.1.5 PROXIMITY CARD/MAGESTRIPS CARDS

The cards shall be of a type that can accommodate a customer logo, photographs and text should they be required and they shall have a high coercively magnetic strip.

### 2.1.6 MAGNETIC DOOR CONTACTS

They shall be of the magnetic reed switch and with appropriate magnet able to handle at least a minimum of 200KN and also of the normally open type.

### 2.1.7 BIOMETRIC READERS WITH BOTH FINGER AND RFID

- ✚ They shall be small in size and compact in design

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- ✚ Fully water proof and dust proof and compatible with BioNano core fingerprint algorithm
- ✚ Easy user enrolment via Management software on computer or via a master card
- ✚ RFID, Mifare card module of Industrial standards
- ✚ Finger print storage of minimum 1000 prints
- ✚ Able to communicate to PC via TCP/IP, RS485 and USB
- ✚ Able to operate on stand alone, i.e. Direct lock and door open sensor
- ✚ Standard Wiegand 26 output

### 2.1.8 APPLICATION SERVER

Minimum Specifications

- ❖ Processor – Intel® Xeon® Processor X5500 series (4 Core processor, 2.8GHz)
- ❖ 8Mb L3 Cache Memory
- ❖ System Memory – 16GB
- ❖ Memory Slots – 18DIMM slots
- ❖ Hard Disk – 4 X 500GB SAS
- ❖ Monitor - 19" TFT
- ❖ Form Factor – Rack Mountable
- ❖ I/O interface – 4 USB ports , 2xRJ45 jack for Ethernet, HDMI port

### 2.1.9 CENTRAL SERVER STATION SOFTWARE

#### (i) General Features:

- Compatible with MySQL, MS SQL Server and Oracle databases.
- System helps to let the software know positioning of controllers, readers, input monitors, output controllers, their interrelation, and various areas, relations between doors, locks, readers and areas.
- Server manages credentials, schedules, area controls, and monitoring access, inputs and outputs by directly interacting with the controllers and storing them in database.
- Software manages role based access control, employees, departments, shifts, schedules, holidays, and business logic and view reports.
- Monitor application monitors the access, inputs and outputs by reading through database logs.
- System allows getting information about visitor by inviter and area which should be accessible to visitor in case invitee is not going to escort visitor.
- Exports reports to MS Excel.
- Auto processing of data.

(ii) **Central Monitoring System**

- Centrally receives all access control logs and track movement of people.
- Monitors current transactions logs, displays area, door information with access message  
Monitors employee and unknown access messages.
- Show Employee Name, photographs, department and other details with his/her current and previous transactions.

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- Displays history of all logs.
- Configurable number of transactions on monitor window.
- Emergency message display.
- Set up rules engine based on What If scenarios.
- Separate access reports for granted and denied access as well as for known and unknown credentials.

(iii) **Area wise attendance on real time basis**

- Controllers push time events to Central Station Server.
- No polling of Data required from Central Station Server to each controller
- Monitors area wise access logs.
- Monitors area wise employee attendance.
- Privileges according to users' roles.
- Employee wise, area wise access reports.
- Separate Access reports for granted and denied access as well as for known and unknown credential.

(i) **Alarm monitoring system.**

- Centrally monitors fire alarms, intrusion alarms, smoke detectors
- Each controller is equipped with AC failure, battery failure, and tamper switch alarm.
- Alarm Acknowledgments by operator.
- Multiple selections for alarm acknowledgement.
- Alarm Pop ups at Taskbar of PC
- Priority wise alarms display.
- Broadcasts alarms of extreme priority to each operator/monitor
- Alarm event reports.
- Alarm annunciation system: Alarm display in Graphical, Stack and Grid view as per priority
- Alarm messaging through SMS, Email and web.

(v) **Credential Management.**

- Card Management

- Association of Card with Employee.

- Card Data may be Card Serial Number or Card Id, Facility Id as defined by Card Format.

- Fingerprint Management: Registering the Fingerprint of Employee.

- PIN Management: Association of PIN with Employee.

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- Automatically pushes Credential Information of Card and PIN to relevant Controllers.

- Displays list of assigned and unassigned credentials.

- Import of Credential Data from Excel Sheet.

- Flush unknown / unassigned credentials so as not to show them during fresh credential assignment.

- Support for 26 bit and 32 or 34 bit card formats.

- System can support up to 4 billion credentials.

**(vi) Schedule Management**

- Set Schedule for Employees as to when they can access the various Areas.

- Set Holiday Lists for the Employees when they are prohibited to enter certain areas.

- Set multiple Holiday and workday schedules with pre-defined time spans for weekdays.

- Import holidays from Time Office.

- Option for 24 hour schedule.

- System supports up to 4 billion schedules, 4 billion holidays.

**(vii) Area Management**

- Configure a Group of CICO (Credential In Credential Out) Access Control Terminals as a Closed Area.

- It is assumed that there are no other entry or exit points for this Closed Area. Then only following functionalities have meaning.

- Apply Real or Timed Anti-Pass-Back to this Area with following possible actions



- It is possible to define Areas in such a way that person is not allowed entry to certain area unless he / she is in specific area. E.g. if person has successfully entered into an ICT office then only he / she is allowed entry to the Server Room inside the ICT department.
- Configure a group of Access Control Terminals, need not be a closed area, for ease of assigning access groups to employees.

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- Assign multiple doors to get inside and outside the area.
- System supports up to 4 billion areas.

#### **(viii) Access Management**

- Collection of combination of Area and Schedule is considered as Access Group.
- You can assign multiple employees to these access groups, or you can assign multiple access groups to employee.
- Separate access group of each access area can be created.
- Employees can be filtered by employee type, establishment, department, designation to assign access groups.
- Provides Role based Access Control.
- Optionally create access group with 24 hour schedule for areas.
- System supports up to 65535 Access Groups.

#### **(ix) Time Office Management**

- Configurable system to suit your business needs.
- Provides Role based Access Control.
- Manages time events such as In, Out, In/Out, Breaks, Inter-site and Offsite movement.
- Allows to add employee, departments, holidays, shifts, shift lists, locations and to enter leaves and auto shifts.
- Understands all types of shift patterns e.g. weekly, tri-weekly, second or fourth Saturday etc.
- Shift scheduling for single or multiple employees.
- Can set multiple auto shifts or groups of auto shifts which detect the shift, and does time evaluation as per the shift set during shift scheduling.
- Manpower planning assists to generate date wise plan to set shift, shift sequence, leaves, overtime.

- Leave management module allows to create leave types and further to allocate these to employees.

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- Different Overtime Policies can be set for Workday and Weekly Off.
- Option of Manual time event entry assists to configure leaves, holidays, shifts and time events manually.
- Generates reports on daily, weekly and monthly basis for Employee's Daily Attendance, Employee Summary, Dept. Summary, Detail Report, Current Status, In/Out Status, Transaction Log, Exceptions like Late, Manual and Single entry, Early Out, Leave Register, Leave Balance, Overtime, Absentee, Pay report and salary Slip Data can be generated. Cross tabs reports such as Detail Muster Roll, Paid/unpaid, late marks are available.
- Sets Leave type and displays current balance for individual employee.

### (x) **Emergency Management**

- Open or maintain closed status of doors as configured to be in case of Emergency.
- Run pre-specified Batch File
- In case you need to run multiple programs, configure your batch file accordingly on the Server.
- Convert Output Points to Status as Configured to be in case of Emergency
- An Emergency Button to open up every door and raise all the configured alarms.
- Emergency messages for preconfigured emergency input(s).

### (xi) **Visitor Management**

- Records Visitor data such as photograph, name, organization, time, person to meet, prior appointment, reason.
- Adds card with temporary credentials with access to specific area / elevator with or without escort. For Escort it allows entry only when escort card is also swiped in.
- User-friendly so that security person can use it.
- Advanced filter options to search visitor on basis of time, name and organization.
- Sorts visitors' data for Inside campus, outside campus and visitors yet to come.
- Keeps track of visitor's belongings.
- Automatically generates visitor pass.
- Popup messages at Security's PC if any visitor spends extra time than given time.
- Displays Visitor's transaction summary at security.

- Generates visits and visitors reports on basis of date, time and employee.
- Every privileged user can set prior appoint for his/her visitor

## 2.1.10 TURNSTILES

### FULL AND HALF HEIGHT TURNSTILES

- + Full height : 2250mm
- + For interior/exterior installation
- + Rotating locking mechanism
- + Perpetual base bearing
- + 100% anti rust treatment
- + Arms: 4No.
- + Rotation:1176mm diameter
- + Arm spacing:120mm
- + Minimum opening:1400mm
- + Auto-lock on alarm option
- + Integrates with all access control systems
- + Power requirements:240Vac, 50Hz
- + Free movement on power failure
- + With Heavy duty solenoids rated for continuous duty cycle
- + Arms designed to ensure a single entry or exit

## 2.1.11 ELECTRO MAGNETIC LOCK

- Holding force 300kg-Force
- Operating voltage : DC 12v or 24v

## 2.1.12 ELECTRIC BOLT LOCK

- Operating voltage:12v or 24v
- Sensor input: and Door Sensor

## 2.1.13 WALK THROUGH METAL DETECTOR

- Zone indications: up to 33 independent zones
- Overhead Control unit: All Electronics- LCD, alarm light, LED bar graph, control touch pads
- Standby function: up to 6hrs back up
- Passage way interior size:Width:760mm, Height:2030mm,
- Power requirements: 240vac 50Hz
- Alarm indicators/Random alarm feature: 33zones, volume –adjustable tone, bright LED visual and remote alarm feature.
- Standards: Electric safety and Compatibility for CE, FCC, CSAIEC and IEEE
- Tamper –Proof Settings: Three Access levels of Security
- Construction: Attractive scratch and mar resistant laminate. Detection and Heads support : Heavy duty aluminium
- Networking: Availability of remote management facility

## 2.1.14 X-RAY BAGGAGE SCANNER

- X-ray baggage scanner to include 2No. 24" LCD Colour Monitors with Key board
- Voltage stabilizer: Integrated , 1phase , 240Vac, 50Hz
- Feeder roller : Compatible with Height of machine
- Discharge roller: Compatible with Height
- Minimum Tunnel dimensions (WXH=A) cross-sectional area of 25cm<sup>2</sup>: Any combination Of Width between 600mm and 630mm & Height between 400 mm and 465mm is acceptable as long as the x-sectional area is not less than 25cm<sup>2</sup>
- Conveyor speed 50Hz at mains frequency: 0.20m/s ( minimum)

- X-ray dose/Inspection (typical): Standard:0.7 $\mu$ Sv, HI-MAT:1.6 $\mu$ Sv(0.14mrem)
- Duty cycle:100% no warm-up procedure required
- Anode voltage: 140Kv-160Kv cp
- Cooling : Hermetically sealed oil Bath
- Beam detection: Diagonal/Vertical/Horizontal
- Image presentation: Colour
- Other features Fading in of date/time, luggage counter, user ID number, luggage marking system, display of operating mode, zoom over view, free programmable keys, USB interface.
- Construction: Steel Construction with steel panels, mounted on roller
- Film safety: Guaranteed up to ISO 1600 (33DIN)
- Digital Video Memory:1280x1024/24bit
- Image evaluation functions: zoom Stepless enlargement
- Manufacturer's Brochures must be included with the tender and during delivery.

### 2.1.15 SOFTWARE LICENCES

The contractor shall before handing over the project ensure that all software packages relating to all systems installed are submitted to the Project Engineer Use of Passwords must be restricted to those alterable by the client as part of system administration. Manufacturers' or proprietary restricted passwords or software shall not be permitted. Prices quoted must include cost of software licences. The system should allow the client to procure software upgrades directly from the supplier of equipment. This should be stated clearly in the tender.

## REQUIREMENTS AND TECHNICAL SPECIFICATIONS FOR LIFTS INSTALLATION WORKS

### 1.0 DESCRIPTION OF THE WORKS

The scope of lift installation works encompasses the supply, installation, testing and commissioning of 2No. modern microprocessor control based lifts including associated builders and electrical works.

### 2.0 GENERAL REQUIREMENTS

The lifts Contractor shall supply, deliver unload, hoist, fix and erect, test and commission all the equipment, plant and materials in accordance with all specifications contained in this document including the Building plans to provide a complete and operable installation.

The lifts Contractor shall become liable for defects and be responsible for the initial maintenance of the lifts installed all as specified here in.

### 3.0 PARTICULAR REQUIREMENTS

The tenderer shall provide factory compliance certificate for EN 81 – 1/1998 to prove compliance with this European code. Failure to provide this shall render the tender non – responsive and hence the bid will not be considered.

### 4.0 TECHNICAL SPECIFICATION FOR THE LIFTS

#### I) 2NO. LIFTS (13 Pass. Capacity)

No. of Units:	Two (2No.)
Load (Each Unit – Gross):	1050Kg (13 persons)
Speed:	1. 5 m/s
Drive:	AC gearless closed loop digital VVVF (microprocessor controlled)

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Control System:	Electronic. Fully software based microprocessor
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	controlled system and an advanced intergrated lift management system to serve the group of two (3No.) lifts
No. of Stops:	5 stops (GF, 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> , 4 <sup>th</sup> Floors).
Travelling Cable:	Install travelling cable to serve interface for fire alarm system, C.C.T.V and Audio System (systems installed by others)
Lift Pit:	Minimum 2000mm (provisional length; subject to confirmation on site)
Head Room:	5000mm - (subject to confirmation on site)
Normal Operation:	<b>Duplex function;</b> <b>One of the lifts; A or B to be configured to operate as a goods lift/fireman's when need arises.</b> Once through with special need, the lift should revert to passenger service using the shared call button with the other lift operating then in duplex mode. Lift C is a dedicated VIP Lift.
Power Requirements:	415V ac, 3 phase, at 50Hz
Machinery:	Gearless Machine-Room-Less (MRL).
Travel Height:	(subject to confirmation on site)
Shaft Size:	The dimensions of the lifts shafts are 2000mm (width) by 1980mm (depth) for the 2No. Single-sided Lifts A & B. This is subject to assigned spatial allocations in Architectural and structural engineer's details.
<b>Other main facilities and functions to be included:</b>	<p>Car door operation shall be fully automatic with (infra-red) electronic door sensors</p> <ul style="list-style-type: none"> <li>: Car position indicator with floor numbers on every floor</li> <li>: Door button – re-open</li> <li>: Voice guidance system (voice synthesizer)</li> <li>: Emergency power operation and system backing (To ensure lift stops and opens doors at the nearest floor landing in case of power failure)</li> <li>: Intercom facility – 3 way</li> <li>: Alarm power unit and bell complete with a maintained back-up power supply</li> <li>: Safe landing with deviation of not more than 3mm</li> <li>: Floor position indicator on every floor</li> <li>: Independent service key operation</li> <li>: Signal floor lantern with sounders or car arrival chimes on all floors.</li> <li>: All the lift call buttons and car operation panels must have <b>buttons for the disabled</b> (Braille for the blind and button for wheel chair users)</li> <li>: Remote control car stop (emergency)</li> <li>: Cabin ventilation shall be tropicalised high Capacity cylinder type operation.</li> <li>: Car extract fan should be powerful, quiet, drought free and multi-directional complete with maintained back-up power supply</li> <li>: Shall incorporate an Audio Visual car overload device.</li> <li>: Shall have forced ventilation key switch.</li> </ul>
<b>Code Compliance:</b>	The lift shall comply with BS 5655 or European Specification equivalent code EN 81 and KS 2169 -1
<b>Structural Openings:</b>	The lift Contractor shall set the landing doors at 10mm from the finished floor levels so as to get a fall away from the landing to prevent water from <b>flowing down the lift shafts when washing up.</b>
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<b>Entrances:</b>	The lifts car shall have automatic high speed power operated doors as follows: - <ul style="list-style-type: none"> <li>▪ panel center opening doors of 1100mm wide by 2100mm high.</li> </ul>
<b>Car door:</b>	Stainless steel all to Engineer's approval.
<b>Landing door:</b>	Stainless steel to Engineer's approval.

**Landing door architraves:** Architraves to be granito tiles with an aluminium strip at the edge to approval by the engineer.

**Wall switches:** All operating switches in the lifts shaft shall be of the totally enclosed drip proof type.

**Lighting:** Indirect Lighting shall be fitted in the car to a level of 150 lux. The fittings shall be fully recessed to prevent damage by tall items and have automatic ON/OFF energy saving features. Emergency car lighting to be incorporated

**Cabin walls:** Hairline stainless steel to Engineer's approval.

**Mirror:** Three Quarters of height and full width on rear side of lifts for the 2No. lifts.

**Door Operation:** Heavy duty variable frequency driven door operators on a frame above the lift car.  
Fully adjustable door open and close speeds -  
Micro-processor controlled.

Intelligent speed adjustments to cope with traffic requirements

Full curtain electronic infrared 3 dimensional detectors.

An electro mechanical type tested interlock shall be provided, fitted on the landing door and operated by the door lock cam on the lift car to prevent movement of the lift car until the landing door is both mechanically and electronically locked.

**Hand rails:** Hairline stainless steel plating hand rails to be provided on the three panel sides. Lower rails for wheel chair users also to be incorporated.

**Emergency light:** Emergency light in the lift cars shall be **6 watts complete with a maintained back-up power supply**

**Signal Hall Lanterns:** LCD displays and different tones for up and down motions.

**Signal fixtures:** Wide angle view car position indicator unit with high reliable LED technology.

**Floor buttons:** Micro motion with ring illumination Brushed stainless steel plate with Braille indication and button for wheel chair users.

**Floor:** Granite tiles, 6mm thick for the 3No. Lifts.

**Car position indicators:** Car position indicators shall be digital LCD type & Buzzers.

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**Car direction indicators:** Car direction indicators shall have polycarbonate Covers and 160° angle view.

**Manual operation:** Provision shall be made for manual raising and Lowering by means of spokeless Wheel. This wheel shall be mounted on the drive motor or provided at the controls for the machine-room less lifts. This facility should be availed at the control panel

**Guarantee of Spare parts:** The tenderer must confirm in writing and provide Written commitment from manufacturer, the availability of parts for the make of lift proposed for installation, for a continuous period of at least 10 (Ten) years.

**Painting:**

All parts of the control equipment, switchgear trunking bed plates and closed sections of metal parts which will not be accessible for painting after erection shall be given three coats of paint at the manufacture's works. All bright surfaces shall be coated with lacquer or other protective coating before leaving the manufacturer's works. Metal works in the lift shaft shall be painted on site with three coats of best quality oil paint. The lifts machine and other machinery located in the lifts motor room shall be painted with three coats of best quality oil paint one coat being applied after erection.

**Construction:**

In general, the lift car shall be constructed from pressed steel. The method of construction and strength of lift cars, doors and panels shall comply with B.S. 5655. Part 1 1970 and the amendments and in accordance with European code EN 81.

**Base frame:**

The complete hoisting equipment shall be mounted on a base frame of fabricated steel which when installed shall be insulated from the building structure by means of rubber or other approved sound and vibration isolated material provided and fixed in an approved manner between frame and the supporting beams.

**Facilities for the Disabled:**

Shall comply to EN81

**Communication & Monitoring Equipment wiring:** The lifts shall be fully equipped with an industry standard interface (LON, BACnet etc.) for Building management system interconnection for remote monitoring and control. The lifts shall also have an interface for integration with the facility's access control system.

**5.0 INFORMATION TO BE SUPPLIED BY THE TENDERER\_\_\_\_\_**

5.1: The tenderer shall fill in the following information pertaining to the VIP Lift offered at the time of tendering: -

- (i) Type of Drive Motor .....
- (ii) Size of the Drive Motor (KW).....
- (iii) Country of Manufacture .....
- (iv) Power Factor .....
- (v) Starting Current A .....
- (vi) Running Current B. ....
- (vii) Duration of Starting Current .....
- (viii) Lift Capacity ( Kg/Persons).....
- (ix) Lift Speed .....
- (x) Landing Doors Type .....
- (xi) Landing Doors Safety Features.....
- (xii) Dimensions of Lift Car .....
- (xiii) Shaft size dimensions (WxD).....
- i) Dimensions of Landing Doors .....
- ii) Structural Openings (WxH).....
- iii) Headroom (Height) .....

5.2: The tenderer shall fill in the following information pertaining to the 2No. Lifts offered at the time of tendering: -

- i) Type of Drive Motor .....
- ii) Size of the Drive Motor (KW).....



- iii) Country of Manufacture .....
- iv) Power Factor .....
- v) Starting Current A .....
- vi) Running Current B. ....
- vii) Duration of Starting Current .....
- viii) Lift Capacity ( Kg/Persons).....
- ix) Lift Speed .....
- x) Landing Doors Type .....
- xi) Landing Doors Safety Features.....
- xii) Dimensions of Lift Car .....
- xiii) Shaft size dimensions (WxD).....
- xiv) Dimensions of Landing Doors .....
- xv) Structural Openings (WxH).....
- xvi) Headroom (Height) .....

**Bidders must provide Technical Brochures to assess their technical compliance with these specifications**

## 2.1.16 STATEMENT OF COMPLIANCE

- (a) I confirm compliance with all clauses in this tender specification.
- (b) I confirm that I have not and will not make any payment to any person which can be perceived as in inducement to enable me win this tender.

Signed: .....for and on behalf of the Tenderer.

Date: .....

Official Rubber Stamp: .....

## **SECTION D**

### **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 sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (including **16% VAT and all other taxes applicable at the time of tender**
6. Any bid returned with unfilled Schedule of Unit Rates shall be considered technically non-responsive, and the bidder shall automatically be disqualified.

**SCHEDULE OF UNIT RATES**  
**(To be completed by the Tenderer)**

Item	Description	Unit	Qty	Rate (KShs.)
	<p>The rates entered in the schedule unless otherwise stated shall be the complete cost of supply, transportation, Insurance, Installation etc., to be added or deducted from the sub-contract Price in respect to variations ordered during the course of the work.</p> <p>The rates entered below shall be used in conjunction with; and not in place of the rates entered within the BoQ. The rates below are intended to complement the BoQ where sections have been priced on lump sum basis Where any conflict occurs between the rates entered below and the rates entered in the BoQ the lowest rate shall be applied throughout. Certain items entered below may not be applicable to the Sub-contract requirements as at present designed. However, the sub-contractor shall enter a rate against these items as future designed/alterations may include Some or all of the items scheduled</p>			
1.00	<p style="text-align: center;"><b>Switchgear</b></p> <p>Distribution boards of the following types and ratings, as Crabtree, Schneider or Approved Equivalent:-</p> <p>8way TP&amp;N DB with integral 550 ampere isolating switch</p>	No	1	
	<p>Consumer Units of the following types and ratings, as Crabtree, Schneider or Approved Equivalent:-</p> <p>4 way TP&amp;N with integral 80 ampere isolating switch</p>	No	1	
	<p>8 way SP&amp;N with integral 200 ampere isolating switch</p>	No	1	
2.00	<p><b><u>Cables</u></b></p> <p>Unarmoured PVC/PVC copper cables with conductors of the following sizes:</p> <p>1.5 sq. mm 3 core</p> <p>2.5 sq. mm 3 core</p> <p>6.0 sq. mm 3 core</p> <p>10.0 sq. mm 3 core</p> <p>16.0 sq. mm 3 core</p> <p>PVC/SWA/PVC copper cables with conductors of the following sizes:</p> <p>10 sq. mm 4 core</p> <p>16 sq. mm 4 core</p> <p>35 sq. mm 4 core</p> <p>70 sq. mm 4 core</p> <p>150 sq. mm 4 core</p> <p>240 sq. mm 4 core</p> <p>300 sq. mm 4 core</p>	<p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p> <p>m</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	
	<b>D/2</b>			
3.00	<b><u>Conduits</u></b>			

Item	Description	Unit	Qty	Rate (KShs.)
	Supply and Installation per linear metre including fixing of all accessories of PVC conduit of the following sizes:			
	20mm	m	1	
	25mm	m	1	
	32mm	m	1	
	40mm	m	1	
	50mm	m	1	
	As above but PVC sheathed flexible steel conduit:			
	20mm	m	1	
	25mm	m	1	
	32mm	m	1	
	40mm	m	1	
4.00	<b><u>Cable trunking</u></b> Supply & install sheet steel cable trunking complete with all necessary supports, fixings and dividing			
	75 x 50mm	m	1	
	150 x 50mm	m	1	
	300 x 300mm	m	1	
5.00	<b><u>Miniature Circuit Breakers (MCBs)</u></b> Supply and installation into distribution board of <b>triple pole</b> MCB of the following ratings:			
	63 amperes	No	1	
	250 amperes	No	1	
6.00	<b><u>Bonding &amp; Earthing</u></b> Earthing rod inspection pit with cover Copper Flat Tape Conductor Copper Earth Rods Copper Earth Rod Clamps Copper Fixings, Bonds & Clamps	No. No. No. No. No.	1 1 1 1 1	
7.00	<b><u>Lighting Fittings</u></b> (a) Type A (b) Type B (c) Type C (d) Type D (e) Type E  (f) Type Exit Sign for viewing up to 30m distance, maintained operation, 3W, 3 hours emergency duration with LED strip and ISO Exit legends As THORN or approved equivalent  (g) Type F (h) Type A2 (i) Type A6  (j) Type A18	No No No No No  No  No No No	1 1 1 1 1  1  1 1 1	
	D/3	No	1	
		No	1	

Item	Description	Unit	Qty	Rate (KShs.)
8.00	<b><u>Lighting Switches</u></b> 10A Ivory moulded wide rocker lighting switch plates flush mounted on masonry wall as Crabtree, Schneider or an approved equivalent.			
	(a) 1 gang 1 way	No	1	
	(b) 2 gang 1 way	No	1	
	(c) 1 gang 2 way	No	1	
	(d) 2 gang 2 way	No	1	
	(e) Intermediate switch	No	1	
9.00	<b><u>Socket Outlet Plates &amp; Switches</u></b> 13A switched Ivory moulded case socket outlet plate, with in-built Type A standard USB 3.0 Flash-charging ports, flush mounted on masonry wall as Crabtree, MK, Schneider or an approved equivalent for:-			
	(a) Single switched	No	1	
	(b) Twin switched	No	1	
	TV outlet plate with polished brass finish as MK, Clipsal, Crabtree or approved equivalent.	No	1	
	45A DP switch with neon pilot lamp and fused connection unit with angled flexible cable outlet for Instant Water Heater.	No	1	
	30A DP switch with neon pilot lamp and fused connection unit with angled flexible cable outlet for Air Conditioner power Point.	No	1	

Item	Description	Unit	Qty	Rate (Kshs.)
1.	64 Port Edge Switch POE capabilities	No	1	
2.	2KVA and 1 KVAUPS	No.	1	
3.	21U Wall Mounted Cabinet	No.	1	
4.	24 Port Patch Panel	No.	1	
5.	24 Port Edge Switch with POE Capabilities	No.	1	
6.	32TB SSD/Micro and HDD storage	No	1	
7.	32TB SSD/Micro and HDD storage	No.	1	
8.	<b>Viewing LED screen 75" UHD (4K) HDR</b>	No.	1	
9.	IP Indoor Dome Camera complete with housing and all other accessories as described in the particular specifications.	No.	1	
10.	IP Indoor Bullet Camera Complete with all other accessories and as Described in the Particular Specs.	No.	1	

Item	Description	Unit	Qty	Rate( KSh)
<b>1</b>	<b>Data Racks/ Equipment Cabinets</b>  (c) 2U (d) 9U (e) 15U (f) 22U (g) 42U	No No. No. No. No.	1 1 1 1 1	
<b>2</b>	<b>Telephone cables</b>  (a) 40 Pair (b) 50 Pair (c) 100 pair	LM LM LM	1 1 1	
<b>3</b>	<b>Fiber optic cable</b> (a) Single Mode  (b) Dual	LM  LM	1  1	
	<b>D/5</b>			

4	<b>Network Switches rack mounted</b>  (a) 12 Port  (b) 24 Port	No.	1	
		No.	1	
		LM	1	
5	<b>Backfilling</b>	LM	1	

ITEM	DESCRIPTION	QTY/UNIT	RATE(KSHS)
1.	125A MCCB	1No.	
4.	PVC/SWA/PVC Copper cable: a) 10.0mm sq. 3 core b) 35.0 mm sq. 4core	1M 1M	
5.	Distribution Boards/Consumer unit as Schneider or an approved equivalent: a) 8 Way TPN Distribution Board b) 6way consumer unit	1No. 1No.	
11.	2.5mm HTS plain fence wire	1M.	
12.	Network Cabinets a) 9U Data Cabinet b) 12U Data Cabinet	1No. 1No.	
17	SMS Energizer controller	1No.	
18	12V 200Ah lithium battery	1No.	



**SECTION E**  
**BILLS OF QUANTITIES**

## **BILLS OF QUANTITIES**

### **A) PRICING OF PRELIMINARIES ITEMS**

Prices will be inserted against item of preliminaries in the Contractor's Bills of Quantities and specification. These Bills are designated as Bill No.1 in this Section. Where the 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 No.1

Contractor's preliminaries are as per those described in section C – Contract Preliminaries and General Conditions of Contract. The 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 1.05 of the section C.

(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 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.

**B) SPECIAL NOTES TO THE 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 sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes including (including **16% VAT and all other 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 descriptions 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 coloured manufacturer's Brochures** detailing Technical Literature and specifications on all the equipment they intend to offer.
  - Power Cables
  - Lighting fittings
  - Switchgear

**The brochures are to be used to determine the first line aesthetics to ascertain the quality and suitability of the components offered by the bidders. Bidders not complying with this requirement may be considered technically non-responsive and may subsequently be disqualified.**

### **Statement of Compliance**

- (a) I confirm compliance with all clauses in this tender specification.
- (b) I confirm that I have not and will not make any payment to any person which can be perceived as an inducement to enable me win this tender.

Signed: .....for and on behalf of the Tenderer.

Date: .....

Official Rubber Stamp: .....

## PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS

W.P ITEM NO. D103/WE/BUN/2202 JOB NO. 11194A

## ELECTRICAL INSTALLATION WORKS

## BILL NO. 1: SUB-CONTRACT PRELIMINARIES

Item	Description	Qty	Unit	Rate (Kshs)	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 the Contractor's 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	<b>50,000.00</b>	<b>50,000.00</b>
11	Government Legislation and Regulations clause 1.16				
12	Import Duty and Value Added Tax clause 1.17(Note this clause applies for materials supplied only. VAT will also be paid by the contractor as allowed in the summary page)				
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				
16	Supplies clause 1.20				
17	Bills of Quantities clause 1.23				
18	Contractor's Office in Kenya clause 1.24				
19	Builder's 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	1	Item	<b>200,000.00</b>	<b>200,000.00</b>
23	Record 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				
29	Storage of Materials clause 1.41				
30	Initial Maintenance clause 1.42				
31	Local and other Authorities notices and fees clause 1.60				
32	Temporary Works clause 1.63				
33	Patent Rights clause 1.64				
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
34	Mobilization and Demobilization Clause 1.65				
35	Supervision by Engineer and Site Meetings Clause 1.67, Training and Professional Development	1	Item	<b>450,000.00</b>	<b>450,000.00</b>
36	Project Engineer's Continuing Training and Professional Development	1	Item	<b>750,000.00</b>	<b>750,000.00</b>
37	Allow for 10% profit and Attendance for the above items (35) and (36)	1	Item	<b>120,000.00</b>	<b>120,000.00</b>
38	Amendment to Scope of Sub-contract Works clause 1.68				
39	Contractor obligation and Employers Obligation clause 1.69				
Total for Bill No. 1: Sub-Contract Preliminaries C/F to Summary Page					

Bidders MUST either insert percentage or indicate as NIL for the following clauses:

(1) Attendance Upon Tradesmen, etc. (Insert percentage only) clause 1.58 of Section C

.....%

(2) Extended Preliminaries (Insert percentage only) Clause 1.66 of Section C

.....%

## BILL NO. 2: LIGHTING &amp; POWER DISTRIBUTION

## SCHEDULE NO. 1: GROUND FLOOR - LIGHTING &amp; POWER DISTRIBUTION

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	LIGHTING & INTERNAL POWER DISTRIBUTION <i>Supply, Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	LIGHTING POINTS				
1.01	Lighting points wired in 3x1.5mm <sup>2</sup> SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	a) One way switching	255	No.		
	b) Two way switching	128	No.		
	c) Intermediate switching	64	No.		
2.00	LIGHTING FITTINGS				
2.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type A	1	No.		
	(b) Type B	4	No.		
	(c) Type E	1	No.		
	(d) Type EXIT	4	No.		
	(e) Type F	4	No.		
	(f) Type G	32	No.		
	(g) Type H	3	No.		
	(h) Type J	5	No.		
	(i) Type K	12	No.		
	(j) Type L	18	No.		
	(k) Type M	14	No.		
	(l) Type N	110	No.		
	(m) Type O	90	No.		
	(n) Type P	6	No.		
	(o) Type Q	6	No.		
	(p) Type R	6	No.		
	(q) Type T	3	No.		
	(r) Type W	44	No.		
	(s) Type X	14	No.		
	(t) Type Z	4	No.		
	(u) Type A2	4	No.		
	(v) Type A3	100	Lm		
	(w) Type A4	24	Lm		
	(x) Type A5	1	No.		
	(y) Type A7	40	No.		
	(o) Type A8	12	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
3.00	LIGHTING SWITCHES				
3.01	10A Ivory moulded wide rocker lighting switch plates; flush mounted on masonry wall as Crabtree, MK, BG, Schneider, Elite Elegance, Simon, Domus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	16	No.		
	(b) 2 gang 1 way	8	No.		
	(c) 3 gang 1 way	8	No.		
	(d) 1 gang 2 way	6	No.		
	(e) 2 gang 2 way	10	No.		
	(f) 3 gang 2 way	2	No.		
	(g) 1 gang intermediate	2	No.		
3.02	Dusk-to-dawn, 5400W/6000VA Max (25A Max) Tungsten/Ballast respectively, 240V, Programmable Twist-Lock Photocell Light Sensor Switch, wall/pole surface mounted as Philips, MK, Schneider or an approved equivalent. (This shall be supplied c/w all necessary accessories and installed (wired) as per control pillar schematics)	1	No.		
4.00	POWER POINTS & ACCESSORIES				
4.01	13A ring mains socket outlet points wired in 3x2.5 mm <sup>2</sup> SC PVC insulated Cu cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories excluding socket outlet plates for:-				
	(a) Single outlet	24	No.		
	(b) Twin outlet	124	No.		
4.02	13A switched Ivory moulded case socket outlet plates with in-built Type A standard USB 3.0 Fast-Charging Ports; flush mounted on masonry wall as MK, Clipsal, BG, Crabtree, Schneider, Elite Elegance or equal and approved equivalent for:-				
	(a) Single switched	24	No.		
	(b) Twin switched	102	No.		
	(c) Ditto but Waterproof (IP54)	22	No.		
4.03	Floor Power Distribution Systems: Floor recessed/mounted power outlet station complete with 4 No. 13A twin standard IP44 (Waterproof) twin switched socket outlet points and plates with twin in-built Type A standard USB 3.0 Fast-Charging Ports for raw power, 4 No. telephone cord outlet plates, 4 No. data cable outlet plates and wiring in 3 x 2.5mm <sup>2</sup> SC-PVC-CU cables. To be constructed from high quality pre-galvanised steel (GI) sheets and stainless steel cover.	8	No.		
	Sub-Total C/F to Next Page				



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.04	Air Conditioner Power Point comprising wiring drawn in 3x6.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	4	No.		
4.05	30A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.04 above as MK, Crabtree or equal and approved equivalent.	4	No.		
4.06	Air Circulating Fan Power Point comprising wiring drawn in 3x4.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	12	No.		
4.07	20A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.06 above as MK, Crabtree or equal and approved equivalent.	12	No.		
4.08	Hand Dryer Power Point wired in 3x4.0mm <sup>2</sup> PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	5	No.		
4.09	13A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.08 above as MK, Crabtree or approved equivalent.	5	No.		
4.10	Hose Reel Pump Power Point wired in 3x4.0mm <sup>2</sup> SC PVCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
4.11	20A DP control switch with neon light and cord outlet for item 4.10 above as MK, Crabtree or approved equivalent.	1	No.		
4.12	Water Booster Pump (3-Φ) Power Point comprising 6mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 25mm Ø concealed HG PVC conduits complete with all accessories but excluding the DOL isolator switch.	1	No.		
4.13	20A TP isolator switch with phase indicating lights and cord outlet for item 4.12 above as MK, Crabtree or approved equivalent.	1	No.		
4.14	Toilet Extract Fan (1-Φ) Power Point wired in 3x4.0mm <sup>2</sup> PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	3	No.		
4.15	16A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item above as MK, Crabtree or approved equivalent.	3	No.		
4.16	Instantaneous water heater power point comprising wiring in 3x6mm <sup>2</sup> SC PVCI Copper Cables drawn in 25mm Ø HG PVC conduits complete with all necessary accessories but excluding the DP switch (Cylinder Type).	2	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.17	45A DP switch with neon pilot lamp (indicator) and fused connection unit with angled flexible cable outlet for item 4.16 above as Crabtree or equal and approved equivalent.	2	No.		
4.18	Undersink Water Heater Power Point comprising wiring in 3x6mm <sup>2</sup> SC-PVCI-CU cables drawn in concealed 25mm Ø HG PVC conduits complete with all necessary accessories but excluding the DP switch.	2	No.		
4.19	30A DP Control Switch, metal clad with Satin Chrome finish, marked 'As Per Application' with neon light and cord outlet for item 4.18 above as MK, Crabtree or approved equivalent.	2	No.		
5.00	TELEVISION POINTS & ACCESSORIES				
5.01	TV outlet point wired in 75 Ohms Screened Coaxial TV cables drawn in concealed 20mm Ø HG PVC conduits from housing unit and linked to the amplifier in roof space via Telephone/television draw-in boxes complete with all accessories but excluding the TV outlet plate.	8	No.		
5.02	Flat single TV/coax outlet plate with polished brass finish for item 5.01 above as MK, Clipsal, Crabtree or equal and approved equivalent.	8	No.		
5.03	TV outlet point wired in 4K HDMI 2.1 (eARC) Cable Network drawn in concealed 40mm Ø HG PVC conduits from HDMI Splitter located in Control Room complete with all accessories but excluding the HDMI outlet plate.	8	No.		
5.04	HDMI 2.1 (eARC) wale plate (Faceplate) with twin HDMI Ports and USB 3.0 (Flash) Port, flush mounted, complete with HDMI Female-Female (F-F) Connectors/Couplers as Mediabridge, Clipsal, Crabtree or equal and approved equivalent.	8	No.		
5.05	300mmx250mmx150mm, 18SWG, powder coated, telephone draw box spray painted to Engineer's approval.	8	No.		
6.00	DATA/TELEPHONE POINTS & ACCESSORIES				
6.01	Install as provision, Data/Telephone outlet points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with draw wire and all necessary accessories but excluding data/telephone outlet plate.	110	No.		
6.02	White moulded case dual data/telephone outlet plate as MK, Crabtree or equal and approved equivalent.	110	No.		
6.03	Install as provision, Indoor wireless access points done in 25mm Ø HG PVC conduit concealed inside slab for c/w draw wire.	3	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
7.00	CCTV/ACCESS CONTROL POINTS & ACCESSORIES				
7.01	Install as provision, CCTV & Access Control System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories but excluding cameras and core equipment.	16	No.		
8.00	PROJECTOR POINT AND RETRACTABLE SCREEN				
8.01	Install as provision, Projector and electric automatic retractable screen points done in 20mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories.	1	No.		
9.00	INTERNAL POWER DISTRIBUTION				
9.01	Powder Coated purpose made front access lockable 8 way Type B TPN Distribution Board (Semi-Recessed) with 200A TP+N+E Bus Bars manufactured in 14 SWG spray painted galvanised mild steel sheet and spray painted (finished) in cream powder coating (or appropriate colour) complete with 150A TPN+E integral isolator, Spareways, Blanking Plates and lockable cover among other accessories but excluding MCBs as per Contract Drawings as Powermax, Power Technics, Schneider Electric, Hausmann or equal and approved equivalent.	3	No.		
9.02	Spare 150A main isolator, TPN+E for the 8 way DB.	3	No.		
9.03	MCB's rated at 500Vac for item 9.01 above as Schneider or approved equivalent as the following:-				
	(i) 10A SP	18	No.		
	(ii) 20A SP	15	No.		
	(iii) 32A SP	18	No.		
	(iv) 45A SP	3	No.		
	(v) 63A SP	3	No.		
	(vi) 100A DP	3	No.		
	(vii) 150A TP	3	No.		
	(viii) SP Spareway	3	No.		
	(ix) TP Spareway	3	No.		
	(x) Blanking Plates	4	No.		
9.04	RCD's rated at 30mAac, Type AC for item 9.01 above as Hager, Wylex, Crabtree, Schneider or equal and approved equivalent as the following:-				
	(i) 150A TPN	3	No.		
9.05	Carry out comprehensive permanent traffolyte labelling for all the sub-circuits, bus bars, circuit breakers etc. in items No. 9.01 & 9.03 above indicating the areas served, outgoing cable sizes etc.	1	Item		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
10.00	SUB-CIRCUIT CABLING WORKS				
10.01	Sub-circuit cable system comprising 35mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 42mm Ø concealed HG PVC conduits from the Cable Loop-In Box (CLB) of the Meterboard/Main Panel ("LVP") in the Power (Generator) House to the Distribution Boards "DBG1", "DBG2" and "DBFU" complete with all necessary accessories, but excluding cable glands and lugs.	60	Lm		
10.02	Cable glands and lugs for the above cables.	30	No.		
11.00	CABLE TRUNKING & DUCTING				
11.01	250x50mm three (3) compartment powder coated steel trunking manufactured in 14 SWG galvanized mild steel sheet and finished in powder coating to match the colour of the room to detail of the interior design complete with covers and all fixing accessories. The trunking to angular section fixed at skirting level. Allow for colour change to Architect's detail subject to client's preference.	220	Lm		
11.02	Ditto but for 25x16mm single compartment steel mini-trunking.	60	Lm		
11.03	200x50mm two (2) compartment powder coated 'CLIP-ON' metal type trunking as Power Technics manufacture to approved colour and complete with all accessories including cover, outlet plates, continuity bonding but excluding corners bends.	80	Lm.		
11.04	Factory made powder coated corner bends for the trunking in 11.01 through 11.03 above.	12	No.		
11.05	Powder coated single punched outlet plate for fixing single socket outlets.	24	No.		
11.06	Powder coated twin punched outlet plate for fixing twin socket outlets.	124	No.		
11.07	Provide trunking knock outs for face plates for single switched outlets.	24	No.		
11.08	Provide trunking knock outs for face plates for twin switched outlets.	124	No.		
11.09	150mmx150mm Standard cable adaptable box made in gauge 14swg galvanized steel sheet.	3	No.		
11.10	50mmx50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved equivalent.	140	No.		
11.11	Ditto but circular cable junction box.	220	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
11.12	Lay HG PVC conduiting of size 3x32mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for telecommunication services.	140	Lm.		
11.13	Lay HG PVC conduiting of size 3x50mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for internal power reticulation.	100	Lm.		
11.14	Lay HG PVC conduiting of size 1x100mm Ø HG PVC ducts inter-connecting electrical service ducts.	100	Lm.		
11.15	Lay HG PVC conduiting of size 1x200mm Ø HG PVC ducts inter-connecting electrical service ducts.	100	Lm.		
11.16	Supply and Install an 18SWG steel sheets spray painted to approval adaptable box 400mmx400mm to Engineer's approval.	4	No.		
12.00	BONDING & GROUNDING				
12.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 11.00 above to Electrical Engineer's approval.	1	Item		
Total for Schedule No. 1: Ground Floor - Lighting & Power Dist. C/F to Price Collection Page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	GENERAL POWER DISTRIBUTION <i>Supply, Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	MAIN SWITCHBOARD (PANEL) - METERBOARD				
1.01	A free-standing Powder Coated purpose made front access lockable LV switchboard with 800A TPN+E Bus Bars manufactured in 14SWG galvanised mild steel sheet and spray painted (finished) in cream powder coating (or appropriate colour) as per schematics and Particular Specifications complete with 600A TPN+E integral isolator, Spareways, Blanking Plates and lockable cover among other accessories but excluding MCBs as per Contract Drawings. To be manufactured by Specialised Power Systems manufacturer such as Powermax, Power Technics, Schneider Electric, Hausmann or approved manufacturer. Fully accessorize the LV Switchboard (Meterboard) with DIN rails for MCBs etc. and create provisions as per the following details:-  (a) Incoming: i) 1No. Incomer 600A Fused Cut-out Switch ii) 1No. Incomer 550A TPN MCCB with shunt trip iii) Space for 1No. KPLC Post-paid metering (3-Φ), fuses and a sealable C.T. chamber iv) 1No. Voltmeter 0-600V plus selector switch v) 1No. Ammeter plus selector switch with CTs (550/5)  vi) 3No. Phase indicating lights (Red-Yellow-Blue) vii) 1No. Power factor meter viii) Multimeter for displaying all power system parameters (KW, KVA, KWHr, KVARs, Frequency, P.F., harmonics etc.).  ix) Appropriately rated surge diverter (b) Outgoing: i) 3No. Outgoer 175A TPN+E MCCB c/w shunt trip ii) 1No. Outgoer 125A DP MCCB c/w shunt trip iii) 2No. Outgoer 40A SP MCCB c/w shunt trip iv) 2No. Outgoer 32A SP MCCB c/w shunt trip v) 2No. TP Spareways vi) 4No. Blanking Plates (c) A suitably rated 415V three-phase surge diverter as Furse ESP 415, fully wired. (d) Spare 550A isolator, TPN+E for the LV Switchboard.	1	Lot		
	Sub-Total C/F to Next Page				
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)

Sub-Total B/F from Previous Page

1.02	Carry out comprehensive labeling of all the bus bars, circuit breakers etc. for item 1.01 above indicating the areas served, outgoing cable sizes etc.	1	Item
1.03	Carry out concise load balancing to achieve a maximum imbalance not greater than + 10% between any two phases, measured at the Main LV switchboard.	1	Lot
2.00	MAIN DISTRIBUTION CABLING WORKS		
2.01	Sub-mains cable system comprising 120mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 42mm Ø in ground from the LV Switchboard to the Cable Loop-In Box (CLB) complete with all necessary accessories, but excluding cable glands and lugs.	40	Lm
2.02	Cable glands and lugs for the above cables.	12	No.
2.03	25mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable from Switchboard to Water Booster Pump House complete with appropriate cable lugs.	20	Lm.
2.04	Cable glands complete with plastic sleeves for the above cable.	6	No.
2.05	10mm <sup>2</sup> 2-Core PVC/SWA/PVC Copper Cable from Switchboard to Hose Reel Pump, VRF outdoor AC unit, Cold room Machine, 3 No. Solar Element and 2No. Pumps sets at the ground Floor and Roof (7 <sup>th</sup> Floor) complete with appropriate cable glands and lugs.	120	Lm.
2.06	Cable glands complete with plastic sleeves for the above cable.	12	No.
2.07	2 x 100mm dia. HG PVC duct in 200mm concrete surround buried 600mm underground for power supply cable way along road and parking crossings.	40	Lm.
2.08	Establish 630 x 550 x 700mm deep standard power manholes, complete with internal plastering, and heavy duty EAFW steel cover.	4	No.
2.09	70mm diameter HG PVC ducts encased in concrete surround buried in ground for incoming data/telephone supply cables.	40	Lm.
2.10	100mm diameter HG PVC ducts encased in concrete surround buried in ground for incoming KPLC power supply cables.	40	Lm.
2.11	450mm x 50mm deep Deep Perfotrated GI cable tray complete with all accessories As Manufactured by Power Technics or approved equivalent.	60	Lm.
2.12	Standard Cable Loop-in box (CLB) made of Weatherproof Powder Coated galvanised steel sheets complete with 80A HRC fuses and fuse carrier with neutral block.	2	No.

Sub-Total C/F to Next Page

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				

2.13	Excavate trenches for ducts and armoured cables above, average depth 700mm, remove soft earth, lay ducts, cover with "DANGER-HATARI" tiles, back fill soft earth and compact to natural ground level.	120	Lm		
2.14	Lay HG PVC conduiting of size 32mm diameter HG PVC ducts from the nearest internet service entry point to chambers building for fiber optic cable.	60	Lm.		
2.15	Establish 450 x 450 x 700mm deep standard data/telephone manholes, complete with internal plastering, and heavy duty EAFW steel cover.	1	No.		
2.16	Lay HG PVC conduiting of size 3x50mm diameter HG PVC ducts from the power (generator) house to chambers building for power reticulation.	60	Lm		
3.00	POWER SUPPLY TO 3NO. LIFTS				
3.01	5 x 16.0mm <sup>2</sup> SC copper cables drawn inside concrete cable channel and in the rising duct from LV Switchboard to isolator point in the rising duct.	120	Lm.		
3.02	63A TP isolator for lifts mounted in the lift shaft/rising duct on the sixth floor as Merlin Gerin or equal and approved equivalent	3	No.		
4.00	PROTECTIVE MULTIPLE EARTHING & BONDING				
4.01	Provide earthing and bonding to all metal work including water pipes, gas pipes, hand-rails, air-conditioning units, window frames, cladding, metal roof etc. and the main earth for the building, throughout the entire electrical infrastructure including subboard and sub-circuit equipment/devices, to the satisfaction of the Electrical Engineer and in accordance with KP&L Co. (KPLC) requirements, IEE regulations, the GoK Electrical Installations regulations and other statutory requirements comprising but not limited to the following:-				
	(a) 25mm x 3mm pure copper tape as FURSE.	2	Lm		
	(b) 15mm Ø driving stud as FURSE cat. No. ST100.	1	No.		
	(c) 1800mm x 15mm pure copper electrode (earth rod) as FURSE cat. No. RB 105.	1	No.		
	(d) Tape to earth rod clamp as Furse.	1	No.		
	(e) Pre-cast concrete inspection pit as FURSE cat. No. PT005 or a well-made 320mm x 320mm x 210mm depth pit.	1	No.		
	Sub-Total C/F to Next Page				
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				



4.02

Earthing of the subboard in accordance with KP&L company requirements, IEE regulations, the government Electrical Installations regulations and other statutory requirements comprising but not limited to the following:-

- a) Establish 450x450x700mm deep earthing chamber, complete with internal plastering, and heavy duty EAFW steel cover clearly marked "EARTH".
- b) 25mm X 3mm pure copper tape as Furse.
- c) Pure copper earth rod (1500mm x 16mm).
- d) Driving head for earth rod.
- e) Tape to earth rod clamp as Furse.
- f) 16mm<sup>2</sup> single core green PVC insulated copper earth lead.

1

No.

3

Lm.

1

No.

1

No.

1

No.

30

Lm.

Total for Schedule No. 2: General Power Reticulation C/F to Price Collection Page

**SCHEDULE NO. 3: FIRST FLOOR - LIGHTING & POWER DISTRIBUTION**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	LIGHTING & INTERNAL POWER DISTRIBUTION <i>Supply, Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	LIGHTING POINTS				
1.01	Lighting points wired in 3x1.5mm <sup>2</sup> SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	a) One way switching	190	No.		
	b) Two way switching	40	No.		
	c) Intermediate switching	20	No.		
2.00	LIGHTING FITTINGS				
2.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type B	6	No.		
	(b) Type EXIT	4	No.		
	(c) Type F	4	No.		
	(d) Type G	50	No.		
	(e) Type J	5	No.		
	(f) Type K	4	No.		
	(g) Type L	12	No.		
	(h) Type N	60	No.		
	(i) Type T	3	No.		
	(j) Type W	44	No.		
	(k) Type X	14	No.		
	(l) Type A3	20	Lm		
	(m) Type A5	1	No.		
	(n) Type A7	38	No.		
3.00	LIGHTING SWITCHES				
3.01	10A Ivory moulded wide rocker lighting switch plates; flush mounted on masonry wall as Crabtree, MK, BG, Schneider, Elite Elegance, Simon, Domus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	14	No.		
	(b) 2 gang 1 way	6	No.		
	(c) 3 gang 1 way	4	No.		
	(d) 1 gang 2 way	4	No.		
	(e) 2 gang 2 way	4	No.		
	(f) 1 gang intermediate				
		2	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.00	POWER POINTS & ACCESSORIES				
4.01	13A ring mains socket outlet points wired in 3x2.5 mm <sup>2</sup> SC PVC insulated Cu cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories excluding socket outlet plates for:-				
	(a) Single outlet	20	No.		
	(b) Twin outlet	80	No.		
4.02	13A switched Ivory moulded case socket outlet plates with in-built Type A standard USB 3.0 Fast-Charging Ports; flush mounted on masonry wall as MK, Clipsal, BG, Crabtree, Schneider, Elite Elegance or equal and approved equivalent for:-				
	(a) Single switched	20	No.		
	(b) Twin switched	80	No.		
	(c) Ditto but Waterproof (IP54)	20	No.		
4.03	Air Conditioner Power Point comprising wiring drawn in 3x6.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	2	No.		
4.04	30A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.03 above as MK, Crabtree or equal and approved equivalent.	2	No.		
4.05	Air Circulating Fan Power Point comprising wiring drawn in 3x4.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	12	No.		
4.06	20A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.05 above as MK, Crabtree or equal and approved equivalent.	12	No.		
4.07	Hand Dryer Power Point wired in 3x4.0mm <sup>2</sup> PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	5	No.		
4.08	13A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.07 above as MK, Crabtree or approved equivalent.	5	No.		
4.09	Hose Reel Pump Power Point wired in 3x4.0mm <sup>2</sup> SC PVCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.10	20A DP control switch with neon light and cord outlet for item 4.09 above as MK, Crabtree or approved equivalent.	1	No.		
4.11	Toilet Extract Fan (1-Φ) Power Point, wired in 3x4.0mm <sup>2</sup> PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	2	No.		
4.12	16A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item above as MK, Crabtree or approved equivalent.	2	No.		
5.00	TELEVISION POINTS & ACCESSORIES				
5.01	TV outlet point wired in 75 Ohms Screened Coaxial TV cables drawn in concealed 20mm Ø HG PVC conduits from housing unit and linked to the amplifier in roof space via Telephone/television draw-in boxes complete with all accessories but excluding the TV outlet plate.	6	No.		
5.02	Flat single TV/coax outlet plate with polished brass finish for item 5.01 above as MK, Clipsal, Crabtree or equal and approved equivalent.	6	No.		
5.03	TV outlet point wired in 4K HDMI 2.1 (eARC) Cable Network drawn in concealed 40mm Ø HG PVC conduits from HDMI Splitter located in Control Room complete with all accessories but excluding the HDMI outlet plate.	6	No.		
5.04	HDMI 2.1 (eARC) wale plate (Faceplate) with twin HDMI Ports and USB 3.0 (Flash) Port, flush mounted, complete with HDMI Female-Female (F-F) Connectors/Couplers as Mediabridge, Clipsal, Crabtree or equal and approved equivalent.	6	No.		
5.05	300mmx250mmx150mm, 18SWG, powder coated, telephone draw box spray painted to Engineer's approval.	6	No.		
6.00	DATA/TELEPHONE POINTS & ACCESSORIES				
6.01	Install as provision, Data/Telephone outlet points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with draw wire and all necessary accessories but excluding data/telephone outlet plate.	100	No.		
6.02	White moulded case dual data/telephone outlet plate as MK, Crabtree or equal and approved equivalent.	100	No.		
6.03	Install as provision, Indoor wireless access points done in 25mm Ø HG PVC conduit concealed inside slab for c/w draw wire.	2	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
7.00	CCTV/ACCESS CONTROL POINTS & ACCESSORIES				
7.01	Install as provision, CCTV & Access Control System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories but excluding cameras and core equipment.	12	No.		
8.00	PROJECTOR POINT AND RETRACTABLE SCREEN				
8.01	Install as provision, Projector and electric automatic retractable screen points done in 20mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories.	1	No.		
9.00	INTERNAL POWER DISTRIBUTION				
9.01	Powder Coated purpose made front access lockable 8 way Type B TPN Distribution Board (Semi-Recessed) with 200A TP+N+E Bus Bars manufactured in 14 SWG spray painted galvanised mild steel sheet and spray painted (finished) in cream powder coating (or appropriate colour) complete with 150A TPN+E integral isolator, Spareways, Blanking Plates and lockable cover among other accessories but excluding MCBs as per Contract Drawings as Powermax, Power Technics, Schneider Electric, Hausmann or equal and approved equivalent.	1	No.		
9.02	Spare 150A main isolator, TPN+E for the 8 way DB.	1	No.		
9.03	MCB's rated at 500Vac for item 9.01 above as Schneider or approved equivalent as the following:-				
	(i) 10A SP	6	No.		
	(ii) 20A SP	5	No.		
	(iii) 32A SP	6	No.		
	(iv) 45A SP	1	No.		
	(v) 63A SP	1	No.		
	(vi) 100A DP	1	No.		
	(vii) 150A TP	1	No.		
	(viii) SP Spareway	1	No.		
	(ix) TP Spareway	1	No.		
	(x) Blanking Plates	4	No.		
9.04	RCD's rated at 30mAac, Type AC for item 9.01 above as Hager, Wylex, Crabtree, Schneider or equal and approved equivalent as the following:-				
	(i) 150A TPN	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
9.05	Carry out comprehensive permanent traffolyte labelling for all the sub-circuits, bus bars, circuit breakers etc. in items No. 9.01 & 9.03 above indicating the areas served, outgoing cable sizes etc.	1	Item		
10.00	SUB-CIRCUIT CABLING WORKS				
10.01	Sub-circuit cable system comprising 35mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 42mm Ø concealed HG PVC conduits in electrical duct looped from the Ground Floor Distribution Board "DBFU" to First Floor Distribution Board "DBF1" complete with all necessary accessories, but excluding cable glands and lugs.	12	Lm		
10.02	Cable glands and lugs for the above cables.	10	No.		
11.00	CABLE TRUNKING & DUCTING				
11.01	250x50mm three (3) compartment powder coated steel trunking manufactured in 14 SWG galvanized mild steel sheet and finished in powder coating to match the colour of the room to detail of the interior design complete with covers and all fixing accessories. The trunking to angular section fixed at skirting level. Allow for colour change to Architect's detail subject to client's preference.	180	Lm		
11.02	Ditto but for 25x16mm single compartment steel mini-trunking.	80	Lm		
11.03	200x50mm two (2) compartment powder coated 'CLIP-ON' metal type trunking as Power Technics manufacture to approved colour and complete with all accessories including cover, outlet plates, continuity bonding but excluding corners bends.	80	Lm.		
11.04	Factory made powder coated corner bends for the trunking in 11.01 through 11.03 above.	10	No.		
11.05	Powder coated single punched outlet plate for fixing single socket outlets.	20	No.		
11.06	Powder coated twin punched outlet plate for fixing twin socket outlets.	80	No.		
11.07	Provide trunking knock outs for face plates for single switched outlets.	20	No.		
11.08	Provide trunking knock outs for face plates for twin switched outlets.	80	No.		
11.09	150mmx150mm Standard cable adaptable box made in gauge 14swg galvanized steel sheet.	3	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
11.10	50mmx50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved equivalent.	120	No.		
11.11	Ditto but circular cable junction box.	200	No.		
11.12	Lay HG PVC conduiting of size 3x32mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for telecommunication services.	120	Lm.		
11.13	Lay HG PVC conduiting of size 3x50mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for internal power reticulation.	80	Lm.		
11.14	Lay HG PVC conduiting of size 1x100mm Ø HG PVC ducts inter-connecting electrical service ducts.	80	Lm.		
11.15	Lay HG PVC conduiting of size 1x200mm Ø HG PVC ducts inter-connecting electrical service ducts.	80	Lm.		
11.16	Supply and Install an 18SWG steel sheets spray painted to approval adaptable box 400mmx400mm to Engineer's approval.	4	No.		
12.00	BONDING & GROUNDING				
12.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 11.00 above to Electrical Engineer's approval.	1	Item		
Total for Schedule No. 3: First Floor - Lighting & Power Dist. C/F to Price Collection Page					

**SCHEDULE NO. 4: SECOND FLOOR - LIGHTING & POWER DISTRIBUTION**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	LIGHTING & INTERNAL POWER DISTRIBUTION <i>Supply, Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	LIGHTING POINTS				
1.01	Lighting points wired in 3x1.5mm <sup>2</sup> SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	a) One way switching	180	No.		
	b) Two way switching	50	No.		
	c) Intermediate switching	22	No.		
2.00	LIGHTING FITTINGS				
2.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type EXIT	4	No.		
	(b) Type F	7	No.		
	(c) Type G	48	No.		
	(d) Type J	5	No.		
	(e) Type N	40	No.		
	(f) Type O	48	No.		
	(g) Type T	5	No.		
	(h) Type U	4	No.		
	(i) Type V	1	No.		
	(j) Type W	24	No.		
	(k) Type X	18	No.		
	(l) Type A3	20	Lm		
	(m) Type A7	38	No.		
3.00	LIGHTING SWITCHES				
3.01	10A Ivory moulded wide rocker lighting switch plates; flush mounted on masonry wall as Crabtree, MK, BG, Schneider, Elite Elegance, Simon, Domus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	10	No.		
	(b) 2 gang 1 way	4	No.		
	(c) 3 gang 1 way	4	No.		
	(d) 1 gang 2 way	8	No.		
	(e) 2 gang 2 way	6	No.		
	(f) 1 gang intermediate	2	No.		
4.00	POWER POINTS & ACCESSORIES				
4.01	13A ring mains socket outlet points wired in 3x2.5 mm <sup>2</sup> SC PVC insulated Cu cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories excluding socket outlet plates for:-				
	(a) Single outlet	28	No.		
	(b) Twin outlet	100	No.		
	Sub-Total C/F to Next Page				



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.02	13A switched Ivory moulded case socket outlet plates with in-built Type A standard USB 3.0 Fast-Charging Ports; flush mounted on masonry wall as MK, Clipsal, BG, Crabtree, Schneider, Elite Elegance or equal and approved equivalent for:-				
	(a) Single switched	30	No.		
	(b) Twin switched	90	No.		
	(c) Ditto but Waterproof (IP54)	20	No.		
4.03	Air Conditioner Power Point comprising wiring drawn in 3x6.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	2	No.		
4.04	30A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.04 above as MK, Crabtree or equal and approved equivalent.	2	No.		
4.05	Air Circulating Fan Power Point comprising wiring drawn in 3x4.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	14	No.		
4.06	20A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.06 above as MK, Crabtree or equal and approved equivalent.	14	No.		
4.07	Hand Dryer Power Point wired in 3x4.0mm <sup>2</sup> PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	5	No.		
4.08	13A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.08 above as MK, Crabtree or approved equivalent.	5	No.		
4.09	Hose Reel Pump Power Point wired in 3x4.0mm <sup>2</sup> SC PVCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
4.10	20A DP control switch with neon light and cord outlet for item 4.09 above as MK, Crabtree or approved equivalent.	1	No.		
4.11	Toilet Extract Fan (1-Φ) Power Point wired in 3x4.0mm <sup>2</sup> PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	2	No.		
4.12	16A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item above as MK, Crabtree or approved equivalent.	2	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.13	Instantaneous water heater power point comprising wiring in 3x6mm <sup>2</sup> SC PVCI Copper Cables drawn in 25mm Ø HG PVC conduits complete with all necessary accessories but excluding the DP switch.	2	No.		
4.14	45A DP switch with neon pilot lamp (indicator) and fused connection unit with angled flexible cable outlet for item 4.14 above as Crabtree or equal and approved equivalent.	2	No.		
4.15	Instant Shower Unit, Fully-accessorised, 8000W, 220-240V AC, 50/60Hz four temperature (4T) selector as Enerbras Enershower or equal and approved equivalent.	2	No.		
4.16	Cooker (1-Φ) Power Point comprising of 3x6mm <sup>2</sup> PVC SC Copper cables drawn in concealed 32mm Ø HG PVC conduits c/w all accessories.	3	No.		
4.17	30A DP Cooker Control Unit with 13A integral Socket Outlet and Pilot Lamp marked 'As Per Application' for item 4.02 above as MK, MEM or approved equivalent.	3	No.		
4.18	Cooker Connection Unit for flush mounting and wired from Cooker Control Unit.	3	No.		
4.19	Undersink Water Heater Power Point comprising wiring in 3x6mm <sup>2</sup> SC-PVCI-CU cables drawn in concealed 25mm Ø HG PVC conduits complete with all necessary accessories but excluding the DP switch.	3	No.		
4.20	30A DP Control Switch, metal clad with Satin Chrome finish, marked 'As Per Application' with neon light and cord outlet for item 4.20 above as MK, Crabtree or approved equivalent.	3	No.		
4.21	Machine Power Point comprising 3x4.0mm <sup>2</sup> + 2.5mm <sup>2</sup> SC PVCI Copper Cables drawn in concealed 25 mm Ø HG PVC conduits from DB to Isolator for Washing Machine.	2	No.		
4.22	20A DP isolator switch with neon light and cord outlet for item 4.22 above as MK, Crabtree or approved equivalent.	2	No.		
5.00	DATA/TELEPHONE POINTS & ACCESSORIES				
5.01	Install as provision, Data/Telephone outlet points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with draw wire and all necessary accessories but excluding data/telephone outlet plate.	80	No.		
5.02	White moulded case dual data/telephone outlet plate as MK, Crabtree or equal and approved equivalent.	80	No.		
5.03	Install as provision, Indoor wireless access points done in 25mm Ø HG PVC conduit concealed inside slab for c/w draw wire.	2	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
6.00	CCTV/ACCESS CONTROL POINTS & ACCESSORIES				
6.01	Install as provision, CCTV & Access Control System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories but excluding cameras and core equipment.	12	No.		
7.00	PROJECTOR POINT AND RETRACTABLE SCREEN				
7.01	Install as provision, Projector and electric automatic retractable screen points done in 20mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories.	2	No.		
8.00	INTERNAL POWER DISTRIBUTION				
8.01	Powder Coated purpose made front access lockable 8 way Type B TPN Distribution Board (Semi-Recessed) with 200A TP+N+E Bus Bars manufactured in 14 SWG spray painted galvanised mild steel sheet and spray painted (finished) in cream powder coating (or appropriate colour) complete with 150A TPN+E integral isolator, Spareways, Blanking Plates and lockable cover among other accessories but excluding MCBs as per Contract Drawings as Powermax, Power Technics, Schneider Electric, Hausmann or equal and approved equivalent.	1	No.		
8.02	Spare 150A main isolator, TPN+E for the 8 way DB.	1	No.		
8.03	MCB's rated at 500Vac for item 8.01 above as Schneider or approved equivalent as the following:-				
	(i) 10A SP	6	No.		
	(ii) 20A SP	5	No.		
	(iii) 32A SP	6	No.		
	(iv) 45A SP	1	No.		
	(v) 63A SP	1	No.		
	(vi) 100A DP	1	No.		
	(vii) 150A TP	1	No.		
	(viii) SP Spareway	1	No.		
	(ix) TP Spareway	1	No.		
	(x) Blanking Plates	4	No.		
8.04	RCD's rated at 30mAac, Type AC for item 8.01 above as Hager, Wylex, Crabtree, Schneider or equal and approved equivalent as the following:-				
	(i) 150A TPN	1	No.		
8.05	Carry out comprehensive permanent traffolyte labelling for all the sub-circuits, bus bars, circuit breakers etc. in items No. 8.01 & 8.03 above indicating the areas served, outgoing cable sizes etc.	1	Item		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
9.00	SUB-CIRCUIT CABLING WORKS				
9.01	Sub-circuit cable system comprising 35mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 42mm Ø concealed HG PVC conduits in electrical duct looped from the Ground Floor Distribution Board "DBFU" to First Floor Distribution Board "DBF2" complete with all necessary accessories, but excluding cable glands and lugs.	24	Lm		
9.02	Cable glands and lugs for the above cables.	10	No.		
10.00	CABLE TRUNKING & DUCTING				
10.01	250x50mm three (3) compartment powder coated steel trunking manufactured in 14 SWG galvanized mild steel sheet and finished in powder coating to match the colour of the room to detail of the interior design complete with covers and all fixing accessories. The trunking to angular section fixed at skirting level. Allow for colour change to Architect's detail subject to client's preference.	180	Lm		
10.02	Ditto but for 25x16mm single compartment steel mini-trunking.	50	Lm		
10.03	200x50mm two (2) compartment powder coated 'CLIP-ON' metal type trunking as Power Technics manufacture to approved colour and complete with all accessories including cover, outlet plates, continuity bonding but excluding corners bends.	75	Lm.		
10.04	Factory made powder coated corner bends for the trunking in 10.01 through 10.03 above.	10	No.		
10.05	Powder coated single punched outlet plate for fixing single socket outlets.	28	No.		
10.06	Powder coated twin punched outlet plate for fixing twin socket outlets.	100	No.		
10.07	Provide trunking knock outs for face plates for single switched outlets.	28	No.		
10.08	Provide trunking knock outs for face plates for twin switched outlets.	100	No.		
10.09	150mmx150mm Standard cable adaptable box made in gauge 14swg galvanized steel sheet.	3	No.		
10.10	50mmx50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved equivalent.	120	No.		
10.11	Ditto but circular cable junction box.	200	No.		
10.12	Lay HG PVC conduiting of size 3x32mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for telecommunication services.	120	Lm.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
10.13	Lay HG PVC conduiting of size 3x50mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for internal power reticulation.	80	Lm.		
10.14	Lay HG PVC conduiting of size 1x100mm Ø HG PVC ducts inter-connecting electrical service ducts.	80	Lm.		
10.15	Lay HG PVC conduiting of size 1x200mm Ø HG PVC ducts inter-connecting electrical service ducts.	80	Lm.		
10.16	Supply and Install an 18SWG steel sheets spray painted to approval adaptable box 400mmx400mm to Engineer's approval.	4	No.		
11.00	BONDING & GROUNDING				
11.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 10.00 above to Electrical Engineer's approval.	1	Item		
Total for Schedule No. 4: Second Floor - Lighting & Power Dist. C/F to Price Collection Page					

## SCHEDULE NO. 5: THIRD FLOOR - LIGHTING &amp; POWER DISTRIBUTION

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	LIGHTING & INTERNAL POWER DISTRIBUTION <i>Supply, Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	LIGHTING POINTS				
1.01	Lighting points wired in 3x1.5mm <sup>2</sup> SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	a) One way switching	144	No.		
	b) Two way switching	30	No.		
	c) Intermediate switching	20	No.		
2.00	LIGHTING FITTINGS				
2.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type EXIT	4	No.		
	(b) Type F	7	No.		
	(c) Type G	30	No.		
	(d) Type I	8	No.		
	(e) Type J	5	No.		
	(f) Type N	48	No.		
	(g) Type T	6	No.		
	(h) Type W	28	No.		
	(i) Type X	10	No.		
	(j) Type A7	38	No.		
3.00	LIGHTING SWITCHES				
3.01	10A Ivory moulded wide rocker lighting switch plates; flush mounted on masonry wall as Crabtree, MK, BG, Schneider, Elite Elegance, Simon, Domus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	12	No.		
	(b) 2 gang 1 way	8	No.		
	(c) 3 gang 1 way	6	No.		
	(d) 1 gang 2 way	6	No.		
	(e) 2 gang 2 way	4	No.		
	(f) 1 gang intermediate	2	No.		
4.00	POWER POINTS & ACCESSORIES				
4.01	13A ring mains socket outlet points wired in 3x2.5 mm <sup>2</sup> SC PVC insulated Cu cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories excluding socket outlet plates for:-				
	(a) Single outlet	20	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.02	(b) Twin outlet 13A switched Ivory moulded case socket outlet plates with in-built Type A standard USB 3.0 Fast-Charging Ports; flush mounted on masonry wall as MK, Clipsal, BG, Crabtree, Schneider, Elite Elegance or equal and approved equivalent for:-	80	No.		
	(a) Single switched	20	No.		
	(b) Twin switched	60	No.		
	(c) Ditto but Waterproof (IP54)	20	No.		
4.03	Air Conditioner Power Point comprising wiring drawn in 3x6.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	2	No.		
4.04	30A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.03 above as MK, Crabtree or equal and approved equivalent.	2	No.		
4.05	Air Circulating Fan Power Point comprising wiring drawn in 3x4.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	14	No.		
4.06	20A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.05 above as MK, Crabtree or equal and approved equivalent.	14	No.		
4.07	Hand Dryer Power Point wired in 3x4.0mm <sup>2</sup> PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	3	No.		
4.08	13A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.07 above as MK, Crabtree or approved equivalent.	3	No.		
4.09	Hose Reel Pump Power Point wired in 3x4.0mm <sup>2</sup> SC PVCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
4.10	20A DP control switch with neon light and cord outlet for item 4.09 above as MK, Crabtree or approved equivalent.	1	No.		
4.11	Toilet Extract Fan (1-Φ) Power Point, wired in 3x4.0mm <sup>2</sup> PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
4.12	16A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item above as MK, Crabtree or approved equivalent.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
5.00	TELEVISION POINTS & ACCESSORIES				
5.01	TV outlet point wired in 75 Ohms Screened Coaxial TV cables drawn in concealed 20mm Ø HG PVC conduits from housing unit and linked to the amplifier in roof space via Telephone/television draw-in boxes complete with all accessories but excluding the TV outlet plate.	6	No.		
5.02	Flat single TV/coax outlet plate with polished brass finish for item 5.01 above as MK, Clipsal, Crabtree or equal and approved equivalent.	6	No.		
5.03	300mmx250mmx150mm, 18SWG, powder coated, telephone draw box spray painted to Engineer's approval.	6	No.		
6.00	DATA/TELEPHONE POINTS & ACCESSORIES				
6.01	Install as provision, Data/Telephone outlet points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with draw wire and all necessary accessories but excluding data/telephone outlet plate.	100	No.		
6.02	White moulded case dual data/telephone outlet plate as MK, Crabtree or equal and approved equivalent.	100	No.		
6.03	Install as provision, Indoor wireless access points done in 25mm Ø HG PVC conduit concealed inside slab c/w draw wire.	2	No.		
7.00	CCTV/ACCESS CONTROL POINTS & ACCESSORIES				
7.01	Install as provision, CCTV & Access Control System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories but excluding cameras and core equipment.	10	No.		
8.00	PROJECTOR POINT AND RETRACTABLE SCREEN				
8.01	Install as provision, Projector and electric automatic retractable screen points done in 20mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories.	2	No.		
	Sub-Total C/F to Next Page				



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
9.00	INTERNAL POWER DISTRIBUTION				
9.01	Powder Coated purpose made front access lockable 8 way Type B TPN Distribution Board (Semi-Recessed) with 200A TP+N+E Bus Bars manufactured in 14 SWG spray painted galvanised mild steel sheet and spray painted (finished) in cream powder coating (or appropriate colour) complete with 150A TPN+E integral isolator, Spareways, Blanking Plates and lockable cover among other accessories but excluding MCBs as per Contract Drawings as Powermax, Power Technics, Schneider Electric, Hausmann or equal and approved equivalent.	1	No.		
9.02	Spare 150A main isolator, TPN+E for the 8 way DB.	1	No.		
9.03	MCB's rated at 500Vac for item 9.01 above as Schneider or approved equivalent as the following:-				
	(i) 10A SP	6	No.		
	(ii) 20A SP	5	No.		
	(iii) 32A SP	6	No.		
	(iv) 45A SP	1	No.		
	(v) 63A SP	1	No.		
	(vi) 100A DP	1	No.		
	(vii) 150A TP	1	No.		
	(viii) SP Spareway	1	No.		
	(ix) TP Spareway	1	No.		
	(x) Blanking Plates	4	No.		
9.04	RCD's rated at 30mAac, Type AC for item 9.01 above as Hager, Wylex, Crabtree, Schneider or equal and approved equivalent as the following:-				
	(i) 150A TPN	1	No.		
9.05	Carry out comprehensive permanent traffolyte labelling for all the sub-circuits, bus bars, circuit breakers etc. in items No. 9.01 & 9.03 above indicating the areas served, outgoing cable sizes etc.	1	Item		
10.00	SUB-CIRCUIT CABLING WORKS				
10.01	Sub-circuit cable system comprising 35mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 42mm Ø concealed HG PVC conduits in electrical duct looped from the Ground Floor Distribution Board "DBFU" to First Floor Distribution Board "DBF3" complete with all necessary accessories, but excluding cable glands and lugs.	36	Lm		
10.02	Cable glands and lugs for the above cables.	10	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
11.00	Sub-Total B/F from Previous Page				
11.01	CABLE TRUNKING & DUCTING				
11.01	250x50mm three (3) compartment powder coated steel trunking manufactured in 14 SWG galvanized mild steel sheet and finished in powder coating to match the colour of the room to detail of the interior design complete with covers and all fixing accessories. The trunking to angular section fixed at skirting level. Allow for colour change to Architect's detail subject to client's preference.	160	Lm		
11.02	Ditto but for 25x16mm single compartment steel mini-trunking.	50	Lm		
11.03	200x50mm two (2) compartment powder coated 'CLIP-ON' metal type trunking as Power Technics manufacture to approved colour and complete with all accessories including cover, outlet plates, continuity bonding but excluding corners bends.	75	Lm.		
11.04	Factory made powder coated corner bends for the trunking in 11.01 through 11.03 above.	10	No.		
11.05	Powder coated single punched outlet plate for fixing single socket outlets.	20	No.		
11.06	Powder coated twin punched outlet plate for fixing twin socket outlets.	80	No.		
11.07	Provide trunking knock outs for face plates for single switched outlets.	20	No.		
11.08	Provide trunking knock outs for face plates for twin switched outlets.	80	No.		
11.09	150mmx150mm Standard cable adaptable box made in gauge 14swg galvanized steel sheet.	3	No.		
11.10	50mmx50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved equivalent.	120	No.		
11.11	Ditto but circular cable junction box.	200	No.		
11.12	Lay HG PVC conduiting of size 3x32mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for telecommunication services.	120	Lm.		
11.13	Lay HG PVC conduiting of size 3x50mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for internal power reticulation.	80	Lm.		
11.14	Lay HG PVC conduiting of size 1x100mm Ø HG PVC ducts inter-connecting electrical service ducts.	80	Lm.		
11.15	Lay HG PVC conduiting of size 1x200mm Ø HG PVC ducts inter-connecting electrical service ducts.	80	Lm.		
11.16	Supply and Install an 18SWG steel sheets spray painted to approval adaptable box 400mmx400mm to Engineer's approval.	4	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
12.00	BONDING & GROUNDING				
12.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 11.00 above to Electrical Engineer's approval.	1	Item		
Total for Schedule No. 5: Third Floor - Lighting & Power Dist. C/F to Price Collection Page					

**SCHEDULE NO. 6: FOURTH FLOOR - LIGHTING & POWER DISTRIBUTION**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	LIGHTING & INTERNAL POWER DISTRIBUTION <i>Supply, Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	LIGHTING POINTS				
1.01	Lighting points wired in 3x1.5mm <sup>2</sup> SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	a) One way switching	8	No.		
2.00	LIGHTING FITTINGS				
2.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering, all IP66 rated, as follows:-				
	(a) Type C	10	No.		
	(b) Type D	10	No.		
	(c) Type Q	20	No.		
	(d) Type Y	5	No.		
	(e) Type Z	3	No.		
	(f) Type A7	38	No.		
3.00	LIGHTING SWITCHES				
3.01	10A Ivory moulded wide rocker lighting switch plates; flush mounted on masonry wall as Crabtree, MK, BG, Schneider, Elite Elegance, Simon, Domus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	1	No.		
3.02	Dusk-to-dawn, 5400W/6000VA Max (25A Max) Tungsten/Ballast respectively, 240V, Programmable Twist-Lock Photocell Light Sensor Switch, wall/pole surface mounted as Philips, MK, Schneider or an approved equivalent. (This shall be supplied c/w all necessary accessories and installed (wired) as per control pillar schematics)	1	No.		
4.00	POWER POINTS & ACCESSORIES				
4.01	13A ring mains socket outlet points wired in 3x2.5 mm <sup>2</sup> SC PVC insulated Cu cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories excluding socket outlet plates for:-				
	(a) Twin outlet	6	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.02	13A switched Ivory moulded case socket outlet plates with in-built Type A standard USB 3.0 Fast-Charging Ports; flush mounted on masonry wall as MK, Clipsal, BG, Crabtree, Schneider, Elite Elegance or equal and approved equivalent for:-				
	(a) Twin switched, Waterproof (IP54)	6	No.		
4.03	Air Conditioner (Out Door Unit) Power Point comprising wiring drawn in 3x6.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	4	No.		
4.04	30A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.03 above as MK, Crabtree or equal and approved equivalent.	4	No.		
4.05	Solar Water Heater Power Point comprising wiring drawn in 3x6.0mm <sup>2</sup> SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	4	No.		
4.06	20A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 4.05 above as MK, Crabtree or equal and approved equivalent.	4	No.		
4.07	Water Booster Pump (3-Φ) Power Point comprising 6mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 25mm Ø concealed HG PVC conduits complete with all accessories but excluding the DOL isolator switch.	1	No.		
4.08	12A TP isolator switch with phase indicating lights and cord outlet for item 4.07 above as MK, Crabtree or approved equivalent.	1	No.		
4.09	Hose Reel Pump Power Point wired in 3x4.0mm <sup>2</sup> SC PVCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
4.10	20A DP control switch with neon light and cord outlet for item 4.09 above as MK, Crabtree or approved equivalent.	1	No.		
5.00	CCTV/ACCESS CONTROL POINTS & ACCESSORIES				
5.01	Install as provision, CCTV & Access Control System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories but excluding cameras and core equipment.	4	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
6.00	INTERNAL POWER DISTRIBUTION				
6.01	Powder Coated purpose made front access lockable 4 way Type B TPN Distribution Board (Semi-Recessed) with 150A TP+N+E Bus Bars manufactured in 14 SWG spray painted galvanised mild steel sheet and spray painted (finished) in cream powder coating (or appropriate colour) complete with 80A TPN+E integral isolator, Spareways, Blanking Plates and lockable cover among other accessories but excluding MCBs as per Contract Drawings as Powermax, Power Technics, Schneider Electric, Hausmann or equal and approved equivalent.	1	No.		
6.02	Spare 80A main isolator, TPN+E for the 4 way DB.	1	No.		
6.03	MCB's rated at 500Vac for item 6.01 above as Schneider or approved equivalent as the following:-				
	(i) 10A SP	1	No.		
	(ii) 20A SP	1	No.		
	(iii) 32A SP	1	No.		
	(iv) 45A SP	1	No.		
	(v) 63A SP	1	No.		
	(vi) 32A TP	1	No.		
	(vii) 80A TP	1	No.		
	(viii) SP Spareway	1	No.		
	(ix) Blanking Plates	4	No.		
6.04	RCD's rated at 30mAac, Type AC for item 6.01 above as Hager, Wylex, Crabtree, Schneider or equal and approved equivalent as the following:-				
	(i) 80A TPN	1	No.		
6.05	Carry out comprehensive permanent traffolyte labelling for all the sub-circuits, bus bars, circuit breakers etc. in items No. 6.01 & 6.03 above indicating the areas served, outgoing cable sizes etc.	1	Item		
7.00	SUB-CIRCUIT CABLING WORKS				
7.01	Sub-circuit cable system comprising 25mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 32mm Ø concealed HG PVC conduits in electrical duct looped from the Third Floor Distribution Board "DBF3" to Roof Level Distribution Board "DBF4" complete with all necessary accessories, but excluding cable glands and lugs.	12	Lm		
7.02	Cable glands and lugs for the above cables.	10	No.		
8.00	CABLE TRUNKING & DUCTING				
8.01	Powder coated twin punched outlet plate for fixing twin socket outlets.	6	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
8.02	Provide trunking knock outs for face plates for twin switched outlets.	6	No.		
8.03	150mmx150mm Standard cable adaptable box made in gauge 14swg galvanized steel sheet.	3	No.		
8.04	50mmx50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved equivalent.	20	No.		
8.05	Ditto but circular cable junction box.	20	No.		
8.06	Lay HG PVC conduiting of size 3x32mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for telecommunication services.	40	Lm.		
8.07	Lay HG PVC conduiting of size 3x50mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for internal power reticulation.	40	Lm.		
8.08	Lay HG PVC conduiting of size 1x100mm Ø HG PVC ducts inter-connecting electrical service ducts.	40	Lm.		
8.09	Lay HG PVC conduiting of size 1x200mm Ø HG PVC ducts inter-connecting electrical service ducts.	40	Lm.		
8.10	Supply and Install an 18SWG steel sheets spray painted to approval adaptable box 400mmx400mm to Engineer's approval.	1	No.		
9.00	BONDING & GROUNDING				
9.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 11.00 above to Electrical Engineer's approval.	1	Item		
Total for Schedule No. 6: Fourth Floor - Lighting & Power Distri. C/F to Price Coll. Page					

**SCHEDULE NO. 7: GATE HOUSE - LIGHTING & POWER DISTRIBUTION**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	LIGHTING & INTERNAL POWER DISTRIBUTION <i>Supply, Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	LIGHTING POINTS				
1.01	Lighting points wired in 3x1.5mm <sup>2</sup> SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	a) One way switching	10	No.		
	b) Two way switching	2	No.		
2.00	LIGHTING FITTINGS				
2.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type H	4	No.		
	(b) Type R	5	No.		
	(c) Type U	4	No.		
	(d) Type X	2	No.		
	(e) Type Z	4	No.		
3.00	LIGHTING SWITCHES				
3.01	10A white moulded lighting switch plates; flush mounted on masonry wall as Crabtree, MK, BG, Schneider, Elite Elegance, Simon, Domus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	2	No.		
	(b) 2 gang 1 way	2	No.		
	(c) 3 gang 1 way (IP66 – Weatherproof)	2	No.		
	(d) 1 gang 2 way	2	No.		
	(e) 2 gang 2 way	2	No.		
4.00	POWER POINTS & ACCESSORIES				
4.01	13A ring mains socket outlet points wired in 3x2.5 mm <sup>2</sup> SC PVC insulated Cu cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories excluding socket outlet plates for:-				
	(a) Twin outlet	4	No.		
4.02	13A switched white moulded case socket outlet plates, flush mounted on masonry wall as MK, Clipsal, BG, Crabtree, Schneider, Elite Elegance or equal and approved equivalent for:-				
	(a) Twin switched (IP66 – Weatherproof)	4	No.		
	Sub-Total C/F to Next Page				



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.03	Water Booster Pump (3-Φ) Power Point comprising 6mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in 25mm Ø concealed HG PVC conduits complete with all accessories but excluding the DOL isolator switch.	1	No.		
4.04	40A TP isolator switch with phase indicating lights and cord outlet for item 4.03 above as Havells, MK, Crabtree or approved equivalent.	1	No.		
4.05	Hose Reel Pump Power Point wired in 3x4.0mm <sup>2</sup> SC PPCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
4.06	20A DP control switch with neon light and cord outlet for item 4.05 above as MK, Crabtree or approved equivalent.	1	No.		
4.07	Install as provision, Walk-through Body Scanner Power Point wired in 3x4.0mm <sup>2</sup> SC PPCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
4.08	20A DP control switch with neon light and cord outlet for item 4.07 above as MK, Crabtree or approved equivalent.	1	No.		
4.09	Install as provision, Automatic Rising Bollards Power Point wired in 3x4.0mm <sup>2</sup> SC PPCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
4.10	20A DP control switch with neon light and cord outlet for item 4.09 above as MK, Crabtree or approved equivalent.	1	No.		
4.11	Instantaneous water heater power point comprising wiring in 3x6mm <sup>2</sup> SC PPCI Copper Cables drawn in 25mm Ø HG PVC conduits complete with all necessary accessories but excluding the DP switch.	1	No.		
4.12	45A DP switch with neon pilot lamp (indicator) and fused connection unit with angled flexible cable outlet for item 4.13 above as Crabtree or equal and approved equivalent.	1	No.		
4.13	Instant Shower Unit, Fully-accessorised, 8000W, 220-240V AC, 50/60Hz four temperature (4T) selector as Enerbras Enershower or equal and approved equivalent.	1	No.		
5.00	CCTV/ACCESS CONTROL POINTS & ACCESSORIES				
5.01	Install as provision, CCTV & Access Control System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with all necessary accessories but excluding cameras and core equipment.	4	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
6.00	INTERNAL POWER DISTRIBUTION				
6.01	4 way Type B TPN Consumer Unit (Semi-Recessed) complete with 80A TPN+E integral isolator and lockable cover c/w all accessories but excluding MCBs as Powermax, Power Technics, Schneider Electric, Hausmann or equal and approved equivalent.	1	No.		
6.02	Spare 80A main isolator, TPN+E for the 4 way DB.	1	No.		
6.03	MCB's rated at 500Vac for item 6.01 above as Schneider or approved equivalent as the following:- (i) 10A SP (ii) 32A SP (iii) 63A DP (iii) 63A TP (iv) SP Spareway (iv) TP Spareway (v) Blanking Plates	1 2 2 1 1 1 4	No. No. No. No. No. No. No.		
6.04	RCD's rated at 30mAac, Type AC for item 6.01 above as Schneider Merlin Gerin, Hager, Wylex, Crabtree or equal and approved equivalent as the following:- (i) 80A TPN	1	No.		
6.05	Carry out comprehensive permanent traffolyte labelling for all the sub-circuits, bus bars, circuit breakers etc. in items No. 6.01 & 6.03 above indicating the areas served, outgoing cable sizes etc.	1	Item		
7.00	SUB-CIRCUIT CABLING WORKS				
7.01	Sub-circuit cable system comprising 25mm <sup>2</sup> 4-Core PVC/SWA/PVC Copper Cable in ground looped from the Distribution Board "LVP" to Sub-board "DBG" complete with all necessary accessories, but excluding cable glands and lugs.	60	Lm		
7.02	Cable glands and lugs for the above cables.	10	No.		
8.00	CABLE TRUNKING				
8.01	25x16mm single compartment powder coated steel trunking manufactured in 14 SWG galvanized mild steel sheet and finished in powder coating to match the colour of the room to detail of the interior design complete with covers and all fixing accessories. The trunking to angular section fixed at skirting level.	20	Lm		
8.02	Factory made powder coated corner bends for the trunking in 8.01 above.	4	No.		
8.03	Powder coated twin punched outlet plate for fixing twin socket outlets.	3	No.		
8.04	150mmx150mm Standard cable adaptable box made in gauge 14swg galvanized steel sheet.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
8.05	Provide trunking knock outs for face plates for twin switched outlets.	4	No.		
8.06	50mm x 50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved equivalent.	6	No.		
9.00	BONDING & GROUNDING				
9.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 8.00 above to Electrical Engineer's approval.	1	Item		
Total for Schedule No. 7: Gate House - Lighting & Power Dist. C/F to Price Collection Page					

**SCHEDULE NO. 8: EXTERIOR & PERIMETER - LIGHTING & POWER DISTRIBUTION**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	LIGHTING & INTERNAL POWER DISTRIBUTION <i>Supply, Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	LIGHTING POINTS				
1.01	Lighting points wired in 3x2.5mm <sup>2</sup> SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	a) One way switching	86	No.		
	b) Two way switching	160	No.		
	c) Intermediate switching	160	No.		
2.00	LIGHTING FITTINGS				
2.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type A7	38	No.		
	(b) Type A8	3	No.		
	(c) Type A9	10	No.		
	(d) Type A10	15	No.		
	(e) Type A11	10	No.		
	(f) Type A12	10	No.		
	(g) Type A13	10	No.		
	(h) Type A14	20	No.		
	(i) Type A15	15	No.		
	(j) Type A16	10	No.		
	(k) Type A17	200	No.		
3.00	LIGHTING SWITCHES				
3.01	10A Ivory moulded wide rocker lighting switch plates; flush mounted on masonry wall as Crabtree, MK, BG, Schneider, Elite Elegance, Simon, Domus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	2	No.		
	(b) 2 gang 1 way	2	No.		
	(c) 3 gang 1 way	2	No.		
	(d) 1 gang 2 way	8	No.		
	(e) 2 gang 2 way	2	No.		
	(f) 1 gang intermediate	4	No.		
3.02	Dusk-to-dawn, 5400W/6000VA Max (25A Max) Tungsten/Ballast respectively, 240V, Programmable Twist-Lock Photocell Light Sensor Switch, wall/pole surface mounted as Philips, MK, Schneider or an approved equivalent. (This shall be supplied c/w all necessary accessories and installed (wired) as per control pillar schematics)	3	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.00	SUB-CIRCUIT CABLE				
4.01	Sub-circuit cable system comprising 10mm <sup>2</sup> 3-Core PVC/SWA/PVC Copper Cable in ground looped from the Gate House Distribution Board "DBG" to the 3No. Cable Loop-In Boxes (CLBs), via the control pillar (3No. Photocells), for compound (exterior) and perimeter lighting complete with all necessary accessories, but excluding cable glands and lugs.	120	Lm		
4.02	Cable glands and lugs for the above cables.	18	No.		
5.00	CABLE TRUNKING				
5.01	150mmx150mm Standard cable adaptable box (CLB) made in gauge 14swg galvanized steel sheet.	3	No.		
5.02	50mm x 50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved equivalent.	160	No.		
5.03	Ditto but circular cable junction box.	280	No.		
6.00	BONDING & GROUNDING				
6.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 5.00 above to Electrical Engineer's approval.	1	Item		
Total for Schedule No. 8: Exterior & Perimeter - Light. & Pow. Dist. C/F to Price Coll. Page					

Item	Description	Amount (Kshs)
1.0	Total for Schedule No. 1: Ground Floor - Lighting & Power Distribution B/F	
2.0	Total for Schedule No. 2: General Power Reticulation B/F	
3.0	Total for Schedule No. 3: First Floor - Lighting & Power Distribution B/F	
4.0	Total for Schedule No. 4: Second Floor - Lighting & Power Distribution B/F	
5.0	Total for Schedule No. 5: Third Floor - Lighting & Power Distribution B/F	
6.0	Total for Schedule No. 6: Fourth Floor - Lighting & Power Distribution B/F	
7.0	Total for Schedule No. 7: Gate House - Lighting & Power Distribution B/F	
8.0	Total for Schedule No. 8: Exterior & Perimeter Wall - Lighting B/F	
Total for Bill No. 2: Lighting & Power Distribution C/F to Summary Page		

## BILL NO. 3: FIRE DETECTION &amp; ALARM SYSTEM

SCHEDULE NO. 1: GROUND FLOOR - FIRE DETECTION & ALARM SYSTEM

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	FIRE DETECTION & ALARM SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission the following as per BS 5839:2017:-</i>				
1.00	FIRE ALARM CONTROL PANEL (FACP)				
1.01	Fully Accessorised 12-Loop zone addressable, intelligent network programmable, fire alarm control panel complete with 72hrs autonomous time emergency batteries, capable of supporting up to 256 devices per loop and up to 384 programmable zones, as Global Fire Juno Net Addressable 12 Loop Fire Alarm Panel J-NET-EN54-SC-012, Menvier DF6100 or equal and approved equivalent.	1	No.		
2.00	DEVICE POINTS				
2.01	Power outlet for Fire Alarm Panel concealed in 20mm Dia. HG PVC conduit, wiring in 3x2.5mm <sup>2</sup> SC-PVC-CU cables and all accessories, including 5A fused unswitched connection unit with neon light.	1	No.		
2.02	Outlet for fire alarm manual call point/smoke/heat detector comprising box, concealed 20mm Dia. HG PVC conduit, wiring in 3x2.5mm <sup>2</sup> "firetuff" cables and all accessories.	58	No.		
3.00	DETECTOR & ACTUATOR DEVICES				
3.01	Addressable Manual Fire break glass call point unit as MENVIER or approved equivalent complete with a packet of 5 spare glasses, a packet of 5 spare test keys, a spare back box and a hinged cover to be installed recessed in building fabric.	4	No.		
3.02	Addressable Electronic Fire Alarm Sounder complete with Red Flashing Beacon Light as MENVIER or approved equivalent.	4	No.		
3.03	Addressable Intelligent Plug-In Photoelectric Smoke Detector as MENVIER or equal and approved equivalent.	30	No.		
3.04	Addressable Intelligent Plug-In Rate-of-Rise (ROR) Heat (Thermal) Detector as MENVIER or equal and approved equivalent.	20	No.		
3.05	Voice evacuation system comprising audio amplifier, wall-mounted white speaker, microphone and all necessary accessories.	1	Lot		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
4.00	AUXILIARY MATERIALS				
4.01	Any other item(s) necessary to complete the installation of the addressable fire detection and alarm system satisfactorily. (List and give quantities of the items)	1	Lot		
	i).....				
	ii).....				
	iii).....				
Total for Schedule No. 1: Ground Floor - Fire Det. & Alarm Syst. C/F to Price Collection Page					



# SCHEDULE NO. 2: FIRST FLOOR - FIRE DETECTION & ALARM SYSTEM

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	FIRE DETECTION & ALARM SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission the following as per BS 5839:2017:-</i>				
1.00	DEVICE POINTS				
1.01	Outlet for fire alarm manual call point/smoke/heat detector comprising box, concealed 20mm Dia. HG PVC conduit, wiring in 3x2.5mm <sup>2</sup> "firetuff" cables and all accessories.	76	No.		
2.00	DETECTOR & ACTUATOR DEVICES				
2.01	Addressable Manual Fire break glass call point unit as MENVIER or approved equivalent complete with a packet of 5 spare glasses, a packet of 5 spare test keys, a spare back box and a hinged cover to be installed recessed in building fabric.	8	No.		
2.02	Addressable Electronic Fire Alarm Sounder complete with Red Flashing Beacon Light as MENVIER or approved equivalent.	4	No.		
2.03	Addressable Intelligent Plug-In Photoelectric Smoke Detector as MENVIER or equal and approved equivalent.	44	No.		
2.04	Addressable Intelligent Plug-In Rate-of-Rise (ROR) Heat (Thermal) Detector as MENVIER or equal and approved equivalent.	20	No.		
2.05	Voice evacuation system components for the floor comprising wall/ceiling-mounted white speakers and all necessary annunciation accessories.	1	Lot		
3.00	AUXILIARY MATERIALS				
3.01	Any other item(s) necessary to complete the installation of the addressable fire detection and alarm system satisfactorily. (List and give quantities of the items) i)..... ii)..... iii).....	1	Lot		
Total for Schedule No. 2: First Floor - Fire Det. & Alarm System C/F to Price Collection Page					

**SCHEDULE NO. 3: SECOND FLOOR - FIRE DETECTION & ALARM SYSTEM**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	<b>FIRE DETECTION &amp; ALARM SYSTEM</b> <i>Supply, Deliver To Site, Install, Test and Commission the following as per BS 5839:2017:-</i>				
1.00	<b>DEVICE POINTS</b>				
1.01	Outlet for fire alarm manual call point/smoke/heat detector comprising box, concealed 20mm Dia. HG PVC conduit, wiring in 3x2.5mm <sup>2</sup> "firetuff" cables and all accessories.	68	No.		
2.00	<b>DETECTOR &amp; ACTUATOR DEVICES</b>				
2.01	Addressable Manual Fire break glass call point unit as MENVIER or approved equivalent complete with a packet of 5 spare glasses, a packet of 5 spare test keys, a spare back box and a hinged cover to be installed recessed in building fabric.	8	No.		
2.02	Addressable Electronic Fire Alarm Sounder complete with Red Flashing Beacon Light as MENVIER or approved equivalent.	4	No.		
2.03	Addressable Intelligent Plug-In Photoelectric Smoke Detector as MENVIER or equal and approved equivalent.	40	No.		
2.04	Addressable Intelligent Plug-In Rate-of-Rise (ROR) Heat (Thermal) Detector as MENVIER or equal and approved equivalent.	16	No.		
2.05	Voice evacuation system components for the floor comprising wall/ceiling-mounted white speakers and all necessary annunciation accessories.	1	Lot		
3.00	<b>AUXILIARY MATERIALS</b>				
3.01	Any other item(s) necessary to complete the installation of the addressable fire detection and alarm system satisfactorily. (List and give quantities of the items) i)..... ii)..... iii).....	1	Lot		
Total for Schedule No. 3: Second Floor - Fire Det. & Alarm Syst. C/F to Price Collection Page					

**SCHEDULE NO. 4: THIRD FLOOR - FIRE DETECTION & ALARM SYSTEM**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	<b>FIRE DETECTION &amp; ALARM SYSTEM</b> <i>Supply, Deliver To Site, Install, Test and Commission the following as per BS 5839:2017:-</i>				
1.00	<b>DEVICE POINTS</b>				
1.01	Outlet for fire alarm manual call point/smoke/heat detector comprising box, concealed 20mm Dia. HG PVC conduit, wiring in 3x2.5mm <sup>2</sup> "firetuff" cables and all accessories.	64	No.		
2.00	<b>DETECTOR &amp; ACTUATOR DEVICES</b>				
2.01	Addressable Manual Fire break glass call point unit as MENVIER or approved equivalent complete with a packet of 5 spare glasses, a packet of 5 spare test keys, a spare back box and a hinged cover to be installed recessed in building fabric.	8	No.		
2.02	Addressable Electronic Fire Alarm Sounder complete with Red Flashing Beacon Light as MENVIER or approved equivalent.	4	No.		
2.03	Addressable Intelligent Plug-In Photoelectric Smoke Detector as MENVIER or equal and approved equivalent.	38	No.		
2.04	Addressable Intelligent Plug-In Rate-of-Rise (ROR) Heat (Thermal) Detector as MENVIER or equal and approved equivalent.	14	No.		
2.05	Voice evacuation system components for the floor comprising wall/ceiling-mounted white speakers and all necessary annunciation accessories.	1	Lot		
3.00	<b>AUXILIARY MATERIALS</b>				
3.01	Any other item(s) necessary to complete the installation of the addressable fire detection and alarm system satisfactorily. (List and give quantities of the items) i)..... ii)..... iii).....	1	Lot		
Total for Schedule No. 4: Third Floor - Fire Det. & Alarm Syst. C/F to Price Collection Page					

**SCHEDULE NO. 5: GATE HOUSE - FIRE DETECTION & ALARM SYSTEM**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	<b>FIRE DETECTION &amp; ALARM SYSTEM</b> <i>Supply, Deliver To Site, Install, Test and Commission the following as per BS 5839:2017:-</i>				
1.00	<b>DEVICE POINTS</b>				
1.01	Outlet for fire alarm manual call point/smoke/heat detector comprising box, concealed 20mm Dia. HG PVC conduit, wiring in 3x2.5mm <sup>2</sup> "firetuff" cables and all accessories.	6	No.		
2.00	<b>DETECTOR &amp; ACTUATOR DEVICES</b>				
2.01	Addressable Manual Fire break glass call point unit as MENVIER or approved equivalent complete with a packet of 5 spare glasses, a packet of 5 spare test keys, a spare back box and a hinged cover to be installed recessed in building fabric.	1	No.		
2.02	Addressable Electronic Fire Alarm Sounder complete with Red Flashing Beacon Light as MENVIER or approved equivalent.	1	No.		
2.03	Addressable Intelligent Plug-In Photoelectric Smoke Detector as MENVIER or equal and approved equivalent.	2	No.		
2.04	Addressable Intelligent Plug-In Rate-of-Rise (ROR) Heat (Thermal) Detector as MENVIER or equal and approved equivalent.	2	No.		
2.05	Voice evacuation system components for the floor comprising wall/ceiling-mounted white speakers and all necessary annunciation accessories.	1	Lot		
3.00	<b>AUXILIARY MATERIALS</b>				
3.01	Any other item(s) necessary to complete the installation of the addressable fire detection and alarm system satisfactorily. (List and give quantities of the items) i)..... ii)..... iii).....	1	Lot		
Total for Schedule No. 5: Gate House - Fire Det. & Alarm System C/F to Pr. Coll. Page					

PRICE COLLECTION PAGE - BILL 3: FIRE DETECTION & ALARM SYSTEM

Item	Description	Amount (Kshs)
1.0	Total for Schedule No. 1: Ground Floor - Fire Detection & Alarm System B/F	
2.0	Total for Schedule No. 2: First Floor - Fire Detection & Alarm System B/F	
3.0	Total for Schedule No. 3: Second Floor - Fire Detection & Alarm System B/F	
4.0	Total for Schedule No. 4: Third Floor - Fire Detection & Alarm System B/F	
5.0	Total for Schedule No. 5: Gate House - Fire Detection & Alarm System B/F	
Total for Bill No. 3: Fire Detection & Alarm System C/F to Summary Page		

SCHEDULE NO. 1: GROUND FLOOR - CCTV & ACCESS CONTROL SYSTEM

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	CCTV (VIDEO MONITORING) SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission the following as per the technical specifications:-</i>				
1.00	CCTV CAMERAS				
1.01	Type CAM1	8	No.		
1.02	Type CAM2	8	No.		
1.03	Type CAM3	1	No.		
2.00	ACTIVE COMPONENTS				
2.01	Power Distribution Units (PDU) 6/8 way Surge Protected /Tripplite Voltage Regulator.	1	No.		
3.00	POWER SUPPLY				
3.01	240V, 50Hz, 2.2KVA, Rack Mountable Double Conversion APC smart un-interrupted power supply unit (UPS) TRUE online INCLUDING Batteries with USB and Serial Port or an approved equivalent.	1	No.		
4.00	CABINETS				
4.01	9U Free standing or wall-mounted metal equipment cabinet (1No. Of which must be made of 4 SWG galvanized steel and spray-painted street cabinets) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	2	No.		
4.02	22U Free standing or wall-mounted metal equipment cabinet (must be made of 4 SWG galvanized steel and spray-painted) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	1	No.		
5.00	PATCH PANELS				
5.01	8 Port UTP edge switch /Patch Panel as Molex or equal and approved equivalent C/W all the necessary accessories.	1	No.		
5.02	24 Port UTP edge switch /Patch Panel as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
6.00	CABLE TRUNKING				
6.01	40mm x 20mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	140	Lm.		
6.02	75mm x 50mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	120	Lm.		
6.03	Grounding and bonding kit complete with 50mm diameter equipotential copper bonding bar and 6mm thick green and yellow wire. The Earthing of the system is to be to the approval of the Engineer.	1	Lot		
7.00	CABLING				
7.01	Cat 6A, UTP 4 Pair cable as Molex or its equal and approved equivalent. (This is provisional length, actual length will be measured)	120	Lm.		
7.02	Cat 6A, UTP 2U, Cable Manager/Organizer as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.		
7.03	Cat 6A, STP 4 Pair cable as Molex or equal and approved equivalent. (This is provisional length, actual length will be measured)	120	Lm.		
7.04	1M, Cat 6A, UTP RJ45-RJ45 factory terminated Patch Cords as Molex or its equal and approved equivalent.	32	No.		
7.05	Multimode Fiber-optic cable C/W all necessary accessories. (This is provisional length, actual length will be measured)	80	Lm.		
7.06	20mm white Flexible Conduits. (This is provisional length, actual length will be measured)	80	Lm.		
7.07	20mm Flexible Conduits glands for item 7.06 above.	20	No.		
7.08	Cable ties, Wrap Markers, Tower clips, Insulating Tapes, Masking Tapes e.t.c.	1	Item		
7.09	RJ45 Cable Connectors.	40	No.		
A.2	ACCESS CONROL SYSTEM <i>Supply, Deliver To Site, Install, Configure, Test and Commission the following as per the technical specifications:-</i>				
1.01	Controlled doors complete with all associated equipment, all wiring and connection to the primary signal processor and door controller supporting:-				
	a) Type 1 - Card and Pin	12	No.		
	b) Type 2 - Card only (Proximity/Motion Sensor)	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
1.02	Two door controller card as specified in particular specifications.	15	No.		
1.03	A 300Kg- Force magnetic door lock.	16	No.		
1.04	Fully accessorised proximity card reader c/w Biometric finger print reader, iris scanner and KeyPad as specified in particular specifications.	16	No.		
1.05	A sturdy door exit button/switch.	16	No.		
1.06	Access control door Power supply module as specified in particular specifications.	16	No.		
1.07	Proximity card containing photograph of individual employees as per particular specifications.	32	No.		
1.08	Wire the entire access control system for the floor using 12 core 1.5mm <sup>2</sup> fire resistant cable.	400	Lm.		
1.09	2KVA UPS power supply as specified in particular specifications.	1	No.		
1.10	Allow for full graphic customization and programming of the installed system.	1	Lot		
1.11	Any other items necessary to complete the above CCTV & Access Control System installation as per the system you propose to install. (To be itemised as required).	1	Lot		
	i).....				
	ii).....				
	iii).....				
Total for Schedule No. 1: Ground Floor - CCTV & Acc. Cont. Sys. C/F to Price Collection Page					



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	CCTV (VIDEO MONITORING) SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission the following as per the technical specifications:-</i>				
1.00	CCTV CAMERAS				
1.01	Type CAM1	4	No.		
1.02	Type CAM2	4	No.		
2.00	ACTIVE COMPONENTS				
2.01	Power Distribution Units (PDU) 6/8 way Surge Protected /Tripplite Voltage Regulator.	1	No.		
3.00	POWER SUPPLY				
3.01	240V, 50Hz, 2.2KVA, Rack Mountable Double Conversion APC smart un-interrupted power supply unit (UPS) TRUE online INCLUDING Batteries with USB and Serial Port or an approved equivalent.	1	No.		
4.00	CABINETS				
4.01	9U Free standing or wall-mounted metal equipment cabinet (1No. Of which must be made of 4 SWG galvanized steel and spray-painted street cabinets) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	2	No.		
4.02	22U Free standing or wall-mounted metal equipment cabinet (must be made of 4 SWG galvanized steel and spray-painted) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	1	No.		
5.00	PATCH PANELS				
5.01	8 Port UTP edge switch /Patch Panel as Molex or equal and approved equivalent C/W all the necessary accessories.	1	No.		
5.02	24 Port UTP edge switch /Patch Panel as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
6.00	CABLE TRUNKING				
6.01	40mm x 20mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	90	Lm.		
6.02	75mm x 50mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	90	Lm.		
6.03	Grounding and bonding kit complete with 50mm diameter equipotential copper bonding bar and 6mm thick green and yellow wire. The Earthing of the system is to be to the approval of the Engineer.	1	Lot		
7.00	CABLING				
7.01	Cat 6A, UTP 4 Pair cable as Molex or its equal and approved equivalent. (This is provisional length, actual length will be measured)	140	Lm.		
7.02	Cat 6A, UTP 2U, Cable Manager/Organizer as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.		
7.03	Cat 6A, STP 4 Pair cable as Molex or equal and approved equivalent. (This is provisional length, actual length will be measured)	140	Lm.		
7.04	1M, Cat 6A, UTP RJ45-RJ45 factory terminated Patch Cords as Molex or its equal and approved equivalent.	35	No.		
7.05	Multimode Fiber-optic cable C/W all necessary accessories. (This is provisional length, actual length will be measured)	80	Lm.		
7.06	20mm white Flexible Conduits. (This is provisional length, actual length will be measured)	80	Lm.		
7.07	20mm Flexible Conduits glands for item 7.06 above.	18	No.		
7.08	Cable ties, Wrap Markers, Tower clips, Insulating Tapes, Masking Tapes e.t.c.	1	Item		
7.09	RJ45 Cable Connectors.	40	No.		
8.00	SERVER SYSTEM, STORAGE & MONITORS				
8.01	32 CH Network Video Recorder (NVR); 100Mbps network camera recording; Embedded Linux OS; Up to 8/6 RAID-5 + Hot standby; SATA Internal HDDs; External e-SATA (2 ports), iSCSI storage (32TB) iSCSI storage supported. (Support 960H-8Ch 2Playback 14FPS) (Full D1 - 8ch 4Playback 30FPS) VGA Output 1280*1024 Resolution. 1*HDMI / 1*VGA / 2*USB ports / 1*TV output 4*Audio input / 1*Audio Support PTZ Control Via built-in RS-485 and rack mountable. As Hikvision or equal and approved equivalent.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
8.02	32TB Surveillance SATA HDD Suitable for the NVR above.	1	No.		
8.03	CCTV and Access Control dedicated Desktop Computer, Intel core i7, 64-bit, 4GB Video Graphics Card Processor/3.6GHz Quad-core/16GB System RAM/4TB SSD/DVD RW/ win10/21" Screen of Multi-Monitor Support complete with a printer as specified in particular specifications for central monitoring.	1	No.		
8.04	Central IP Video Surveillance Management Software for viewing and Recording live video of premises with support for multi-site/multi-client monitoring (for up to 2 No. client stations).	1	No.		
8.05	Network based graphic video controller	1	No.		
8.06	65 inch Professional, 24/7-operational, Industrial LCD LED Monitor, HDMI, DVI, VGA, and component (CVBS common) video output, Ethernet / RS-232C remote control, Built-in speaker as SONY or equal and approved equivalent. (C/W wall mount bracket)	2	No.		
A.2	ACCESS CONTROL SYSTEM <i>Supply, Deliver To Site, Install, Configure, Test and Commission the following as per the technical specifications:-</i>				
1.01	Access Control Desktop Computer (Server) as per particular specifications.	1	No.		
1.02	Software module for access the control system integrated with the CCTV system compatible with the access control system.	1	Lot		
1.03	Door input controller interface unit with fifteen input and two output Compatible with BioStar2 Software2 as per particular specifications.	2	No.		
1.04	Controlled doors complete with all associated equipment, all wiring and connection to the primary signal processor and door controller supporting:- a) Type 1 - Card and Pin	2	No.		
1.05	Two door controller card as specified in particular specifications.	2	No.		
1.06	A 300Kg- Force magnetic door lock.	4	No.		
1.07	Fully accessorised proximity card reader c/w Biometric finger print reader, iris scanner and KeyPad as specified in particular specifications.	4	No.		
1.08	A sturdy door exit button/switch.	4	No.		
1.09	Access control door Power supply module as specified in particular specifications.	4	No.		
1.10	Joystick Controller Module as per particular specifications.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
1.10	Proximity card containing photograph of individual employees as per particular specifications.	6	No.		
1.11	Wire the entire access control system for the floor using 12 core 1.5mm <sup>2</sup> fire resistant cable.	260	Lm.		
1.12	2KVA UPS power supply as specified in particular specifications.	1	No.		
1.13	Allow for full graphic customization and programming of the installed system.	1	Lot		
1.14	Allow sum for putting up signage and permanent labels on the entire installation CCTV & Access Control infrastructure as required by the International safety standards.	1	Lot		
1.15	Any other items necessary to complete the above CCTV & Access Control System installation as per the system you propose to install. (To be itemised as required).	1	Lot		
	i).....				
	ii).....				
	iii).....				
Total for Schedule No. 2: First Floor - CCTV & Acc. Cont. Sys. C/F to Price Collection Page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	CCTV (VIDEO MONITORING) SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission the following as per the technical specifications:-</i>				
1.00	CCTV CAMERAS				
1.01	Type CAM1	4	No.		
1.02	Type CAM2	4	No.		
2.00	ACTIVE COMPONENTS				
2.01	Power Distribution Units (PDU) 6/8 way Surge Protected /Tripplite Voltage Regulator.	1	No.		
3.00	POWER SUPPLY				
3.01	240V, 50Hz, 2.2KVA, Rack Mountable Double Conversion APC smart un-interrupted power supply unit (UPS) TRUE online INCLUDING Batteries with USB and Serial Port or an approved equivalent.	1	No.		
4.00	CABINETS				
4.01	9U Free standing or wall-mounted metal equipment cabinet (1No. Of which must be made of 4 SWG galvanized steel and spray-painted street cabinets) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	2	No.		
4.02	22U Free standing or wall-mounted metal equipment cabinet (must be made of 4 SWG galvanized steel and spray-painted) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	1	No.		
5.00	PATCH PANELS				
5.01	8 Port UTP edge switch /Patch Panel as Molex or equal and approved equivalent C/W all the necessary accessories.	1	No.		
5.02	24 Port UTP edge switch /Patch Panel as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.		
	Sub-Total C/F to Next Page				
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)

Sub-Total B/F from Previous Page

6.00	CABLE TRUNKING		
6.01	40mm x 20mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	120	Lm.
6.02	75mm x 50mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	120	Lm.
6.03	Grounding and bonding kit complete with 50mm diameter equipotential copper bonding bar and 6mm thick green and yellow wire. The Earthing of the system is to be to the approval of the Engineer.	1	Lot
7.00	CABLING		
7.01	Cat 6A, UTP 4 Pair cable as Molex or its equal and approved equivalent. (This is provisional length, actual length will be measured)	100	Lm.
7.02	Cat 6A, UTP 2U, Cable Manager/Organizer as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.
7.03	Cat 6A, STP 4 Pair cable as Molex or equal and approved equivalent. (This is provisional length, actual length will be measured)	94	Lm.
7.04	1M, Cat 6A, UTP RJ45-RJ45 factory terminated Patch Cords as Molex or its equal and approved equivalent.	32	No.
7.05	Multimode Fiber-optic cable C/W all necessary accessories. (This is provisional length, actual length will be measured)	88	Lm.
7.06	20mm white Flexible Conduits. (This is provisional length, actual length will be measured)	88	Lm.
7.07	20mm Flexible Conduits glands for item 7.06 above.	22	No.
7.08	Cable ties, Wrap Markers, Tower clips, Insulating Tapes, Masking Tapes e.t.c.	1	Item
7.09	RJ45 Cable Connectors.	48	No.
7.10	Any other items necessary to satisfactorily complete the above CCTV System installation as per the system you propose to install. (To be itemised as required).	1	Lot
	i).....		
	ii).....		
	iii).....		

Total for Schedule No. 3: Second Floor - CCTV &amp; Acc. Cont. Sys. C/F to Price Col. Page

**SCHEDULE NO. 4: THIRD FLOOR - CCTV & ACCESS CONTROL SYSTEM**

Item	Description	Qty	Unit	Rate (Kshs)	Amount
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					(Kshs)
A.1	CCTV (VIDEO MONITORING) SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission the following as per the technical specifications:-</i>				
1.00	CCTV CAMERAS				
1.01	Type CAM1	4	No.		
1.02	Type CAM2	4	No.		
2.00	ACTIVE COMPONENTS				
2.01	Power Distribution Units (PDU) 6/8 way Surge Protected /Tripplite Voltage Regulator.	1	No.		
3.00	POWER SUPPLY				
3.01	240V, 50Hz, 2.2KVA, Rack Mountable Double Conversion APC smart un-interrupted power supply unit (UPS) TRUE online INCLUDING Batteries with USB and Serial Port or an approved equivalent.	1	No.		
4.00	CABINETS				
4.01	9U Free standing or wall-mounted metal equipment cabinet (1No. Of which must be made of 4 SWG galvanized steel and spray-painted street cabinets) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	2	No.		
4.02	22U Free standing or wall-mounted metal equipment cabinet (must be made of 4 SWG galvanized steel and spray-painted) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	1	No.		
5.00	PATCH PANELS				
5.01	8 Port UTP edge switch /Patch Panel as Molex or equal and approved equivalent C/W all the necessary accessories.	1	No.		
5.02	24 Port UTP edge switch /Patch Panel as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.		
	Sub-Total C/F to Next Page				
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)

Sub-Total B/F from Previous Page

6.00	CABLE TRUNKING		
6.01	40mm x 20mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	80	Lm.
6.02	75mm x 50mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	80	Lm.
6.03	Grounding and bonding kit complete with 50mm diameter equipotential copper bonding bar and 6mm thick green and yellow wire. The Earthing of the system is to be to the approval of the Engineer.	1	Lot
7.00	CABLING		
7.01	Cat 6A, UTP 4 Pair cable as Molex or its equal and approved equivalent. (This is provisional length, actual length will be measured)	100	Lm.
7.02	Cat 6A, UTP 2U, Cable Manager/Organizer as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.
7.03	Cat 6A, STP 4 Pair cable as Molex or equal and approved equivalent. (This is provisional length, actual length will be measured)	100	Lm.
7.04	1M, Cat 6A, UTP RJ45-RJ45 factory terminated Patch Cords as Molex or its equal and approved equivalent.	40	No.
7.05	Multimode Fiber-optic cable C/W all necessary accessories. (This is provisional length, actual length will be measured)	80	Lm.
7.06	20mm white Flexible Conduits. (This is provisional length, actual length will be measured)	80	Lm.
7.07	20mm Flexible Conduits glands for item 7.06 above.	20	No.
7.08	Cable ties, Wrap Markers, Tower clips, Insulating Tapes, Masking Tapes e.t.c.	1	Item
7.09	RJ45 Cable Connectors.	40	No.
7.10	Any other items necessary to satisfactorily complete the above CCTV System installation as per the system you propose to install. (To be itemised as required).	1	Lot
	i).....		
	ii).....		
	iii).....		

Total for Schedule No. 4: Third Floor - CCTV &amp; Acc. Cont. Syst. C/F to Price Collection Page

**SCHEDULE NO. 5: FOURTH FLOOR - CCTV & ACCESS CONTROL SYSTEM**

Item	Description	Qty	Unit	Rate (Kshs)	Amount
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					(Kshs)
A.1	CCTV (VIDEO MONITORING) SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission the following as per the technical specifications:-</i>				
1.00	CCTV CAMERAS				
1.01	Type CAM1	2	No.		
1.02	Type CAM2	3	No.		
2.00	CABLE TRUNKING				
2.01	75mm x 50mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	60	Lm.		
2.02	Grounding and bonding kit complete with 50mm diameter equipotential copper bonding bar and 6mm thick green and yellow wire. The Earthing of the system is to be to the approval of the Engineer.	1	Lot		
3.00	CABLING				
3.01	Cat 6A, UTP 4 Pair cable as Molex or its equal and approved equivalent. (This is provisional length, actual length will be measured)	60	Lm.		
3.02	Cat 6A, UTP 2U, Cable Manager/Organizer as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.		
3.03	Cat 6A, STP 4 Pair cable as Molex or equal and approved equivalent. (This is provisional length, actual length will be measured)	60	Lm.		
3.04	1M, Cat 6A, UTP RJ45-RJ45 factory terminated Patch Cords as Molex or its equal and approved equivalent.	16	No.		
3.05	Multimode Fiber-optic cable C/W all necessary accessories. (This is provisional length, actual length will be measured)	54	Lm.		
3.06	20mm white Flexible Conduits. (This is provisional length, actual length will be measured)	54	Lm.		
3.07	20mm Flexible Conduits glands for item 3.06 above.	10	No.		
3.08	Cable ties, Wrap Markers, Tower clips, Insulating Tapes, Masking Tapes e.t.c.	1	Item		
3.09	RJ45 Cable Connectors.	10	No.		
3.10	Any other items necessary to satisfactorily complete the above CCTV System installation as per the system you propose to install. (To be itemised as required).	1	Lot		
	i).....				
	ii).....				
	iii).....				
Total for Schedule No. 5: Fourth Floor - CCTV & Acc. Con. Sys. C/F to Price Collection Page					

#### SCHEDULE NO. 6: GATE HOUSE - CCTV & ACCESS CONTROL SYSTEM

Item	Description	Qty	Unit	Rate (Kshs)	Amount
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					(Kshs)
A.1	CCTV (VIDEO MONITORING) SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission the following as per the technical specifications:-</i>				
1.00	CCTV CAMERAS				
1.01	Type CAM1	2	No.		
1.02	Type CAM2	2	No.		
1.03	Type CAM3	1	No.		
2.00	ACTIVE COMPONENTS				
2.01	Power Distribution Units (PDU) 6/8 way Surge Protected /Tripplite Voltage Regulator.	1	No.		
3.00	POWER SUPPLY				
3.01	240V, 50Hz, 2.2KVA, Rack Mountable Double Conversion APC smart un-interrupted power supply unit (UPS) TRUE online INCLUDING Batteries with USB and Serial Port or an approved equivalent.	1	No.		
4.00	CABINETS				
4.01	9U Free standing or wall-mounted metal equipment cabinet (1No. Of which must be made of 4 SWG galvanized steel and spray-painted street cabinets) with lockable glass door. C/W low noise (Low dB) fans, power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet) and grounding kits & casters.	1	No.		
5.00	PATCH PANELS				
5.01	8 Port UTP edge switch /Patch Panel as Molex or equal and approved equivalent C/W all the necessary accessories.	1	No.		
6.00	CABLE TRUNKING				
6.01	40mm x 20mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	30	Lm.		
6.02	75mm x 50mm deep single-compartment metal trunking complete with all accessories as Schneider Electric or equal and approved equivalent.	50	Lm.		
6.03	Grounding and bonding kit complete with 50mm diameter equipotential copper bonding bar and 6mm thick green and yellow wire. The Earthing of the system is to be to the approval of the Engineer.	1	Lot		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
7.00	CABLING				
7.01	Cat 6A, UTP 4 Pair cable as Molex or its equal and approved equivalent. (This is provisional length, actual length will be measured)	50	Lm.		
7.02	Cat 6A, UTP 2U, Cable Manager/Organizer as Molex or its equal and approved equivalent C/W all the necessary accessories.	1	No.		
7.03	Cat 6A, STP 4 Pair cable as Molex or equal and approved equivalent. (This is provisional length, actual length will be measured)	48	Lm.		
7.04	1M, Cat 6A, UTP RJ45-RJ45 factory terminated Patch Cords as Molex or its equal and approved equivalent.	22	No.		
7.05	Multimode Fiber-optic cable C/W all necessary accessories. (This is provisional length, actual length will be measured)	44	Lm.		
7.06	20mm white Flexible Conduits. (This is provisional length, actual length will be measured)	44	Lm.		
7.07	20mm Flexible Conduits glands for item 7.06 above.	20	No.		
7.08	Cable ties, Wrap Markers, Tower clips, Insulating Tapes, Masking Tapes e.t.c.	1	Item		
7.09	RJ45 Cable Connectors.	32	No.		
A.2	ACCESS CONROL SYSTEM <i>Supply, Deliver To Site, Install, Configure, Test and Commission the following as per the technical specifications:-</i>				
1.01	Under Vehicular Surveillance System complete with Automatic Number Plate Recognition System as follows:- . Observation Unit (OU): Camera . Sensor Type : Linear CCD . Pixel Size : 10µm x 10µm with a 10µm pitch . Pixel Speed : 20 MHz . Video Output Format : Dual Taps (8/10 bits) . Power Supply : 12 VDC . Power Consumption : 800 mA . Field of View : 100° . Light Type : Halogen Lights Dimension . Observation Unit : 600 x 350 x 80mm . Lighting Unit : 600 x 80 x 80mm Material Stainless Steel . Environmental: IP 65 rated . Power Requirements: 12VDC	2	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
1.02	<p>Walk through Metal Detector with the following specifications:-</p> <ul style="list-style-type: none"> <li>• 18 zone display</li> <li>• Excellent discrimination, with low unwanted alarm rate</li> <li>• Fully adjustable floor sensitivity control</li> <li>• Processor based continuous wave multiple sensor measurement method with self-testing diagnostics and high digital signal processing</li> <li>• Transmitter and receiver sensor elements positioned in both side panels</li> <li>• Status display indicator</li> <li>• Horizontal axis gain control</li> <li>• Immunity to EMI</li> <li>• Power requirements 240v 9c, 50Hz</li> <li>• Rugged, rigid mechanical construction</li> <li>• Security on/off key lock and user selectable passcode</li> <li>• Fast automatic reset and high through output</li> <li>• Turnstile movement flow control</li> </ul>	1	No.		
1.03	Fully accessorised automatic retractable (recessing) telescopic bollard system for vehicular traffic control c/w all necessary auxiliary hardware and software configured to perform desired functionalities.	2	No.		
1.04	Operator Workstation Intel Core II Duo 3.0Ghz, 2Gb RAM, 500 GB HD, 1GD Video.	1	No.		
1.05	Operator Display Screen Monitor, Full LED Backlit 24" 1366*768 with 2 HDMI, 2USB support.	1	No.		
1.06	15kVA UPS for Operator Unit as APC, Mecer or approved equivalent.	1	No.		
1.07	Software module for access the control system integrated with the CCTV system compatible with the access control system.	1	Lot		
1.08	Door input controller interface unit with fifteen input and two output Compatible with BioStar2 Software2 as per particular specifications.	1	No.		
1.09	Controlled turnstile complete with all associated equipment, all wiring and connection to the primary signal processor and door controller supporting:-				
	a) Type 1 - Card and Pin	1	No.		
1.10	Two turnstile/door controller card as specified in particular specifications.	1	No.		
1.11	A 300Kg- Force magnetic turnstile/door lock.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
1.12	Fully accessorised proximity card reader c/w Biometric finger print reader, iris scanner and KeyPad as specified in particular specifications.	1	No.		
1.13	A sturdy door exit button/switch.	1	No.		
1.14	Access control turnstile/door Power supply module as specified in particular specifications.	1	No.		
1.15	Proximity card containing photograph of individual employees as per particular specifications.	2	No.		
1.16	Wire the entire access control system for the space using 12 core 1.5mm <sup>2</sup> fire resistant cable.	50	Lm.		
1.17	Allow for full graphic customization and programming of the installed system.	1	Lot		
1.18	Any other items necessary to complete the above CCTV & Access Control System installation as per the system you propose to install. (To be itemised as required).	1	Lot		
	i).....				
	ii).....				
	iii).....				
Total for Schedule No. 6: Gate House - CCTV & Access Control System C/F to Price Col. Page					

PRICE COLLECTION PAGE - BILL 4: CCTV & ACCESS CONTROL SYSTEM

Item	Description	Amount (Kshs)
1.0	Total for Schedule No. 1: Ground Floor - CCTV & Access Control System B/F	
2.0	Total for Schedule No. 2: First Floor - CCTV & Access Control System B/F	
3.0	Total for Schedule No. 3: Second Floor - CCTV & Access Control System B/F	
4.0	Total for Schedule No. 4: Third Floor - CCTV & Access Control System B/F	
5.0	Total for Schedule No. 5: Fourth Floor - CCTV & Access Control Syst. B/F	
6.0	Total for Schedule No. 6: Gate House - CCTV & Access Control System B/F	
Total for Bill No. 4: CCTV & Access Control System C/F to Summary Page		

**SCHEDULE NO. 1: GROUND FLOOR - STRUCTURED CABLING & IP EPABX SYSTEM**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	STRUCTURED CABLING & IP EPABX <i>Supply, Deliver To Site, Install, Configure, Test and Commission the following:-</i>				
1.00	TELEPHONE EQUIPMENT				
1.01	Standard IP telephone set Enhanced network connectivity with Power over Ethernet as Cisco SPA 508G 8-Line IP Phone or equal and approved equivalent for the following stations:-				
	a) Office	4	No.		
	b) Secretary	2	No.		
	c) Reception	1	No.		
	d) Security desk	1	No.		
1.02	Digital Executive telephone instruments for executive offices complete with telephone cord and termination block as per technical specifications.	2	No.		
1.03	Allow for terminating, testing and Labelling all circuits.	1	Item		
1.04	Secretarial Sets as described in the technical Specifications.	2	No.		
1.05	10 pair MDF Box Telephone Discase.	1	No.		
2.00	HORIZONTAL DATA/TELEPHONY CABLING				
2.01	1M RJ45-RJ45 Cat 6A UTP factory terminated patch cord as Siemons or approved equivalent to be used in cabinet.	34	No.		
2.02	Cat 6A UTP 4-pair cable as Siemons or approved equivalent laid between cabinet and work station.	400	Lm.		
2.03	3M RJ45-RJ45 Cat 6 AUTP factory terminated patch cord as Siemons or approved equivalent to be used at work station (outlet plates).	26	No.		
2.04	RJ45 Cat 6 UTP (Dual) Data and Voice outlet complete with faceplate and labelling system as Siemons or approved equivalent.	18	No.		
2.05	3M, RJ45-RJ11 factory terminated patch cords as Siemon or its equal and approved equivalent between Data outlet and Telephone handsets.	40	No.		
2.06	1M, RJ45-RJ45 Cat 6A UTP factory terminated patch cords as Siemon or its equal and approved equivalent to be used in cabinet.	40	No.		
2.07	IDC (Insulation displacement connectors) - 1M, S110-RJ45 Cat 6 UTP factory terminated patch cords Jacks as Siemon or its equal and approved equivalent to be used in cabinet.	40	No.		
2.01	IDC voice termination kit.	3	No.		
	Sub-Total C/F to Next Page				
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)

Sub-Total B/F from Previous Page

3.00	BACKBONE CABLING AND GENERAL REQUIREMENTS				
3.01	1000BASE X 8-Core Fibre Optic Cable as data backbone to Server Room complete with connectors and all terminations to active components.	80	Lm.		
3.02	24 Port Fibre Optic Patch Panel as Siemon or its equal and approved equivalent.	1	No.		
3.03	1000Base-SX Multicore SFP fibre modules as CISCO or approved equivalent.	4	No.		
3.04	Dual Fibre optic patch leads.	8	No.		
3.05	Cable Ties and Self Adhesive Labels for Cable Labelling (Packets of 200 Labels each).	1	Item		
3.06	450mm x 50mm deep Deep Perfotrated GI cable tray complete with all accessories As Manufactured by Power Technics or approved equivalent.	60	Lm.		
4.00	CABINETS, PATCH PANELS & SWITCHES				
4.01	9U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	4	No.		
4.02	22U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	2	No.		
4.03	48 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	1	No.		
4.04	48 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	1	No.		
4.05	24 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	2	No.		
4.06	24 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	2	No.		
4.07	2U Cable Manager/Organizers as Siemon SA002021 or its equal and approved equivalent.	8	No.		
4.08	240Vac (1-Φ), 50Hz, 3KVA, Rack Mountable Fully-accessorized Double Conversion Smart Line Interactive Uninterruptible Power Supply (UPS) unit; TRUE Online INCLUDING Batteries with USB and Serial Port . As APC Smart-UPS RM SMT3000 RM 2U (240V), MECER or Approved equivalent.	1	No.		

Sub-Total C/F to Next Page

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
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Sub-Total B/F from Previous Page

4.09

Grounding and bounding kit complete with 50mm diameter copper bounding bar and 6mm thick green and yellow wire. The Earthing of the system is subject to the approval of the Engineer.

1

Lot

5.00

## ACTIVE COMPONENTS

5.01

48 Port Edge Switch as Described in the particular specifications.

1

No.

5.02

24 Port Edge Switch as Described in the particular specifications.

1

No.

5.03

Long Range Dual-band Wi-Fi Router/AP/Range Extender, 300mW, 802.11n Wi-Fi long range high power Access Point wireless technology and virtual management controller software package to cover at least 30m radius (range) and with PoE capabilities complete with antennae, power adaptor and all accessories. As Ubiquiti U6-Pro; UniFi Access Point WiFi 6 Pro, Cisco Access Point 2702I-E-K9 or equal and approved equivalent.

4

No.

6.00

## AUXILIARY EQUIPMENT

Any other items necessary to complete the structured cabling & IP EPABX system satisfactorily. (List and give quantities of the items)

1

Lot

i).....

ii).....

iii).....

Total for Schedule No. 1: Ground Floor - Str. Cab. &amp; IP PBX Sys. C/F to Price Collection Page

SCHEDULE NO. 2: FIRST FLOOR - STRUCTURED CABLING & IP EPABX SYSTEM

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
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A.1	STRUCTURED CABLING & IP EPABX <i>Supply, Deliver To Site, Install, Configure, Test and Commission the following:-</i>			
1.00	TELEPHONE EQUIPMENT			
1.01	Standard IP telephone set Enhanced network connectivity with Power over Ethernet as Cisco SPA 508G 8-Line IP Phone or equal and approved equivalent for the following stations:-			
	a) Office	3	No.	
1.02	Digital Executive telephone instruments for executive offices complete with telephone cord and termination block as per technical specifications.	3	No.	
1.03	Allow for terminating, testing and Labelling all circuits.	1	Item	
1.04	10 pair MDF Box Telephone Discase.	1	No.	
2.00	HORIZONTAL DATA/TELEPHONY CABLING			
2.01	1M RJ45-RJ45 Cat 6A UTP factory terminated patch cord as Siemons or approved equivalent to be used in cabinet.	34	No.	
2.02	Cat 6A UTP 4-pair cable as Siemons or approved equivalent laid between cabinet and work station.	740	Lm.	
2.03	3M RJ45-RJ45 Cat 6 A UTP factory terminated patch cord as Siemons or approved equivalent to be used at work station (outlet plates).	26	No.	
2.04	RJ45 Cat 6 UTP (Dual) Data and Voice outlet complete with faceplate and labelling system as Siemons or approved equivalent.	18	No.	
2.05	3M, RJ45-RJ11 factory terminated patch cords as Siemon or its equal and approved equivalent between Data outlet and Telephone handsets.	80	No.	
2.06	1M, RJ45-RJ45 Cat 6A UTP factory terminated patch cords as Siemon or its equal and approved equivalent to be used in cabinet.	80	No.	
2.07	IDC (Insulation displacement connectors) - 1M, S110-RJ45 Cat 6 UTP factory terminated patch cords Jacks as Siemon or its equal and approved equivalent to be used in cabinet.	80	No.	
2.08	IDC voice termination kit.	3	No.	
3.00	BACKBONE CABLING AND GENERAL REQUIREMENTS			
3.01	1000BASE X 8-Core Fibre Optic Cable as data backbone to Server Room complete with connectors and all terminations to active components.	75	Lm.	
3.02	24 Port Fibre Optic Patch Panel as Siemon or its equal and approved equivalent.	1	No.	

Sub-Total C/F to Next Page

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
3.03	1000Base-SX Multicore SFP fibre modules as CISCO or approved equivalent.	4	No.		
3.04	Dual Fibre optic patch leads.	8	No.		
3.05	Cable Ties and Self Adhesive Labels for Cable Labelling (Packets of 200 Labels each).	1	Item		
3.06	450mm x 50mm deep Deep Perfotrated GI cable tray complete with all accessories As Manufactured by Power Technics or approved equivalent.	60	Lm.		
4.00	CABINETS, PATCH PANELS & SWITCHES				
4.01	9U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	4	No.		
4.02	22U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	2	No.		
4.03	42U Free standing equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	1	No.		
4.04	48 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	2	No.		
4.05	48 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	2	No.		
4.06	24 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	4	No.		
4.07	24 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	4	No.		
4.08	2U Cable Manager/Organizers as Siemon SA002021 or its equal and approved equivalent.	10	No.		
4.09	240Vac (1-Φ), 50Hz, 3KVA, Rack Mountable Fully-accessorized Double Conversion Smart Line Interactive Uninterruptible Power Supply (UPS) unit; TRUE Online INCLUDING Batteries with USB and Serial Port. As APC Smart-UPS RM SMT3000 RM 2U (240V), MECER or Approved equivalent.	1	No.		
4.10	Grounding and bounding kit complete with 50mm diameter copper bounding bar and 6mm thick green and yellow wire. The Earthing of the system is subject to the approval of the Engineer.	1	Lot		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
5.00	ACTIVE COMPONENTS				
5.01	48 Port Edge Switch as Described in the particular specifications.	2	No.		
5.02	24 Port Edge Switch as Described in the particular specifications.	4	No.		
5.03	Long Range Dual-band Wi-Fi Router/AP/Range Extender, 300mW, 802.11n Wi-Fi long range high power Access Point wireless technology and virtual management controller software package to cover at least 30m radius (range) and with PoE capabilities complete with antennae, power adaptor and all accessories. As Ubiquiti U6-Pro; UniFi Access Point WiFi 6 Pro, Cisco Access Point 2702I-E-K9 or equal and approved equivalent.	4	No.		
6.00	AUXILIARY EQUIPMENT Any other items necessary to complete the structured cabling & IP EPABX system satisfactorily. (List and give quantities of the items)  i)..... ii)..... iii).....	1	Lot		
Total for Schedule No. 2: First Floor - Str. Cab. & IP PBX Sys. C/F to Price Collection Page					

# SCHEDULE NO. 3: SECOND FLOOR - STRUCTURED CABLING & IP EPABX SYSTEM

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	STRUCTURED CABLING & IP EPABX <i>Supply, Deliver To Site, Install, Configure, Test and Commission the following:-</i>				
1.00	TELEPHONE EQUIPMENT				
1.01	Standard IP telephone set Enhanced network connectivity with Power over Ethernet as Cisco SPA 508G 8-Line IP Phone or equal and approved equivalent for the following stations:-				
	a) Reception	1	No.		
1.02	Digital Executive telephone instruments for executive offices complete with telephone cord and termination block as per technical specifications.	1	No.		
1.03	Allow for terminating, testing and Labelling all circuits.	1	Item		
1.04	10 pair MDF Box Telephone Discase.	1	No.		
2.00	HORIZONTAL DATA/TELEPHONY CABLING				
2.01	1M RJ45-RJ45 Cat 6A UTP factory terminated patch cord as Siemons or approved equivalent to be used in cabinet.	34	No.		
2.02	Cat 6A UTP 4-pair cable as Siemons or approved equivalent laid between cabinet and work station.	440	Lm.		
2.03	3M RJ45-RJ45 Cat 6 A UTP factory terminated patch cord as Siemons or approved equivalent to be used at work station (outlet plates).	26	No.		
2.04	RJ45 Cat 6 UTP (Dual) Data and Voice outlet complete with faceplate and labelling system as Siemons or approved equivalent.	18	No.		
2.05	3M, RJ45-RJ11 factory terminated patch cords as Siemon or its equal and approved equivalent between Data outlet and Telephone handsets.	80	No.		
2.06	1M, RJ45-RJ45 Cat 6A UTP factory terminated patch cords as Siemon or its equal and approved equivalent to be used in cabinet.	80	No.		
2.07	IDC (Insulation displacement connectors) - 1M, S110-RJ45 Cat 6 UTP factory terminated patch cords Jacks as Siemon or its equal and approved equivalent to be used in cabinet.	80	No.		
2.08	IDC voice termination kit.	3	No.		
3.00	BACKBONE CABLING AND GENERAL REQUIREMENTS				
3.01	1000BASE X 8-Core Fibre Optic Cable as data backbone to Server Room complete with connectors and all terminations to active components.	75	Lm.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
3.02	24 Port Fibre Optic Patch Panel as Siemon or its equal and approved equivalent.	1	No.		
3.03	1000Base-SX Multicore SFP fibre modules as CISCO or approved equivalent.	4	No.		
3.04	Dual Fibre optic patch leads.	8	No.		
3.05	Cable Ties and Self Adhesive Labels for Cable Labelling (Packets of 200 Labels each).	1	Item		
3.06	450mm x 50mm deep Deep Perforated GI cable tray complete with all accessories As Manufactured by Power Technics or approved equivalent.	50	Lm.		
4.00	CABINETS, PATCH PANELS & SWITCHES				
4.01	9U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	4	No.		
4.02	22U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	2	No.		
4.03	48 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	1	No.		
4.04	48 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	1	No.		
4.05	24 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	2	No.		
4.06	24 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	2	No.		
4.07	2U Cable Manager/Organizers as Siemon SA002021 or its equal and approved equivalent.	6	No.		
4.08	240Vac (1-Φ), 50Hz, 3KVA, Rack Mountable Fully-accessorized Double Conversion Smart Line Interactive Uninterruptible Power Supply (UPS) unit; TRUE Online INCLUDING Batteries with USB and Serial Port. As APC Smart-UPS RM SMT3000 RM 2U (240V), MECER or Approved equivalent.	1	No.		
4.09	Grounding and bounding kit complete with 50mm diameter copper bounding bar and 6mm thick green and yellow wire. The Earthing of the system is subject to the approval of the Engineer.	1	Lot		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
5.00	ACTIVE COMPONENTS				
5.01	48 Port Edge Switch as Described in the particular specifications.	1	No.		
5.02	24 Port Edge Switch as Described in the particular specifications.	1	No.		
5.03					
	Long Range Dual-band Wi-Fi Router/AP/Range Extender, 300mW, 802.11n Wi-Fi long range high power Access Point wireless technology and virtual management controller software package to cover at least 30m radius (range) and with PoE capabilities complete with antennae, power adaptor and all accessories. As Ubiquiti U6-Pro; UniFi Access Point WiFi 6 Pro, Cisco Access Point 2702I-E-K9 or equal and approved equivalent.	4	No.		
6.00	AUXILIARY EQUIPMENT				
	Any other items necessary to complete the structured cabling & IP EPABX system satisfactorily. (List and give quantities of the items)	1	Lot		
	i).....				
	ii).....				
	iii).....				
Total for Schedule No. 3: Second Floor - Str. Cab. & IP PBX Sys. C/F to Price Collection Page					

**SCHEDULE NO. 4: THIRD FLOOR - STRUCTURED CABLING & IP EPABX SYSTEM**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	STRUCTURED CABLING & IP EPABX <i>Supply, Deliver To Site, Install, Configure, Test and Commission the following:-</i>				
1.00	TELEPHONE EQUIPMENT				
1.01	Standard IP telephone set Enhanced network connectivity with Power over Ethernet as Cisco SPA 508G 8-Line IP Phone or equal and approved equivalent for the following stations:-				
	a) Office	1	No.		
1.02	Digital Executive telephone instruments for executive offices complete with telephone cord and termination block as per technical specifications.	4	No.		
1.03	Allow for terminating, testing and Labelling all circuits.	1	Item		
1.04	10 pair MDF Box Telephone Discase.	1	No.		
2.00	HORIZONTAL DATA/TELEPHONY CABLING				
2.01	1M RJ45-RJ45 Cat 6A UTP factory terminated patch cord as Siemons or approved equivalent to be used in cabinet.	34	No.		
2.02	Cat 6A UTP 4-pair cable as Siemons or approved equivalent laid between cabinet and work station.	480	Lm.		
2.03	3M RJ45-RJ45 Cat 6 A UTP factory terminated patch cord as Siemons or approved equivalent to be used at work station (outlet plates).	40	No.		
2.04	RJ45 Cat 6 UTP (Dual) Data and Voice outlet complete with faceplate and labelling system as Siemons or approved equivalent.	20	No.		
2.05	3M, RJ45-RJ11 factory terminated patch cords as Siemon or its equal and approved equivalent between Data outlet and Telephone handsets.	80	No.		
2.06	1M, RJ45-RJ45 Cat 6A UTP factory terminated patch cords as Siemon or its equal and approved equivalent to be used in cabinet.	80	No.		
2.07	IDC (Insulation displacement connectors) - 1M, S110-RJ45 Cat 6 UTP factory terminated patch cords Jacks as Siemon or its equal and approved equivalent to be used in cabinet.	80	No.		
2.08	IDC voice termination kit.	4	No.		
3.00	BACKBONE CABLING AND GENERAL REQUIREMENTS				
3.01	1000BASE X 8-Core Fibre Optic Cable as data backbone to Server Room complete with connectors and all terminations to active components.	90	Lm.		
	Sub-Total C/F to Next Page				



Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
3.02	24 Port Fibre Optic Patch Panel as Siemon or its equal and approved equivalent.	1	No.		
3.03	1000Base-SX Multicore SFP fibre modules as CISCO or approved equivalent.	4	No.		
3.04	Dual Fibre optic patch leads.	8	No.		
3.05	Cable Ties and Self Adhesive Labels for Cable Labelling (Packets of 200 Labels each).	1	Item		
3.06	450mm x 50mm deep Deep Perforated GI cable tray complete with all accessories As Manufactured by Power Technics or approved equivalent.	60	Lm.		
4.00	CABINETS, PATCH PANELS & SWITCHES				
4.01	9U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	4	No.		
4.02	22U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	2	No.		
4.03	48 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	1	No.		
4.04	48 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	1	No.		
4.05	24 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	2	No.		
4.06	24 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	2	No.		
4.07	2U Cable Manager/Organizers as Siemon SA002021 or its equal and approved equivalent.	6	No.		
4.08	240Vac (1-Φ), 50Hz, 3KVA, Rack Mountable Fully-accessorized Double Conversion Smart Line Interactive Uninterruptible Power Supply (UPS) unit; TRUE Online INCLUDING Batteries with USB and Serial Port. As APC Smart-UPS RM SMT3000 RM 2U (240V), MECER or Approved equivalent.	1	No.		
4.09	Grounding and bounding kit complete with 50mm diameter copper bounding bar and 6mm thick green and yellow wire. The Earthing of the system is subject to the approval of the Engineer.	1	Lot		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
5.00	ACTIVE COMPONENTS				
5.01	48 Port Edge Switch as Described in the particular specifications.	1	No.		
5.02	24 Port Edge Switch as Described in the particular specifications.	1	No.		
5.03					
	Long Range Dual-band Wi-Fi Router/AP/Range Extender, 300mW, 802.11n Wi-Fi long range high power Access Point wireless technology and virtual management controller software package to cover at least 30m radius (range) and with PoE capabilities complete with antennae, power adaptor and all accessories. As Ubiquiti U6-Pro; UniFi Access Point WiFi 6 Pro, Cisco Access Point 2702I-E-K9 or equal and approved equivalent.	4	No.		
6.00	AUXILIARY EQUIPMENT				
	Any other items necessary to complete the structured cabling & IP EPABX system satisfactorily. (List and give quantities of the items)	1	Lot		
	i).....				
	ii).....				
	iii).....				
Total for Schedule No. 4: Third Floor - Str. Cab. & IP PBX Sys. C/F to Price Collection Page					

**SCHEDULE NO. 5: GATE HOUSE - STRUCTURED CABLING & IP EPABX SYSTEM**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	STRUCTURED CABLING & IP EPABX <i>Supply, Deliver To Site, Install, Configure, Test and Commission the following:-</i>				
1.00	TELEPHONE EQUIPMENT				
1.01	Standard IP telephone set Enhanced network connectivity with Power over Ethernet as Cisco SPA 508G 8-Line IP Phone or equal and approved equivalent for the following stations:-				
	a) Security desk	1	No.		
1.02	Allow for terminating, testing and Labelling all circuits.	1	Item		
1.03	10 pair MDF Box Telephone Discase.	1	No.		
2.00	HORIZONTAL DATA/TELEPHONY CABLING				
2.01	1M RJ45-RJ45 Cat 6A UTP factory terminated patch cord as Siemons or approved equivalent to be used in cabinet.	10	No.		
2.02	Cat 6A UTP 4-pair cable as Siemons or approved equivalent laid between cabinet and work station.	440	Lm.		
2.03	3M RJ45-RJ45 Cat 6 A UTP factory terminated patch cord as Siemons or approved equivalent to be used at work station (outlet plates).	10	No.		
2.04	RJ45 Cat 6 UTP (Dual) Data and Voice outlet complete with faceplate and labelling system as Siemons or approved equivalent.	10	No.		
2.05	3M, RJ45-RJ11 factory terminated patch cords as Siemon or its equal and approved equivalent between Data outlet and Telephone handsets.	20	No.		
2.06	1M, RJ45-RJ45 Cat 6A UTP factory terminated patch cords as Siemon or its equal and approved equivalent to be used in cabinet.	10	No.		
2.07	IDC (Insulation displacement connectors) - 1M, S110-RJ45 Cat 6 UTP factory terminated patch cords Jacks as Siemon or its equal and approved equivalent to be used in cabinet.	8	No.		
2.08	IDC voice termination kit.	2	No.		
3.00	BACKBONE CABLING AND GENERAL REQUIREMENTS				
3.01	1000BASE X 8-Core Fibre Optic Cable as data backbone to Server Room complete with connectors and all terminations to active components.	20	Lm.		
3.02	24 Port Fibre Optic Patch Panel as Siemon or its equal and approved equivalent.	1	No.		
3.03	1000Base-SX Multicore SFP fibre modules as CISCO or approved equivalent.	2	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				
3.04	Dual Fibre optic patch leads.	4	No.		
3.05	Cable Ties and Self Adhesive Labels for Cable Labelling (Packets of 200 Labels each).	1	Item		
3.06	450mm x 50mm deep Deep Perfotrated GI cable tray complete with all accessories As Manufactured by Power Technics or approved equivalent.	20	Lm.		
4.00	CABINETS, PATCH PANELS & SWITCHES				
4.01	9U Free standing or wall-mounted equipment and server cabinet with lockable door, low noise (low Db) fans and power outlet sockets (Additional 6-Way power extension cable, surge protected within the cabinet).	1	No.		
4.02	24 Port RJ45 Cat 6A Data Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	4	No.		
4.03	24 Port RJ45 Cat 6A Voice Patch Panel for UTP termination as Siemon or its equal and approved equivalent.	4	No.		
4.04	2U Cable Manager/Organizers as Siemon SA002021 or its equal and approved equivalent.	4	No.		
4.05	240Vac (1-Φ), 50Hz, 3KVA, Rack Mountable Fully-accessorized Double Conversion Smart Line Interactive Uninterruptible Power Supply (UPS) unit; TRUE Online INCLUDING Batteries with USB and Serial Port. As APC Smart-UPS RM SMT3000 RM 2U (240V), MECER or Approved equivalent.	1	No.		
4.06	Grounding and bounding kit complete with 50mm diameter copper bounding bar and 6mm thick green and yellow wire. The Earthing of the system is subject to the approval of the Engineer.	1	Lot		
5.00	ACTIVE COMPONENTS				
5.01	24 Port Edge Switch as Described in the particular specifications.	1	No.		
5.02	Long Range Dual-band Wi-Fi Router/AP/Range Extender, 300mW, 802.11n Wi-Fi long range high power Access Point wireless technology and virtual management controller software package to cover at least 30m radius (range) and with PoE capabilities complete with antennae, power adaptor and all accessories. As Ubiquiti U6-Pro; UniFi Access Point WiFi 6 Pro, Cisco Access Point 2702I-E-K9 or equal and approved equivalent.	1	No.		
	Sub-Total C/F to Next Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
6.00	Sub-Total B/F from Previous Page  AUXILIARY EQUIPMENT Any other items necessary to complete the structured cabling & IP EPABX system satisfactorily. (List and give quantities of the items)  i)..... ii)..... iii).....	1	Lot		
Total for Schedule No. 5: Gate House - Structured Cabling & IP PBX Sy. C/F to Pr. Col. Page					

Item	Description	Amount (Kshs)
1.0	Total for Schedule No. 1: Ground Floor - Structured Cabling & IP EPABX System B/F	
2.0	Total for Schedule No. 2: First Floor - Structured Cabling & IP EPABX System B/F	
3.0	Total for Schedule No. 3: Second Floor - Structured Cabling & IP EPABX System B/F	
4.0	Total for Schedule No. 4: Third Floor - Structured Cabling & IP EPABX System B/F	
5.0	Total for Schedule No. 7: Gate House - Structured Cabling & IP EPABX System B/F	
Total for Bill No. 5: Structured Cabling & IP EPABX System C/F to Summary Page		

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	AUDIOVISUAL EQUIPMENT <i>Supply, Safely Deliver To Site, Install, Test and Commission the following:-</i>				
1.00	AUDIO EQUIPMENT				
1.01	True Surround Sound, 1000W (RMS), 5.1CH Soundbar System. DTS, Dolby Digital, Bluetooth/NFC, Wi-Fi (DLNA) enabled with Bravia Sync/HDMI CEC. As Sony HT-S700RF or equal and approved equivalent.	3	No.		
1.02	4K HDMI Cable, Flat-Shaped Design, 6M Long (20ft.); 18 Gbps bandwidth support 3840*2160 @60Hz High Dynamic Range (HDR) video, dynamic 4K@60Hz gaming, Dolby True HD 7.1 audio and 3D resolution up to 1080P Full HD at 60 Hz. Audio Return Channel (ARC), HDMI Ethernet Channel (HEC) Certified. As Vention, Sony or equal and approved equivalent. (For item 1.01 above)	3	No.		
1.02	Cable management system for item 1.01 above.	1	Lot		
2.00	DISPLAY UNITS, POWER SUPPLY & CABLES				
2.01	A fully accessorised and operational 75 inch 4K (UHD) HDR Android/Google, Alexa Voice Control, Wi-Fi, DNA-enabled, Digital LCD LED TV that supports USB, HDMI, DVI, VGA inputs, Optical Audio and Component (CVBS common) video output, Ethernet/ RS-232C, Dolby Digital Audio Sound Built-in speaker System c/w remote control and wall-mount bracket. As SONY XR-75X90J or equal and approved equivalent.	10	No.		
2.02	Appropriately rated surge protectors/diverter (TV Guards) for item 2.01.	10	No.		
2.03	Suitably sized Equipment Power Supply Unit (PSU) for item 2.01.	10	No.		
2.04	4K HDMI Cable, Flat-Shaped Design, 6M Long (20ft.); 18 Gbps bandwidth support 3840*2160 @60Hz High Dynamic Range (HDR) video, dynamic 4K@60Hz gaming, Dolby True HD 7.1 audio and 3D resolution up to 1080P Full HD at 60 Hz. Audio Return Channel (ARC), HDMI Ethernet Channel (HEC) Certified. As Vention, Sony or equal and approved equivalent.	10	No.		
2.05	Cable management system for item 1.01 above.	1	Lot		
2.06	Electric Projection Screen (Retractable) as described in the Particular Specifications.	6	No.		
2.07	Projector complete with power and signal cabling to item 1.06 as described in the Particular Specifications.	6	No.		
2.08	Cabling between Equipment, Audio and Video Output Devices.	1	Lot		
	Sub-Total C/F to Next Page				
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)

Sub-Total B/F from Previous Page

## A.2 VIDEO CONFERENCING EQUIPMENT

*Supply, Safely Deliver To Site, Install In the Executive Boardroom, Test and Commission the following:-*

## 1.00 VIDEO EQUIPMENT KIT

1.01 Video Conferencing Kit Comprising Codec Unit, SCOPIA XT Premium Camera with cable, 3-way Microphone POD with cable, Remote Control Unit and Batteries, HDMI Cable, Ethernet Cable for LAN 4m, Power Supply and Power Cable and DVI-I to VGA converter compatible with PCs supporting VGA outputs only. As Avaya Scopia XT5000 or equal and approved equivalent.

1

No.

1.02 75" 4K (UHD), HDR LED Smart Android/Google TV Screen with *video conferencing capabilities* complete with mounting brackets and all other necessary accessories. As Sony, Samsung, LG or equal and approved equivalent.

1

No.

## 2.00 DVR/P, SWITCHES, CABLES &amp; CABINETS

2.01 Fully accessorised *DV-Cam Recorder/Player*. As Sony or equal and approved equivalent.

1

No.

2.02 Fully accessorised and functional *Video Switcher Interface*. As Kramer or equal and approved equivalent.

1

No.

2.03 Fully accessorised and functional *Matrix Scaler Switcher*. As Kramer or equal and approved equivalent.

1

No.

2.04 4K HDMI Cable, Flat-Shaped Design, 20M Long; 18 Gbps bandwidth support 3840\*2160 @60Hz High Dynamic Range (HDR) video, dynamic 4K@60Hz gaming, Dolby True HD 7.1 audio and 3D resolution up to 1080P Full HD at 60 Hz. Audio Return Channel (ARC), HDMI Ethernet Channel (HEC) Certified. As Vention, Sony or equal and approved equivalent.

2

No.

2.05 Table box with HDMI(2), USB(A), USB(Type C), RJ-45, VGA+Audio power plug

1

No.

2.06 Assorted AV Cabling between Equipment and Video Output Devices for proper functioning of the video conferencing system.

1

Item

2.07 22U Equipment racks cabinets with shelves, casings, and mountings. As Arnet or equal and approved equivalent.

1

No.

2.08 Cable management system for the video conferencing installation.

1

Lot



	Sub-Total C/F to Next Page				
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
2.09	Sub-Total B/F from Previous Page  Any other items necessary to complete the installation of the audiovisual and video conferencing equipment satisfactorily. (List and give quantities of the items)  i)..... ii)..... iii).....	1	Lot		
Total for Bill No. 6: Audiovisual & Video Conferencing Equipment C/F to Summary Page					

## BILL NO. 7: CENTRALISED ANTENNA SYSTEM &amp; OBSTRUCTION LIGHTING

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	CENTRALISED DSTV ANTENNA SYSTEM <i>Supply, Deliver To Site, Install, Test and Commission Centralised Digital Satellite Television (DSTV) System comprising the following:-</i>				
1.00	DISH ANTENNA SYSTEM				
1.01	Satellite Receiver Dish for DSTV complete with mounting brackets, Low-Noise Block (LNB); and installation thereof.	1	No.		
1.02	High Gain Signal Amplifier (Booster) Unit; Min: 20dB Gain, Outdoor, Mast/Wall Surface Mounted.	1	No.		
2.00	ANTENNA SIGNAL BOOSTER (SPLITTER)				
2.01	8 way Pre-amplified DTV Signal Splitter as Ellies or equal and approved equivalent.	1	No.		
3.00	SET-TOP BOX (STB)				
3.01	DSTV Explora Decoder Unit c/w all accessories.	4	No.		
4.00	HDMI SIGNAL SPLITTER				
4.01	8 way 4K HDMI Signal Splitter c/w remote control and all necessary accessories as Vention, Sony or equal and approved equivalent.	2	No.		
5.00	RF & AV CABLES				
5.01	Supply and install heavy duty RF Coaxial RG6 Cable in 100m rolls as Astel or equal and approved equivalent.	2	No		
5.02	4K HDMI Cable, Flat-Shaped Design, 40M Long; 18 Gbps bandwidth support 3840*2160 @60Hz High Dynamic Range (HDR) video, dynamic 4K@60Hz gaming, Dolby True HD 7.1 audio and 3D resolution up to 1080P Full HD at 60 Hz. Enhanced Audio Return Channel (eARC), HDMI Ethernet Channel (HEC) Certified as Vention, Sony or equal and approved equivalent.	4	No.		
5.03	Ditto but for 20M Length.	6	No.		
6.00	CABLE TRUNKING				
6.01	16 SWG, (300 x 300 x 300) mm <sup>3</sup> galvanised steel draw box for TV works.	2	No.		
6.02	Provide 25x25mm (2m pieces) self-adhesive plastic cable trunking for the HDMI Cable System. Allow for colour change to client's detail to match the existing room colour. The trunking to angular section fixed at skirting level.	200	Pcs		
	Sub-Total C/F to Next Page				
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)

Sub-Total B/F from Previous Page

## A.2 AVIATION WARNING LIGHTING SYSTEM

*Supply, Deliver To Site, Install, Test and Commission  
Obstruction Lighting System comprising the following:-*

## 1.00 LIGHTING POINTS

1.01 Lighting points wired in 3x1.5mm<sup>2</sup> SC PVC insulated Copper  
Cables drawn in concealed 20mm diameter HG PVC conduits  
complete with all necessary accessories excluding switch  
plates and fittings for:-

a) Unswitched

1

No.

## 2.00 LIGHTING FITTINGS

2.01 Lighting fittings c/w all accessories including lamps of  
appropriate wattage and colour rendering, all IP66 rated, as  
follows:-

(a) Type A6

1

No.

2.02 Any other items necessary to complete the installation of the  
Centralised Antenna and Obstruction Lighting systems  
satisfactorily. (List and give quantities of the items)

1

Lot

i).....

ii).....

iii).....

Total for Bill No. 7: Centralised Antenna Sys. & Obstruction Lightin' C/F to Summary Page

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	MACHINE-ROOM-LESS (MRL) LIFTS				
1.00	Import, supply, deliver to site, install, test and commission a Stainless Steel 1030kg (13 passenger capacity) Single-Sided (Conventional) Machine-Room-Less (MRL) Elevator (Lift) unit for general building users' access (Lifts A & B) complete with all necessary accessories as fully described in particular specifications. To be manufactured as KONE, Stiltz Duo, Arrow Lift or equal and approved equivalent.	2	No.		
1.01	Associated builders works.	1	Lot		
1.02	Associated electrical works.	1	Lot		
1.03	One Year free maintenance and warranty cost.	1	Lot		
1.04	Annual maintenance cost after the first year free maintenance and warranty.	1	Lot		
1.05	Allow for training of 3No. client's staff on the operation and maintenance of the shaftless unit.	1	Item		
1.06	Allow for mandatory 1 week (7 <i>working days excluding travelling days</i> ) overseas factory inspection and approvals by the Project Electrical Engineer (PEE), the project manager (PM), Project Architect (PA) and 2No. Employer's representatives as fully described in particular specifications.	1	Item		
1.07	Any other items necessary to complete the lift infrastructure installation satisfactorily. (List and give quantities of the items)  i)..... ii)..... iii).....	1	Lot		
Total for Bill No. 8: Vertical Transport System - Lifts C/F to Summary Page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<i>Supply and deliver to the Project Engineer the following stationery to be used in running the project:- These shall then be delivered upon their first demand, subject to approval, to the Office of the Chief Engineer (Electrical) immediately after the award to the Successful Tenderer.</i>				
1.00	Conqueror photocopying paper white A4 80g/m <sup>2</sup> (Reams), 500 Sheets.	1	No.		
1.01	Conqueror printing paper cream laid A4 80g/m <sup>2</sup> (Reams), 500 Sheets.	1	No.		
1.02	Conqueror printing paper blue A4 80g/m <sup>2</sup> (Reams), 500 Sheets.	1	No.		
1.03	Toner cartridges:-				
	i) HP C4911A Ink Catridge (82), Cyan, 69ml	2	No.		
	ii) HP C4844A Ink Catridge (10), Black, 69ml	2	No.		
	iii) HP C4912A Ink Catridge (82), Magenta, 69ml	2	No.		
	iv) HP C4913A Ink Catridge (82), Yellow, 69ml	2	No.		
1.04	HP LaserJet Print Cartridges:-				
	i) Q5949A	4	No.		
	ii) Q6511A	2	No.		
	iii) Q7553A	4	No.		
	iv) CE505A	2	No.		
	v) PQ5949A	2	No.		
1.05	8 GB DDR3 RAM for Laptop Computer as Samsung or equal and approved equivalent.	2	No.		
1.06	Intel Core i-7, 3.2 GHz Processor for Laptop Computer.	1	No.		
1.07	Laptop Computer Intel Core i7 8th generation processor/3.2GHz Quad-core/32GB System RAM/1TB SSD 2TB HDD/DVD RW/ win10/HD19.6" Screen/carry case with 4gb Nvidia Quadro P2000 as Hp Zbook 15 G5.	2	No.		
1.08	Apple 12.9" iPad Pro M2 (512GB, Wi-Fi+5G LTE) with a Quad Core 3.0GHz.	2	No.		
1.09	2TB Portable Harddisk as Hp/ Transcend/Toshiba.	2	No.		
Total for Bill No. 9: Project Engineer's Stationery C/F to Summary Page					

### **SCHEDULE OF LIGHT FITTINGS**

Item	Description
	Light Fittings complete with all accessories and lamps as follows:-
i)	<b>Type A</b> 5-Light Chandelier. Features alabaster glass shades that sit atop the sleek fixture arms paired with a brushed Nickel finish. Lamps: 5x8W SBC Warm White Candle LED. As <b>Micromark or equal and approved equivalent</b> .
ii)	<b>Type B</b> 3-Light cluster pendant light fixture with a black finish, exposed hardware and clear glass shades. Adjustable fabric cords allow for customization of the length of the lights. Quality metal construction with a black finish and clear glass shades. Measures 12 inches wide; clear glass shades measure 3.5 inches in diameter by 8 inches high. Adjustable cords, 12.75 inches minimum hanging height and 57 inches maximum hanging height. Uses three E26-base LED bulbs 60W max., 3000K (Warm White), dimmable when used with a dimmable bulb and compatible dimmer switch. As <b>Thorn, Micromark or equal and approved equivalent</b> .
iii)	<b>Type C</b> Semi Flush pendant LED Luminaire antique brass finish alabaster style acid glass. Acid glass diffuser. Fitted with Lamp: 13W BC round Energy Saving. As <b>Micromark Ashby or equal and approved equivalent</b> .
iv)	<b>Type D</b> 1 Light Pendant Satin Brass Finish, Alabaster style acid glass shade employing 14W LED. As Micromark Mandalay or equal and approved equivalent.
v)	Type E Modern LED Ceiling Light, 40W, 3000-6500K (Tri-Colour+RGB), 15.7 inch (0.4m Dia.), Dimmable, Brightness Adjustable LED Fixture, Ceiling Surface Mount. As <b>Annaror RGB, Oowolf or equal and approved equivalent</b> .
vi)	<b>Type EXIT</b> Self-contained double sided EXIT sign with 8W LED lamp for non-maintained emergency lighting for 3 hour duration. As <b>Sapphire or equal and approved equivalent</b> .
vii)	<b>Type F</b> Modern 4-Light flush mounted ceiling LED Luminaire. Size: 600mm Square Lamps, smooth-curved edges: 4x18W Square Headers Fixture. 6500K (Daylight). As <b>Philips, Micromark or equal and approved equivalent</b> .
viii)	<b>Type G</b> 60W, 600mm Square, Recessed LED Panel Light, 5400lm, 6500K (Daylight). As <b>Philips, EOS or equal and approved equivalent</b> .
ix)	<b>Type H</b> 60W, 600mm Square, Surface LED Panel Light, 5400lm, 6500K (Daylight). As <b>Philips, EOS or equal and approved equivalent</b> .
x)	<b>Type I</b> 4x40W, 600mm Square Modular Prismatic LED Luminaire, Ceiling Flush (Surface) Mounted, designed for use in lay-in ceiling grids c/w CAT 2 Louvre retention system, electronic ballast and plug and socket installation method. As <b>Thorn, Philips or an approved equivalent</b> .
xi)	<b>Type J</b> 600mm (2ft.), 1x10W LED Tube/Mirror Strip Modular Luminaire with Prismatic Diffuser, white finish and on/off pull switch. Dual voltage 240/110V c/w 100mA Shaver Unit/Socket Outlet and Hair Dryer. As <b>Micromark, Tronic or equal and approved equivalent</b> .
xii)	<b>Type K</b> Wall uplighter with On/Off Pull Switch Fitted with Lamp: 40W BC Warm Candle LED Lamp or Energy Saving Bulb. As <b>Micromark Mozart Wall Uplighter or equal and approved equivalent</b> .

Item	Description
	Light Fittings complete with all accessories and lamps as follows:-
xiii)	<b>Type L</b> 28W, Slim Recessed LED Downlight, 2000lm, 6500K (Daylight). As <b>Philips Coreline slim downlight or equal and approved equivalent</b> .
xiv)	<b>Type M</b> 15W, 840lm, 200mm Diameter, LED Low-Glare Dimmable Downlight, 3000-6500K (Tri-Colour), 35000 Hrs (LED), IP54, satin finish, aluminium reflector and silver effect and suitable for recessed installation in standard ceiling. As <b>Maximus or equal and approved equivalent</b> .
xv)	<b>Type N</b> 26W TC-D Ceiling Recessed LED downlight incorporating a thermally optimised, deep drawn aluminium body with IP54 as standard. Fixed or dimmable output or with emergency function. Correlated colour temperature is 6500K (Daylight) with CRI >80 and UGR <22. Overall height <100mm and cut out of 150mm or 200mm Lifetime is 50,000 hours (L80) at Ta 25°C. As <b>Thorn Chalice LED 190 ECO or equal and approved equivalent</b> .
xvi)	Type O 13W LED downlight incorporating thermally optimised, deep drawn, 230Lm/W, 6500K (Daylight), aluminium body with IP44 standard. As <b>Thorn Cetus LED, Philips or equal and approved equivalent</b> .
xvii)	<b>Type P</b> universal robust and elegant wall mounted luminaires for wall or façade decorative downlighting. Available in 2 sizes, narrow or medium beam, one or two windows, with 2x3W LEDs, 3000K (Warm White), grey aluminium body sealed to IP65, gear integrated. Size 1: Ø90mm; Size 2: Ø140mm. As <b>Thorn Cesar Wall or equal and approved equivalent</b> .
xviii)	<b>Type Q</b> Aluminium bodied, semi-conical wall light for surface mounting with opal polycarbonate diffuser employing 28W LED. As <b>Thorn Avenue Wall 300 II or equal and approved equivalent</b> .
xix)	<b>Type R</b> 40W Surface Mounted LED Outdoor (IP65) Bulkhead with die-cast white aluminium body and opal polycarbonate diffuser, round large with bezel. As <b>Thorn Eyekon or equal and approved equivalent</b> .
xx)	<b>Type S</b> 1x70W HSE Lamp, 5800lm with CRI >20, Aluminium Bulkhead with moulded glass cover for tungsten lamps, IP65 protection. As <b>Eaton AG Bulkhead, Thorn DB Bulkhead or an approved equivalent</b> .
xxi)	<b>Type T</b> IP66 LED Weatherproof 600mm Luminaire, 2x18W, 117Lm/W, 6500K (Daylight) LED, 50000 Hrs Lamp Life, Polycarbonate Housing and Optical Cover. As <b>Thorn Aquaforce Pro, Philips or equal and approved equivalent</b> .
xxii)	<b>Type U</b> 1200mm, 2x36W standard waterproof IP65 fluorescent fitting with injection moulded polycarbonate body and polycarbonate diffuser for T8 lamp with switchstart gear. As <b>Thorn Aquaproof or an approved equivalent</b> .
xxiii)	<b>Type V</b> 1200mm, 1x36W, 4450lm LED bare batten fitting of slim cross section with clip-on cover plate and adjustable end cap system with a detachable LED engine. Switchable or DALI ballast, integral emergency and sensor versions available. As <b>Thorn PopPack LED or equal and approved equivalent</b> .

Item	Description
	Light Fittings complete with all accessories and lamps as follows:-
xxiv)	<b>Type W</b> 28W, 6500K, 3000lm circular (round) recessed modular LED panel luminaire. As <b>Uranus LED Round Panel, Philips SmartBright LED Oyster or equal and approved equivalent.</b>
xxv)	<b>Type X</b> 28W, 6500K, 3000lm, 2D standard circular surface modular LED panel luminaire with polycarbonate body and white trim, polycarbonate opal diffuser and integral control gear, compact tube lamp. As <b>Thorn Superclub or equal and approved equivalent.</b>
xxvi)	<b>Type Y</b> 27W, IP65, 2500lm, LED floodlight. As <b>Philips or equal and approved equivalent.</b>
xxvii)	<b>Type Z</b> 100Watts IP66 High Power, Heavy-duty, Outdoor LED Flood Lights with in-built surge protection, 100Lm/W, 6500K (Daylight) and over 50000 Hrs Lamp Life complete with all necessary accessories. As <b>Ensava, Thorn LEO, Thorn LED Fit, Philips or equal and approved equivalent.</b>
xxviii)	<b>Type A1</b> 300Watts IP66 High Power, Heavy-duty, High Quality Outdoor Solar LED High Quality Outdoor Security Solar LED Street Lights with In-built Photocell light sensor switch, 6500K (Daylight) and over 50000 Hrs Lamp Life complete with all necessary accessories. As <b>Vellmax, Osram, Ensava or equal and approved equivalent.</b>
xxix)	<b>Type A2</b> Semi Flush Pendant Ceiling Fan Luminaire, 42" Ceiling Fans with Retractable Blades, Remote-Controlled, Invisible 4 ABS Fan Blades, Quiet White AC 220V 50/60Hz, 3-Color Temperatures (3000K, 4000K, 6500K), 40W LED, Energy Saving [Energy Class A+], 5400lm, Acrylonitrile Butadiene, Styrene, Metal, Polyvinyl Chloride body. As <b>Cjoy, Phillips or equal and approved equivalent.</b>
xxx)	<b>Type A3</b> 15W/m, RGB+6500K (Daylight) Low Voltage LED Strip Light (Snake Light) in 100mm wide Acrylic Perspex complete with power adapter (PSU module). As <b>Philips or equal and approved equivalent.</b> (Allow for change in colour temperature to architects detail)
xxi)	<b>Type A4</b> 15W/m, RGB+6500K (Daylight) Low Voltage LED Strip Light (Snake Light) complete with power adapter (PSU module). As <b>Philips or equal and approved equivalent.</b> (Allow for change in colour temperature to architects detail)
xxxii)	<b>Type A5</b> Fully-Accessorised, High Intensity, 300W-800W, Monolight (Daylight), Heavy-Duty, Integrated (All-In-One) Flash Kit, Ceiling Strobe Studio Luminaire c/w Standard Aluminium Dish Reflector for Photography with Built-In 2.4 GHz Wireless X System, Compatible with Most TTL Systems. As <b>Visico VL300PLUS, Godox VL300 LED Video Light, Aputure 600D PRO or equal and approved equivalent.</b>
xxxiii)	<b>Type A6</b> Twin Aviation Obstruction (Aircraft Warning/Beacon) LED Lights, 6.5W-20W, Dual-light (Flashing Red – twilight and night-time operations & Flashing White – daytime operations) c/w obstruction light controller and all necessary accessories. As <b>Dialight Vigilant LED LI, Dialight SafeSite, Avlite, S4GA or equal and approved equivalent.</b> (This shall be solar or grid powered at the discretion of the Electrical Engineer)



Item	Description
	Light Fittings complete with all accessories and lamps as follows:-
xxxiv)	<b>Type A7</b> 2W, wall-recessed LED staircase luminaire, 100lm, 2700K (Warm White). As <b>Sirolo Steplight, Cazalla LED Steplight, Lucca 30 Steplight or equal and approved equivalent.</b>
xxxv)	<b>Type A8</b> Elegant 340mm diameter 1200mm/1800mm conical bollard in cast aluminium for indirect lighting; Lamp: 26W TC-TEL compact fluorescent, cap: base GX24q-3. IP54; for building exit staircase lighting. As <b>Thorn Madison Bollard/Uomo Bollard or equal and approved equivalent.</b>
xxxvi)	<b>Type A9</b> Circular section bollard of high vandal resistance with polycarbonate sleeves covering high purity anodised aluminium louvre optical system, 70W HSE, with single triangular tamper resistant bolt for access to lamp and gear; for pavement or walkway lighting. Sealed to IP54. As <b>Thorn Basal or equal and approved equivalent.</b>
xxxvii)	<b>Type A10</b> Aluminium bulkhead with hemispherical bowl, visor and ring, finished white/matt grey/anthracite, using integral gear for 7/18W compact fluorescent lamp, for wall/bollard mounting; for driveway or walkway lighting. As <b>Thorn Equator or equal and approved equivalent.</b>
xxxviii)	<b>Type A11</b> Aluminium bodied conical lantern for post top/wall bracket mounting with opal/clear bowl and copper/stainless steel/perforated/slotted/opal polycarbonate diffuser, finished anthracite. Employing HPS-E/MBF lamp; 70W, Column: 3m tapered aluminium column with or without decorative sleeve, finished copper/stainless steel. Supplied for root/flange mounting; for driveway, parking or walkway lighting. As <b>Thorn Avenue Deco column or equal and approved equivalent.</b>
xxxix)	<b>Type A12</b> Aluminium bodied conical lantern for post top mounting with clear bowl and copper/stainless steel/slotted/holed/lamp shield, finished anthracite, Lamp: HPS-E 110W, cap: E27, Column: 3.5m tapered/108mm Ø/decorative aluminium column/with copper/stainless steel finished sleeve. Supplied for root/flange mounting; for driveway, parking or walkway lighting. As <b>Thorn Avenue XL column or equal and approved equivalent.</b>
xL)	<b>Type A13</b> 500mm Ø prismatic sphere with integral control gear for 70W/100W/150W HPS-E lamps; for pavement lighting. As <b>Thorn S500VP or equal and approved equivalent.</b>
xLi)	<b>Type A14</b> IP66 post top decorative aluminium lantern with 20/30/40W LED packages, powder coated dark grey finish, with prismatic diffuser and a choice of metallised PC copper or stainless steel lampshields. Street or symmetrical distributions, integrated dimming system and coordinated decorative column; for pavement, walkway or driveway lighting. As <b>Thorn Avenue D<sup>2</sup> LED or equal and approved equivalent.</b>
xLii)	<b>Type A15</b> 3.5m tapered/108mm Ø/ decorative aluminium column with copper/stainless steel finished sleeve. Supplied for root/flange/pillar-top (column) mounting; for walkway, driveway or perimeter wall lighting. As <b>Thorn Avenue XL Column or equal and approved equivalent.</b>

Item	Description
	<p>Light Fittings complete with all accessories and lamps as follows:-</p> <p>xLiii) <b>Type A16</b> 6/8/10m conical tapered steel lighting column, finished hot dip galvanised, with 76mm shaft. Root/flange mounted. With aluminium single/twin/post top/single mid-pole bracket with 60mm spigot for mounting Decostreet lantern; for double-arm (twin) street and parking lighting. As <b>Thorn Decostreet column/DSTB/M2 bracket Style or equal and approved equivalent.</b></p> <p>xLiv) <b>Type A17</b> Amenity post top lantern made with die-cast aluminium base in grey power coat, 5 joules acrylic opal/clear reeded bowl/diffuser and canopy in spun aluminium with dark grey powder coat; for pillar top/column perimeter wall or driveway lighting. Lamp: HST (ST) E40 70-100W LED Bulb. As <b>Thorn Gamma Basique or equal and approved equivalent.</b></p> <p>xLv) <b>Type A18</b> Submersible, Waterproof (up to 1m depth of submergence), IP68, Heavy-duty, Stainless Steel enclosure, Outdoor LED, 18 Watts, 40Lm/W, RGB and over 50000 Hrs Lamp Life Swimming Pool Luminaire complete with Stainless Steel angle-adjustable lamp holder, waterproof transformer power supply module (150W) and all necessary accessories. As <b>Tronic LL SWIM-18-RGB, LEDS C4 Aqua Spotlight AISI 316 RGB EASY+ or equal and approved equivalent.</b></p>

Item	Description
	<p>CCTV Cameras complete with appropriate mounting brackets and all other accessories as follows:-</p> <p>i) <b>Type CAM1</b> High resolution Network IR Indoor Dome Day &amp; Night Camera; Built-in motorized varifocal lens, Micro SD/SDHC/SDXC,NAS Edge Storage, PoE, IK8, Bi-directional audio support, motion detection, with a range of not less than 50 metres (about 167 feet). To be surface/ceiling mounted. C/W housing, appropriate mounting brackets and all other accessories. As <b>Wisenet SND-7084R or equal and approved equivalent.</b></p> <p>ii) <b>Type CAM2</b> High resolution Network IR indoor/outdoor Bullet Day &amp; Night Camera; Built-in motorized varifocal lens, Micro SD/SDHC/SDXC,NAS Edge Storage, PoE, IK8, Bi-directional audio support, motion detection. To be surface/ceiling mounted. C/W housing, appropriate mounting brackets and all other accessories. As <b>Wisenet, Hikvision or equal and approved equivalent.</b></p> <p>iii) <b>Type CAM3</b> PTZ 1/3" 1.3Megapixel progressive scan CMOS H.264 &amp; MJPEG dual-stream encoding 25/30fps @ 1.3M (1280X960) &amp; 25/30fps @ 720P(1280X720) DWDR, Day/Night (ICR), 3DNR, AWB, AGC. BLC 3.6mm fixed Lens, max. IR LEDs length 30M IP66, POE. As <b>Wisenet, Hikvision Turbo HD or equal and approved equivalent.</b></p>

**BUNGOMA COUNTY ASSEMBLY CHAMBERS - ELECTRICAL WORKS**

<b>Item</b>	<b>Description</b>	<b>Amount (Kshs)</b>
1	Bill No. 1: Sub-Contract Preliminaries Brought Forward	
2	Bill No. 2: Lighting & Power Distribution Brought Forward	
3	Bill No. 3: Fire Detection & Alarm System Brought Forward	
4	Bill No. 4: CCTV & Access Control System Brought Forward	
5	Bill No. 5: Structured Cabling & IP EPABX System Brought Forward	
6	Bill No. 6: Audiovisual & Video Conferencing Equipment Brought Forward	
7	Bill No. 7: Centralised Antenna System & Obstruction Lighting Brought Forward	
8	Bill No. 8: Vertical Transport System - Lifts Brought Forward	
9	Bill No. 9: Project Engineer's Stationery Brought Forward	
10	Provide for preparing and presenting warranty and maintenance service contract agreement documentation of all Audio Visual, CCTV & Access Control and the 2No. Lift Installations; and cabling layout diagrams, indelible traffolyte labels and preparing and submitting individual test results (for each equipment to be submitted as a bound report in triplicate). Attach printed results and soft copy.	
11	Allow for testing and commissioning of all electrical installation works.	<b>300,000.00</b>
12	Allow for training of 3No. client's staff on the operation and maintenance of the Installed Audiovisual, Video Conferencing, CCTV and Access Control Systems.	
13	Provisional Sum for <b>Three Phase Grid (KPLC) Power Commissioning</b>	<b>1,200,000.00</b>
14	Allow for preparation of 3No. Copies of "As Installed" Drawings	<b>330,000.00</b>
15	Provisional Sum for <b>Contingency</b>	<b>2,000,000.00</b>
<b>Total For Electrical Works Carried Forward To Form Of Tender</b>		

**Grand Total Cost Estimates: Say Kshs.****Total Estimated Amount in Words: - Kenya Shillings**

.....

.....

Bidder's Name &amp; Official Stamp

.....

P.O. Box.....

Signature ..... Date.....

PIN No. .... VAT Certificate No. ....






Witness..... Address.....

Signature of Witness..... Date.....

**SECTION F**  
**TECHNICAL SCHEDULE**  
**OF**  
**ITEMS TO BE SUPPLIED**

1. The technical schedule shall be submitted by tenderers to facilitate and enable the evaluation of 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 Engineer..
2. This schedule forms part of Technical Evaluation of the tenders, and bidders shall therefore be required to indicate the type/make and country of origin of all the materials and equipment they intend to offer to the employer as they shall have listed in the technical schedule.
3. Any bid returned with **unfilled Technical Schedule** shall be considered technically **non-responsive**, and the bidder may be **disqualified**.

F/1

ITEM	DESCRIPTION	TYPE/MAKE	MODEL	COUNTRY OF ORIGIN
1	LIGHTING FITTINGS  Type Exit  Type A6  Lighting Switches  D.P Switches			
2	Socket outlet plates (13 Ampere)			
3	Distribution Boards			
4	MCB			
5	MCCB			
6	Cables  Single core PVC Copper  Unarmoured Copper (PVC/PVC)  Armoured Copper (PVC/SWA/PVC)			
8	PVC conduits			
9	Fire Alarm Panel			
10	Smoke Detectors			
11	Heat Detectors			
12	Sounder			
13	Fire Evacuation Speakers			
14	Lifts			

ITEM	DESCRIPTION	TYPE/MAKE	COUNTRY OF ORIGIN
1	IP CCTV Surveillance System		
2	Cameras		
3	Server		
4	IP Video Surveillance Management Software for the CCTV System		
5	Network Video Recorder		
6	75 Inch LED Viewing Screen		
7	CCTV and Access Control dedicated Desktop Computer, Intel corei7, 64-bit, 4GB Video Graphics Card Processor/3.6GHz Quad-core/8GB System RAM/4TB SSD/DVD RW/win10/21" Screen of Multi Monitor Support complete		





REPUBLIC OF KENYA

*STATE DEPARTMENT FOR PUBLIC WORKS*

ELECTRICAL ENGINEERING DIRECTORATE

**TESTING & COMMISSIONING GUIDE**  
**FOR**  
**ELECTRICAL INSTALLATION WORKS ON SITE**

**Issued by:**

The Chief Engineer (Electrical),  
State Department for Public Works,  
P. O.BOX 41191 – 00100 GPO,  
**NAIROBI**

## STATE DEPARTMENT FOR PUBLIC WORKS

## ELECTRICAL DEPARTMENT

TESTING AND COMMISSIONING OF ELECTRICAL INSTALLATION WORKS ON SITE.

PROJECT NAME.....

W. P ITEM No.....JOB No.....

The subcontractor shall test in accordance with the relevant section of IEE regulations, Rule 3 of the Electrical Power Act for additional tests not covered by the regulations, Government Electrical specifications I & II and the Kenya Power & Lighting Co. Ltd by-laws.

**A. PRELIMINARY CHECKS**

The Engineer shall check to establish the following data: -

ITEM	DESCRIPTION			REMARKS
(i)	Type of installation (New/Renovation/Addition/ to existing installation)			
(ii)	a) Power supply 240V/415V/11KV			.....
	b) Frequency of the mains supply			.....
	c) Installation power factor			.....
(iii)	Method of Metering (New /Monitoring/Existing meter)			
(iv)	Are Testing/Measuring instruments available			
(v)	Are there maintenance/operational manuals for specialized systems (if any)			
(vi)	List of 'as installed drawings'	Drg. No.	Description	

ITEM	TEST DESCRIPTION	OBSERVATIONS/ RESULTS	REMARKS
1	<b>Tests shall be carried out to ensure:</b>		
	a) All fuses and single pole switches are installed in live conductor		
	b) All outlets and switched socket outlets are connected to 'LIVE' conductor in the Terminal marked so and each earth pin effectively bonded to earth continuity system		
	c) Verify continuity of all final conductors of each 'Ring' circuit. (0.05 to 0.8Ω)	.....Ohms	
	d) All radial circuits emanate from respective distribution boards/consumer units and that they do not supply any other Equipment		
	e) The correct phase sequence is maintained throughout the installation		
	f) Effective 'Discrimination' in the arrangement of protective devices. i.e. a fault in the furthest power point/Lighting point should not blow or trip Fuses/MCBs respective in the Meter board.		
2	<b>Inspect to ensure:</b>		
	a) No terminal in the Ceiling Rose is 'LIVE' when the corresponding switch is in the off position.		
	b) All conduit termination conduit boxes, Consumer unit, DB's and Adaptable boxes have smooth edges and are properly bushed.		
	c) All fixed metal works close to Electrical installation are bonded to earth continuity conductor.		
	d) All Fuse ways and Circuit breakers for final sub circuits are properly labelled		

ITEM	TEST DESCRIPTION	OBSERVATIONS/ RESULTS	REMARKS
3	<b>Carry out the following tests:</b>		
	a) Insulation Resistance tests i) Between phases a) R -Y .....MΩ b) R -B .....MΩ c) B-Y .....MΩ ii) Phase to Neutral a) R - N .....MΩ b) R - N .....MΩ c) B - N .....MΩ iii) Phase to Earth a) R - E .....MΩ b) R -E .....MΩ c) B -E .....MΩ  <b>Minimum thresholds for above and for:</b> i) ELV circuits (SELV & PELV) = 0.25 MΩ ii) LV Circuits up to 500V = 0.5 MΩ iii) LV Circuits above 500V = 1 MΩ		
	b) Earth continuity conductor impedance (0.005 to 2Ω)	.....Ohms	
	c) Earth fault Loop impedance (0 - 2000 Ω)	.....Ohms	
	d) Earth Electrode resistance (Less than 4Ω)	.....Ohms	
	e) Earth Lead resistance (Less than 4Ω)	.....Ohms	
	f) The operation of protection MCCBS & MCBS (Tripping under faulty conditions)		
	g) Check the mechanical toggling (make & break) of all the switches to installed accessories.		
	<b>4 Underground cabling, Check for:</b>		
	i) Continuity of the phases		
4	ii) Factory tests done (avail certification)		
	iii) Proper termination		
	iv) Route markers		

ITEM	TEST DESCRIPTION			OBSERVATIONS/ RESULTS	REMARKS
5	<b>Installed load</b>				
	i)	Lighting points (No.)			
	ii)	Socket outlets (No.)			
	iii)	Motors (Give rating)			
	iv)	<b>Other machines (Attach list if more)</b>			
	<b>Item</b>	<b>Description</b>	<b>Rating</b>		
6	<b>Type of Earthing:</b> TN-C/TN-S/ TN-C-S/TT/IT.				
7	<b>LV switchboard:</b> The board shall be checked to ascertain the following				
	i)	Rating of the switchboard			
	ii)	Rating of main incomer MCCB			
	iii)	Form of construction (1/2B/3B/4)			
	iv)	Degree of protection (IP rating)			
	v)	Nameplates for identification of all circuits entering/leaving switchgear			
	vi)	Proper Electrical & Mechanical operation of functional parts i.e. MCCBs, Indicating meters, CTs & VTs.			
	vii)	Check cable terminations, type & terminals			
	viii)	General comments on the appearance of the finished mechanical assembly including welding, full nuts & tightness of bolted parts.			
8	<b>Fireman's switch.</b>				
	i)	Make and manufacturer			
	ii)	The rating of the switch			
	iii)	Test for the Electrical and Mechanical operation of the switch			
	iv)	State the types of loads supported by the maintained board on the switch.			
	<b>** see foot note</b>				

**S.D. P.W REPRESENTATIVE/ PROJECT ENGINEER: -**

Sign..... Date.....

Sign..... Date.....

**\*\*If there are other defects noted, list them on a separate sheet and attach.**



REPUBLIC OF KENYA

*STATE DEPARTMENT FOR PUBLIC WORKS*

ELECTRICAL ENGINEERING DIRECTORATE

**TESTING & COMMISSIONING GUIDE**  
**FOR**  
**ELECTRIC LIFTS**

**Issued by:**

The Chief Engineer (Electrical),  
State Department for Public Works,  
P. O.BOX 41191 – 00100 GPO,  
**NAIROBI**

**A. DOCUMENTS REQUIRED**

The following documentation is required for conducting tests

1. Owner's manual
2. Specifications/Bills of Quantities
3. As Built (approved) drawings

**B. SPECIAL NOTES**

NA - means not applicable

NC – means not in compliance (to clarify noncompliance give more details at the bottom of the corresponding page if necessary).

Fix – means compliance is obtained after fixing.

OK – means in compliance.

**C. CONTRACT DETAILS**

1. CONTRACT NO. ....  
.....
2. COMMENCEMENT DATE .....  
.....
3. COMPLETION DATE .....  
.....
4. SITE IDENTIFICATION .....  
.....
5. NUMBER OF LIFTS .....
6. NAME AND ADDRESS OF CONTRACTOR.....  
.....  
.....  
.....
7. BUILDING .....  
.....

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**D. LIFTS IDENTIFICATION DETAILS**



LIFT SERIAL NO. ....

LIFT TYPE .....

YEAR OF MANUFACTURE .....

COUNTRY OF MANUFACTURE CAPACITY .....

.....

#### E. DESCRIPTION OF LIFTS INSTALLATION

1. Length of travel .....
2. No. of levels served (total ).....
3. No of landing doors front .....
- Rear .....
4. Rated load .....kg .....persons .....
5. Rated speed .....m/s
6. Mass of counterweight .....kg
7. Mass of Empty car .....kg

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#### F. DRAWING/DOCUMENTS

CONFIRM THAT THE DRAWING OR OTHER DOCUMENTS CONTAIN INFORMATION RELATING TO THE FOLLOWING

Item	Details/Remarks
<ol style="list-style-type: none"> <li>1. Loads and forces imposed on the building</li> <li>2. Indication of the shaft enclosure dimensions</li> <li>3. Dimensions of pit and headroom</li> <li>4. Location of the machinery and access</li> <li>5. Access spaces underneath the shaft</li> <li>6. Fixation points of guide rails, maximum distance allowed between each brackets</li> </ol>	



Item	Details/Remarks
<p>5. Buffers – Energy accumulation – non liner (cw)</p> <p>6. Energy dissipation (car)</p> <p>7. Energy dissipation (cw)</p> <p>8. Device to prevent uncontrolled upward movement.</p> <p>9. Electric switches containing electronic components</p>	

**I. MACHINERY**

Item	Details/Remarks
<ol style="list-style-type: none"> <li>1. Confirm that the main switch is in accordance with the specified</li> <li>2. Confirm that an electric socket outlet has been provided in the controller.</li> <li>3. Confirm that a light has been provided at the controller and operates.</li> <li>4. Confirm that the safety signs are inside the MAC and SCP.</li> <li>5. Confirm that the electrical emergency operation system functions correctly</li> <li>6. Confirm that the emergency release instructions are displayed in the controller cabinet</li> <li>7. Confirm that the controller cabinet is fitted with a suitable door Lock.</li> <li>8. Confirm that there is a communication device in place and working</li> <li>9. Confirm that means of lifting heavy components are available and correctly marked (lifting accessories)</li> <li>10. Confirm that the safety chain has been tested to ensure that an earth fault will cause disconnection.</li> <li>11. Confirm the installation of the surge protector</li> </ol>	

**J. THE SHAFT****CLEARANCES AND RUN BYS**

Check pit/overhead dimensions by reference to approved values of the type – examination certificate.

	<b>TOLERANCES mm</b>	<b>SPECIFIED M</b>	<b>MEASURED (M) DISTANCE</b>	<b>IN COMPLIANCE</b>
Overhead complies with the value of layout (drawing)	0, + 25			
Pit depth complies with value of the layout	0, + 25			
Run-by between counter weight and buffer complies with layout (Drawings)	-25/+25			
Lift travel complies with layout. (Drawings)	-25/+25			

<b>Item</b>	<b>Details/Remarks</b>
<ol style="list-style-type: none"> <li>1. Confirm that the above dimensions are within the specified tolerance</li> <li>2. Confirm that the car buffers are in accordance with what was specified by the manufacturer</li> <li>3. Confirm that the Energy accumulation buffers (non-linear type) have been CE marked</li> <li>4. Confirm that the cwt buffers are in accordance with the manufactures specification</li> <li>5. Confirm that the Energy dissipation buffers (oil type) has been CE marked</li> </ol>	

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<b>Item</b>	<b>Details/Remarks</b>
6. Confirm whether Energy accumulation buffers (non-linear type) have been	

CE marked

7. Confirm that the well lighting level above the car roof and the pit is about 50 lux
8. Confirm that the lighting level in front of the machine is about 200 lux
9. confirm that the terminal light fittings are less than 0.5m from the pit floor and ceiling
10. Confirm that the lights can be switched from both the pit and controller
11. Confirm that an electrical outlet has been provided in the pit
12. Is the designation of the guide rails in accordance with the manufacturer's specification for the car?
13. Confirm that the maximum pitch of the rail fixings does not exceed the value indicated on the lay out drawing.

**THE CAR**

Item	Details/Remarks
<ol style="list-style-type: none"> <li>1. Confirm that the available floor conforms to that specified</li> <li>2. Confirm that the inside of the car is at least 2.0m in height</li> <li>3. confirm that where glass panels are used a hand rail is not fixed on the panels</li> <li>4. Confirm that the max load and manufacturers name is indicated in the car (i.e. number of persons, load in kg and identification number)</li> <li>5. Confirm that the emergency alarm device allows two-way verbal communication with a rescue service</li> <li>6. Confirm that the lighting in the car gives a minimum of 50lux at floor level and on the controls.</li> <li>7. Confirm that the emergency lighting on the car roof Operates correctly.</li> <li>8. Confirm that the emergency lighting in the car operates correctly</li> <li>9. Confirm that the car overload device operates correctly.</li> <li>10. Confirm that the ventilation has been provided in the car.</li> </ol>	



Item	Details/Remarks
<ol style="list-style-type: none"> <li>1. Confirm that the top has been fitted with controls, stopping devices and socket outlets.</li> <li>2. confirm that the car top station operates correctly on: - <ul style="list-style-type: none"> <li>Movement</li> <li>Stopping</li> <li>Travel limits</li> <li>Interaction with emergency recall drive</li> </ul> </li> <li>3. Confirm that the alarm device on the car roof top operates correctly</li> <li>4. Confirm that the car roof has one clear area for standing</li> <li>5. Confirm that the parking device on the car roof operates correctly mechanically and electronically</li> <li>6. Confirm that the stopping devices on the car top have been positioned correctly and provided so that when operated they stop and prevent movement of the car confirm double presence in case of double entrance.</li> </ol>	

**3. CAR ENTRANCE CLEARANCE**

Item	Details/Remarks
<ol style="list-style-type: none"> <li>1. Confirm that the running clearance between the door panels and between the panels and uprights, lintels, or sills is less than or equal to 6mm.</li> <li>2. Confirm that no recess or projection on the face of the door panels exceeds 3mm.</li> <li>3. Confirm the horizontal distance between car and landing door sills is 35mm or less</li> </ol>	

**4. LANDING AND CAR DOOR**

Item	Details/Remarks
<ol style="list-style-type: none"> <li>1. Confirm that the closing force limiter operates if the panel movement is blocked.</li> <li>2. Confirm that all protective devices reverse the doors</li> <li>3. Confirm that each set of landing doors is capable of being unlocked from outside with an emergency key.</li> <li>4. Confirm that the doors can be opened manually within the unlocking zone.</li> </ol>	

**5. SUSPENSION CONTROLS BRAKING AND TRACTION**

Item	Details/Remarks
<ol style="list-style-type: none"> <li>1. Confirm that the correct suspension ropes are supplied. (Check using manufacturer's approved drawings/documents/specifications)</li>   <li>2. Confirm that the suspension rope terminations are correctly made and secure (washer, safety nut and pin).</li>   <li>3. Confirm that the suspension rope terminations ensure distribution of load between the rope (spring equalizer).</li>   <li>4. Confirm that the car stops under emergency conditions when traveling upwards at rated speed in the upper part of the well.</li>   <li>5. Confirm that the car stops under emergency conditions when traveling downwards at rated speed with 125% rated load in lower part of the well.</li>   <li>6. Confirm that the car cannot be raised when the counterweight rests on a compressed buffer.</li>   <li>7. Confirm that the car balance is correct.</li>   <li>8. Confirm that the leveling and re-leveling circuits operate correctly.</li> </ol>	

**6. CAR & COUNTERWEIGHT SAFETY GEAR & OVERSPEED PROTECTION**

Item	Details/Remarks
<ol style="list-style-type: none"> <li>1. Confirm that the safety gear has been CE marked</li> <li>2. Confirm that the safety gear stops the car in the downward direction when operated by the governor and engaging at the appropriate speed with load uniformly distributed at 125% of rated load at rated speed or lower for progressive safety.</li> <li>3. Confirm that the floor of the lift is horizontal or slopping less than 5% from the horizontal after safety gear operation.</li> <li>4. Following the test confirm that no deterioration which could adversely affect normal use of the lift has occurred.</li> <li>5. Confirm that the electrical safety device operates correctly.</li> </ol>	

**7. COUNTER WEIGHT GONERNOR**

Item	Details/Remark
<ol style="list-style-type: none"> <li>1. Confirm that the over speed governor has been CE marked.</li> <li>2. Confirm that the electrical safety device on the over speed governor operates correctly.</li> <li>3. Confirm that the electrical safety device on tension weight detecting breakage or slack in overspeed governor safety rope operates correctly.</li> </ol> <p style="text-align: center;"><b>G/34</b></p>	

**8. ASCENDING CAR PROTECTION**

Item	Details/Remark
<ol style="list-style-type: none"><li>1. Confirm that the protective device has been CE marked</li><li>2. Confirm that the device functions correctly with the car ascending at not less than the rated speed.</li><li>3. Confirm that the electrical safety device on the means of protection operates correctly (Governor Switch).</li></ol>	

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**9. MEASUREMENT OF THE ELECTRICAL SYSTEM**

Item	Details/Remark
<b>S1. PROTECTIVE DEVICES</b> <ol style="list-style-type: none"> <li>1. Is the motor for the for the lift windings protection operating correctly. (is the motor protected)</li> <li>2. Is the protection for the door motor winding supplied and operating correctly</li> <li>3. Is the correct motor run time limiter supplied and operating time correctly set</li> <li>4. Confirm the that lighting and socket supply is separate from that of the lift machine and that they have their own independent circuits</li> </ol>	
<b>S2. DOCUMENTATION</b> <ol style="list-style-type: none"> <li>1. Confirm that all the specified documentation has been supplied.</li> </ol>	
• USER MANUALS	
• WIRING DIAGRAMS	
• OPERATION MANUALS	
• STATUTORY INSPECTION	
• CERTIFICATES	
• LIFT INSPECTION REPORT BY LICENCED LIFT INSPECTOR	
• HANDING OVER CERTIFICATES	

**T. SIGNATURE PAGE**

1. PROJECT MANAGER .....  
NAME .....  
DESIGNATION .....  
STAMP .....
2. CONTRACTOR. ....  
NAME .....  
DESIGNATION .....  
STAMP .....
3. CLIENT .....  
NAME .....  
DESIGNATION .....  
STAMP .....

## Specification

Supply and install contract to be procured through international competition, the Procuring Entity's Requirements must be drawn up to permit the widest, possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials and performance of the Facilities. Only if this is done will the objectives of economy, efficiency, fairness and transparency in procurement be realized, responsiveness of Tenders be ensured and the subsequent task of Tender evaluation facilitated.

In a design, supply and install approach, the design is to be done by the Contractor. No detailed technical specification as is normal practice is developed at the pre-Tender stage. However, the Procuring Entity does and must know what it wants and must communicate its needs to the Tenderers. Hence, this section on Procuring Entity's Requirements replaces the usual Technical Specifications of a more traditional approach.

While this section of the Tendering document should endeavor to define the Procuring Entity's Requirements as precisely as possible, care must be taken to avoid over specifying details to the extent that the flexibility and potential benefits associated with a design, supply and install contract are seriously eroded or threatened.

Care must be taken when drafting the Procuring Entity's Requirements to ensure that the requirements are not restrictive. Recognized international standards should be used as much as possible for the description of goods, materials and workmanship. Where other particular standards are specified, whether national standards of Kenya other standards, it should be stated that goods, materials and workmanship meeting other authoritative standards and which promise to ensure equal or higher quality than the standards specified, will also be acceptable. Where a brand name of a product is specified it should always be qualified with the terms "or equivalent".

For a design, supply and install contract no detail drawings would generally be available at the pre-Tendering process stage. It would, however, be useful to include such conceptual drawings as are appropriate to supplement or help explain the general concept of the Procuring Entity's needs.

The Procuring Entity should specify any Environmental, Social, health, and safety requirements as appropriate.

Any sustainable procurement technical requirements shall be clearly specified. The requirements to be specified shall be specific enough to not demand evaluation based on rated criteria/ merit point system. The sustainable procurement requirements shall be specified to enable evaluation of such a requirement on a pass/ fail basis. To encourage Tenderers' innovation in addressing sustainable procurement requirements, as long as the Tender evaluation criteria specify the mechanism for monetary adjustments for the purpose of Tender comparisons, Tenderers may be invited to offer Plant that exceeds the specified minimum sustainable procurement requirements.

Where Tenderers are invited to submit alternative technical solutions for specified parts of the facilities, such parts shall be described in this Specification.

# PROVISIONAL SUMS



Item No.	Description	Qty	Unit	Rate KShs	Amount KShs
	<b><u>SECTION NO. 12 - PROVISIONAL SUMS</u></b>				
	<b><u>PROVISIONAL SUMS</u></b>				
	<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>				
A	Provide a Sum of Kenya Shillings <b>Five Hundred Thousand</b> Only for Geo Technical Survey	ITEM			500,000.00
B	Provide a Sum of Shillings Kenya <b>Thirty Three Million</b> Only for Furniture - Rest of the Building - <b>OMIT</b>	ITEM			-
C	Provide a Sum of Kenya Shillings <b>Ten Million</b> Only for Price Fluctuations	ITEM			10,000,000.00
D	Provide a Sum of Kenya Shillings <b>Twenty Million</b> Only for contingencies to be omitted or expended in whole or in part at the discretion of the Project Manager	ITEM			20,000,000.00
	<b><u>SECTION NO. 12</u></b>				
	<b><u>PROVISIONAL SUMS</u></b>				
	Carried to Main summary			KSHS	30,500,000.00

# GRAND SUMMARY

PROPOSED CONSTRUCTION OF BUNGOMA COUNTY ASSEMBLY CHAMBERS, BUNGOMA COUNTY				
GRAND SUMMARY				
ITEM	DESCRIPTION	Page No.	FOR TENDERER USE ONLY	FOR OFFICIAL USE ONLY
		PAGE	K.SHS.	K.SHS.
A	PARTICULAR PRELIMINARIES	PP/10		
B	GENERAL PRELIMINARIES	GP/10		
C	DEMOLITIONS	DM/2		
D	BUILDER'S WORK; GROUND FLOOR	GF/24		
E	BUILDER'S WORK; FIRST FLOOR	FF/17		
F	BUILDER'S WORK; SECOND FLOOR	SF/19		
G	BUILDER'S WORK; THIRD FLOOR	TF/18		
H	INTERIOR WORK; SIGNAGE	3		
J	INTERIOR WORK; CHAMBERS FURNITURE	3		
K	EXTERNAL WORKS	EW/1		
L	GUARD HOUSE	GD/11		
M	CIVIL WORKS	CIV / 15		
N	LANDSCAPING WORKS	LS/ 1		
P	MECHANICAL WORKS	M/50		
Q	ELECTRICAL WORKS			
R	PRIME COST & PROVISIONAL SUMS	PS/1	30,500,000.00	30,500,000.00
GRAND TOTAL CARRIED TO FORM OF TENDER (VAT INCLUSIVE)				
AMOUNT IN WORDS : KENYA SHILLINGS .....				
.....				
.....				
TENDERER'S NAME .....				
ADDRESS .....				
DATE .....				
TENDERER'S SIGNATURE .....				
WITNESS'S NAME.....				
ADDRESS .....				
DATE .....				
WITNESS SIGNATURE.....				
JOB NO:		GS		