



COUNTY GOVERNMENT OF NYERI

STANDARD TENDER DOCUMENT OPEN TENDER - NATIONAL

**PROPOSED COMPLETION OF KARATINA ACCIDENT AND EMERGENCY
BLOCK (PHASE II)**

INVITATION TO TENDER ITT CGN/HEALTH/17/2024-2025

IFMIS NEGOTIATION NO: 1812838

VOLUME 1 of 3: MAIN WORKS

MARCH,2025

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INVITATION TO TENDER

TENDER REF NO. CGN/HEALTH/17/2024-2025

TENDER NAME' PROPOSED CONSTRUCTION OF COUNTYAGGREGATION AND INDUSTRIAL PARKS-NYERI

1. The **Chief Officer, Department of Health Services** invites sealed tenders for the construction of ***Proposed Completion of Accident and Emergency Block (Phase II) at Karatina Sub-County Hospital***
2. Tendering will be conducted under open competitive method (National) *using* a standardized tender document.
3. Tendering is open to all qualified and interested Tenderers.
4. 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.
Nyeri County Government Headquarters (Nyeri town Hall)
Postal Address -**P.O. Box 1112- 10100, Nyeri**
5. A complete set of tender documents may be obtained electronically free of charge from the Nyeri County Government Website(s) **www.nyeri.go.ke**.
6. Tenderers who download the tender document must forward their particulars immediately to facilitate any further clarification or addendum.
7. Tenders shall be quoted be in Kenya Shillings and shall include all taxes. Tenders shall remain valid for **(180 days)** from the date of opening of tenders.
8. All Tenders must be accompanied by a “*Tender Security*” of KShs. **1,243,928.00**
9. The Tenderer shall chronologically serialize all pages of the tender documents submitted.
10. There shall be a **pre-tender site visit on 25th March 2025 at 11.00 a.m.** Bidders should congregate at Karatina Sub-County Hospital, Karatina
11. Completed tenders must be delivered and deposited at designated tender box at the headquarters **of Nyeri County Government (Town Hall)** on or before **2nd April 2025 at 11.00 a.m**
12. Electronic Tenders shall not be allowed
13. Tenders will be opened immediately after the deadline date and time specified above or any deadline 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.
14. Late tenders will be rejected.

**Chief Officer,
Department of Health Services**

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 “inwriting” 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 another tenderer;
 - b) Receives or has received any director indirect subsidy from another tenderer.
 - c) Has the same legal representative as another tenderer.
 - d) Has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process;
 - e) Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the goods or works that are the subject of the tender.
 - f) Any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as a consultant for Contract implementation.
 - g) Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the contract specified in this Tender Document.
 - h) Has a close business or personal relationship with senior management or professional staff of the Procuring Entity who has the ability to influence the bidding process and:
 - i) Are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract; or
 - ii) May be involved in the implementation or supervision of such Contract unless the conflicts stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.
- 34** 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
- 35** 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.
- 36** 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.
- 37** 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.
- 38** 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 like any commercial enterprise to enable it compete with firms in the private sector on an equal basis.
- 39** 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 to determine if this condition is met shall be provided for this purpose in “*SECTION II - 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.
- 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.
- 4.14** 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.
- 40 Eligible goods, equipment, and services**
- 41** 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.
- 42** Any goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.
- 5.0 Tenderer's responsibilities**
- 5.1** The tenderer shall bear all costs associated with the preparation and submission of his/her tender, and the Procuring Entity will in no case be responsible or liable for those costs.
- 5.2** The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the Site of the Works and its surroundings and obtain all information that may be necessary for preparing the tender and entering into a contract for construction of the Works. The costs of visiting the Site shall be the tenderer's own expense.
- 5.3** The Tenderer and any of its personnel or agents will be granted permission by the Procuring Entity to enter upon its premises and lands for the purpose of such visit. The Tenderer shall indemnify the Procuring Entity against liability arising from death or personal injury, loss of or damage to property, and any other losses and expenses incurred as a result of the examination and inspection.

- 54 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

60 Sections of Tender Document

- 61 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

- 62 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.

- 63 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.

70 Clarification of Tender Document, Site Visit, Pre-tender Meeting

- 71 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.

- 72 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.

- 73 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.

- 74 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.

- 75 The Procuring Entity shall so 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.

80 Amendment of Tender Documents

- 81 At any time prior to the deadline for submission of Tenders, the Procuring Entity may amend the Tender Documents by issuing addenda.
- 82 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
- 83 the Procuring Entity's website in accordance with ITT 7.5.
- 84 To give Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity should extend the deadline for the submission of Tenders, pursuant to ITT 22.2.

C. PREPARATION OF TENDERS

9. 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 by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Tender shall be signed by all members and submitted with the Tender, together with a copy of the proposed JV Agreement. Change of membership and conditions of the JV prior to contract signature will render the tender liable for disqualification.

12.0 Form of Tender and Schedules

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

13 Alternative Tenders

- 131** Unless otherwise specified in the TDS, alternative Tenders shall not be considered.
- 132** 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.
- 133** 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.
- 134** 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.

140 Tender Prices and Discounts

- 141** 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.
- 142** 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.
- 143** 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.
- 144** The Tenderer shall quote any discounts and the methodology for their application in the Form of Tender, in accordance with ITT 12.1.
- 145** 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.
- 146** Where tenders are being invited for individual lots (contracts) or for any combination of lots (packages), tenderers wishing to offer discounts for the award of more than one Contract shall specify in their Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITT 14.4, provided the Tenders for all lots (contracts) are opened at the sometime.

147 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.

150 Currencies of Tender and Payment

151 The currency(ies) of the Tender and the currency(ies) of payments shall be the same.

152 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.

153 Tenderers may be required by the Procuring Entity to justify, to the Procuring Entity's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data in the Appendix to Tender are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Tenderers.

16.0 Documents Comprising the Technical Proposal

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

170 Documents Establishing the Eligibility and Qualifications of the Tenderer

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

172 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.

173 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.

174 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.

175 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.

176 The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to ownership and control which information 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.

177 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.

- 178** 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.
- 179** 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 has 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 of 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.

- 196** 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.
- 197** 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.
- 198** 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.
- 199** 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.
- 1910** A tenderer shall not issue a tender security to guarantee itself.

200 Format and Signing of Tender

- 201** 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 origin a land the copies, the original shall prevail.
- 202** 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.
- 203** 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.
- 204** 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.
- 205** 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

210 Sealing and Marking of Tenders

- 211** 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 envelope or package or container marked "COPIES", all required copies of the Tender; and
 - c) if alternative Tenders are permitted in accordance with ITT 13, and if relevant:

- i) in an envelope or package or container marked “ORIGINAL –ALTERNATIVE TENDER”, the alternative Tender; and
- ii) in the envelope or package or container marked “COPIES- ALTERNATIVE TENDER”, all required copies of the alternative Tender.

The inner envelopes or packages or containers shall:

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

212 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.

220 Deadline for Submission of Tenders

221 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**.

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

23.0 Late Tenders

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

240 Withdrawal, Substitution, and Modification of Tenders

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

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

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

243 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

251 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**.

252 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.

253 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.

- 254 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.
- 255 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.
- 256 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.
- 257 At the Tender Opening, the Procuring Entities shall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 23.1).
- 258 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.
- 259 The Tenderers' representatives who are present shall be requested to sign the minutes. The omission of a Tenderer's signature on the minutes shall not invalidate the contents and effect of the minutes. A copy of the tender opening register shall be distributed to all Tenderers.

E. EVALUATION AND COMPARISON OF TENDERS

26. Confidentiality

- 261 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.
- 262 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.
- 263 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. Clarification of Tenders

- 271 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.
- 272 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. Deviations, Reservations, and Omissions

- 281 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.

330 Margin of Preference and Reservations

- 331** 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.
- 332** A margin of preference shall not be allowed unless it is specified so in the **TDS**.
- 333** Contracts procured on basis of international competitive tendering shall not be subject to reservations exclusive to specific groups as provided in ITT 33.4.
- 334** Where it is intended to reserve a contract to 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.

340 Nominated Subcontractors

- 341** 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. Incase 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.
- 342** 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.
- 343** 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** a scan 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

- 351** 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.
- 352** 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 nonmaterial on-conformities in accordance with ITT 30.3; and
 - e) any additional evaluation factors specified in the **TDS** and Section III, Evaluation and Qualification Criteria.
- 353** 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.
- 354** Where the tender involves multiple lots or contracts, the tenderer will be allowed to tender for one or more lots (contracts). Each lot or contract will be evaluated in accordance with ITT 35.2. The methodology to determine the lowest evaluated tenderer or tenderers base done lot (contract) or based on a combination of lots (contracts), will be specified in Section III, Evaluation and Qualification Criteria. In the case of multiple lots or contracts, tenderer will be 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.

370 Abnormally low tenders and abnormally high tenders

Abnormally Low Tenders

- 371** 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 regard to the Tenderer's ability to perform the Contract for the offered Tender Price or that genuine competition between Tenderers is compromised.
- 372** 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.
- 373** 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

- 374** 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.
- 375** In case of a nab normally high price, the Procuring Entity shall make a survey of the market prices, check if the estimated cost of the contract is correct and review the Tender Documents to check if the specifications, scope of work and conditions of contract are contributory to the abnormally high tenders. The Procuring Entity may also seek written clarification from the tenderer on the reason for the high tender price. The Procuring Entity shall proceed as follows:
- i) If the tender price is abnormally high based on wrong estimated cost of the contract, the Procuring Entity may accept or not a ccept 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.
- 376** 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.

380 Unbalanced and/ or front-loaded tenders

- 381** 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.
- 382** After the evaluation of the information and detailed price analyses presented by the Tenderer, the Procuring Entity may as appropriate:
- a) accept the Tender;
 - b) require that the total amount of the Performance Security be increased at the expense of the Tenderer to a level not exceeding a 30% of the Contract Price;
 - c) agree on a payment mode that eliminates the inherent risk of the Procuring Entity paying too much for undelivered works;
 - d) reject the Tender,

39.0 Qualifications of the tenderer

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

40.0 Lowest evaluated tender

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

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

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

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

F. AWARD OF CONTRACT

42.0 Award criteria

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

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

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

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

44.0 Stand still Period

- 44.1** The Contract shall not be signed earlier than the expiry of a Standstill Period of 14 days to allow any dissatisfied tender to launch a complaint. Where only one Tender is submitted, the Standstill Period shall not apply.
- 44.2** Where a Standstill Period applies, it shall commence when the Procuring Entity has transmitted to each Tenderer the Notification of Intention to Enter into a Contract with the successful Tenderer.

450 Debriefing by The Procuring Entity

- 451** 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.
- 452** 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 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 Complaints and Administrative Review

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

50.2 A request for administrative review shall be made in the form provided under contract forms.

Section II - Tender Data Sheet (TDS)

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

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
A. General	
ITT 1.1	The name of the contract is _PROPOSED COMPLETION OF ACCIDENT AND EMERGENCY BLOCK (PHASE II) AT KARATINA SUB-COUNTY HOSPITAL The reference number of the Contract is __CGN/HEALTH/17/2024-2025
ITT 2.4	The Information made available on competing firms is as follows:
ITT 2.4	The firms that provided consulting services for the contract being tendered for are: Department of Infrastructure and Public Works, P.O. Box 1112-10100 Nyeri
ITT 3.1	Maximum number of members in the Joint Venture (JV) shall be: <i>Not applicable</i>
B. Contents of Tender Document	
ITT 7.1	(i) The Tenderer will submit any request for clarifications in writing at the Address_ Director of Procurement County Government Nyeri shall publish its response at the website <u>_www.nyeri.go.ke</u>
ITT 7.2	A pre-tender site visit <i>shall</i> take place on 25th March 2025 at 11.00 a.m. Bidders should congregate at the Karatina Sub-County Hospital, Karatina
ITT 7.5	The Procuring Entity's website where <u>Minutes of the pre-Tender meeting</u> and the pre-arranged pretender will be published is _www.nyeri.go.ke

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 9.1	For Clarification of Tender purposes, for obtaining further information and for purchasing tender documents, the Procuring Entity's address is: (1) Name of Procuring Entity COUNTY GOVERNMENT OF NYERI
C. Preparation of Tenders	
ITT 11.1 (h)	The Tenderer shall submit the following additional documents in its Tender: <i>Program of works</i>
ITT 13.1	Alternative Tenders [<i>"shall not be"</i>]_____considered.
ITT 13.2	Alternative times for completion [<i>"shall not be"</i>]_____permitted.
ITT 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: Not applicable
ITT 14.5	The prices quoted by the Tenderer shall be: Fixed
ITT 15.2 (a)	Foreign currency requirements are not allowed.
ITT 18.1	The Tender validity period shall be 180 days.
ITT 18.3	(a) The Number of days beyond the expiry of the initial tender validity period will be _30_days. (b) The Tender price shall be adjusted by the following percentages of the tender price: (i) By <i>Not applicable</i>) _____ % of the local currency portion of the Contract price adjusted to reflect local inflation during the period of extension, and (ii) By <i>Not applicable</i>) _____ % the foreign currency portion of the Contract price adjusted to reflect the international inflation during the period of extension.
ITT 19.1	Tender shall provide a Tender Security of in the amount of Kenya shillings One Million, Two Hundred and Forty Three Thousand Nine Hundred and Twenty Eight Shillings (KShs. 1,243,928.00 as prescribed in the Tender Document
ITT 20.1	In addition to the original of the Tender, the number of copies is: One (1)
ITT 20.3	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of: proof of Power of attorney
D. Submission and Opening of Tenders _____	
ITT 22.1	(A) For <u>Tender submission purposes</u> only, the Procuring Entity's address is: ... of Nyeri County Government (<i>Town Hall</i>) on or before 2nd April 2025 at 11.00 a.m

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	(5) Tenders shall not submit tenders electronically.
ITT 25.1	The Tender opening shall take place at the time and the address for Opening of Tenders provided below: <i>As indicated in ITT 22.1 above</i>
E. Evaluation, and Comparison of Tenders	
ITT 30.3	The adjustment shall be based on the _____ [<i>insert “average” or “highest”</i>] 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.
TT 32.1	The currency of the tender is Kenya Shilling
ITT 33.2	A margin of preference shall Not apply.
ITT 33.4	The invitation to tender is extended to the following group that qualify for Reservations_____ Not applicable _____
ITT 34.1	At this time, the Procuring Entity _____ [<i>“does not intend”</i>] to execute certain specific parts of the Works by subcontractors selected in advance.

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 34.2	Contractor's may propose subcontracting: Maximum percentage of subcontracting permitted is: <u>10</u> % of the total contract amount. Tenderers planning to subcontract more than 10% of total volume of work shall specify, in the Form of Tender, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience.
ITT 34.3	The bidder is required to nominate a specialized contractor for the following works: <u>(i)</u> Electrical Installation Works <u>(ii)</u> Mechanical Installation Works For the above-designated Specialized Works that require Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors will be added to the qualifications of the Tenderer for the purpose of evaluation. <i>(i.e. Failure by the Specialized Sub-contractors to qualify in the relevant criteria shall lead to dis-qualification of the tender)</i>
ITT 35.2 (e)	Additional requirements apply. These are detailed in the evaluation criteria in Section III, Evaluation and Qualification Criteria.
ITT 48.1	Other documents required in addition to the Performance Security are <u>N/A</u>
ITT 50.1	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 www.ppra.go.ke or email complaints@ppra.go.ke. 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: 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): (i) the terms of the Tender Documents; and (ii) the Procuring Entity's decision to award the contract.

SECTION III - EVALUATION AND QUALIFICATION CRITERIA

10 GENERAL PROVISIONS

- 11** 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.
- 12** 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.

13 EVALUATION AND CONTRACT AWARD CRITERIA

The Procuring Entity shall use the criteria and methodologies provided to evaluate tenders and arrive at the Lowest Evaluated Tender.

NOTE: The evaluation criteria shall apply to the tenderer and the proposed specialized sub-contractors for electrical and mechanical works

Order of evaluation of tenders will be as follows:

- a) Preliminary evaluation of Main Works, Mechanical Works and Electrical Works
- b) Technical Evaluation of Main Works, Mechanical Works and Electrical Works
- c) Financial Evaluation
- d) Due diligence

2.0 PRELIMINARY EXAMINATION FOR DETERMINATION OF

RESPONSIVENESS Preliminary examination for Determination of Responsiveness

The Procuring Entity will start by examining all tenders to ensure they meet in all respects the eligibility criteria and other mandatory requirements in the ITT, and that the tender is complete in all aspects in meeting the requirements provided for in the preliminary evaluation criteria outlined below. The Standard Tender Evaluation Report Document for Goods and Works for evaluating Tenders provides very clear guide on how to deal with review of these requirements. Tenders that do not pass the Preliminary Examination will be considered non-responsive and will not be considered further.

S/No	PRELIMINARY EVALUATION CRITERIA / MANDATORY REQUIREMENTS FOR MAIN CONTRACTOR
MR1	Dully filled and signed form of tender prepared in accordance with ITT 12
MR2	Provide proof of registration with the National Construction Authority (NCA) category 5 and above under builders works category with current annual contractors practicing license.(2024/2025)
MR3	Must submit one original copy of the Tender Document and one copy . Submission of Original and Copy (all Volumes) in the format required by the procuring entity and all the tender document (all volumes) to be BOUND
MR4	Properly bound; perfect cover, hard cover or case bound (use of spring bound and spring files will lead to automatic disqualification), paginated, serialized tender document (each page of the tender submission must have a number and the numbers must be in chronological order). For pagination, Arabic Numerals shall be used, i.e. 1,2,3,4,5,6,7,8,9,10.....n (n being the last numerical page of the tender document)
MR5	Tender Security in accordance with ITT 19.1; of Bank Guarantee from a bank or insurances approved by Public Procurement Regulatory Authority (PPRA) in the amount of Kenya shillings 1,243,928.00 . The tender security shall be as per the prescribed forms in section (IV)
MR6	Provide proof of power of attorney (of tender signatory if not director of the company/ partner, signed and stamped by Commissioner of Oaths)
MR7	Valid Copy of Certificate of Incorporation/ Registration.
MR8	Valid Current Tax Compliance Certificate
MR9	Dully filled, signed and stamped Confidential Business Questionnaire
MR10	Valid Copy of Current Single Business permit (for the year 2025)
MR11	valid CR12 form issued within one year from the date of tender advert
MR12	Must duly fill the Certificate of Independent Tender Determination in the format provided
MR13	Must submit audited accounts for the last three years (2022, 2023 and 2024) duly signed and stamped by an ICPAK registered auditor on every page. (Attach the Annual license for the Auditor)
MR14	Must submit bank statements for the last (1) year certified by the bank
MR15	Must duly fill the Self-declaration form that the person/tenderer is not debarred in the matter of the Public Procurement and Asset Disposal Act 2015 in the format provided - Form SD1 .
MR16	Must duly fill the Self-declaration that the person/tenderer will not engage in any corrupt or fraudulent practice in the format provided - Form SD2
MR17	Must fill and submit Declaration and Commitment to The Code of Ethics in the format provided
MR18	Must attach certificate of pretender/pre-bid site visit stamped and signed by an authorized officer of Nyeri County Government
MR19	The main contractor to attach sub-contract agreements with the nominated specialized sub-contactors
	NOTE Bidders who do not satisfy any of the above requirements shall be considered non responsive and their tenders will not be evaluated further.

PRELIMINARY EVALUATION FOR MECHANICAL WORKS

This stage of evaluation shall involve examination of the mandatory requirements as set out in the Tender Advertisement Notice or Letter of Invitation to Tender and any other conditions stated in the bid document.

These conditions shall include the following:

- i) Company Certificate of incorporation/registration;
- ii) Valid Tax Compliance Certificate;
- iii) Current Certificate of registration with National Construction Authority in Mechanical Engineering Works (NCA 6 and above);
- iv) Current and Valid NCA contractor's practicing license
- v) valid CR12 form showing the list of directors /shareholding(issued within the last 12 months) from the date of advert or National Identity Card(s) for Sole Proprietorship / Partnership;
- vi) Domestic Sub-contractors must sign and stamp the Summary Page of their respective specialist works in the tender document.

PRELIMINARY EVALUATION FOR ELECTRICAL WORKS

This stage of evaluation shall involve examination of the mandatory requirements as set out in the Tender Advertisement Notice or Letter of Invitation to Tender and any other conditions stated in the bid document.

These conditions shall include the following:

S/No.	Mandatory Requirement (MR)	Submitted (Y/N)
MR1	Valid Copy of Company Certificate of Incorporation/Registration	
MR2	Valid Tax Compliance Certificate	
MR3	valid CR12 (issued within the last 12 months) from the date of advert	
MR4	Valid copy of NCA Registration Certificate, NCA 7 and above in Electrical Engineering Services	
MR5	Valid Annual Contractors Practicing License from National Construction Authority for Electrical Engineering Services	
MR6	Copy of Valid License in Electrical Installation Works from Energy and Petroleum Regulatory Authority (EPRA) - Class A1 or Class B	
MR7	Domestic Sub-contractors must sign and stamp the Summary Page of their respective specialist works in the tender document.	

The tenderers who do not satisfy any of the above mandatory requirements shall be considered Non-Responsive and their tenders will not be evaluated further.

TECHNICAL EVALUATION

a) MAIN WORKS

ITEM	EVALUATION CRITERION		WEIGHTED %	SCORE (%)
1	<u>No of Years in Business</u>		<u>5</u>	
	a)	1-5 Years	3	
	b)	6-10 Years	4	
	c)	Over 10 Years	5	
2	<u>Specific Construction Experience</u> <i>Provide Project Completion Certificates of Building Projects of similar nature, complexity, and scope (over KShs. 50 million) The Certificate(s) should be signed by a technical Project Manager</i>		<u>25</u>	
	a)	1-3 Projects	15	
	b)	4-6 Projects	20	
	c)	Over 6 Projects	25	
3	Financial Capacity	<u>Average Annual Construction Turnover (Main Contractor only)</u>	<u>15</u>	
		a) Turnover less than 2 times the total value of the contract sum	5	
		b) Turnover more than 2 times but less than 3 times the value of the contract sum	10	
		c) Turnover more than 3 times the value of the contract sum.	15	
		<u>Adequate Cashflow (Lines of Credit or Liquid Assets)</u>	<u>15</u>	
		a) Up-to KShs.20 million	5	
4	Key Personnel <i>(Provide CVs, Academic Certificates and Testimonials)</i>	<u>Director/Owner of Company/Business</u> <i>(Minimum Experience of 5 years)</i>	<u>5</u>	
		a) Certificate Training in Construction	3	
		b) Diploma Training in Construction	4	
		c) Degree Training in Construction	5	

		<u>Site Agent/Manager</u> <i>(Minimum qualification of Certificate Training in Building and Civil Engineering)</i>	<u>5</u>	
		a) With 1-5 years' experience in similar position b) With 6-10 years' experience in similar position c) With over 10 years' experience in similar position	3 4 5	
5		<u>Plant and Equipment</u> <i>(Provide proof of Ownership for the following indicating Model and Capacity or a Lease Agreement with ownership documents from the Lessor)</i>	<u>20</u>	
		a) Concreting Equipment- Concrete Mixer, Concrete Hoist, Poker Vibrator b) Earthwork Equipment- Excavator, Roller c) Welding Equipment, Tile cutter, Grinder d) Transport Vehicles-(Max 5No)	5 5 5 5	
6		<u>Program of Works</u> Provide a Program of Works	<u>5</u>	
7		<u>Serialization</u> Bid to be clearly serialized	<u>5</u>	
		Total	100	

Any bidder who scores 70 points and above shall be considered for further evaluation

b) Contractor Capacity Technical Evaluation. -Electrical Works

Item	Description	Points Scored	Max. Point
1	<u>No of Years in Business</u> d) 1-5 Years e) 6-10 Years f) Over 10 Years	6 8 10	10
2	Key Personnel (Attach evidence) Director of the firm - Holder of degree in relevant Engineering field ----- 8 - Holder of diploma in relevant Engineering field ----- 6 - Holder of certificate in relevant Engineering field-----4 - Holder of trade test certificate in relevant Engineering field----- 3 - No relevant certificate ----- 0 At least 1No. degree/diploma holder of key personnel in relevant field - With over 10 years relevant experience ----- 8 - With over 5 years relevant experience----- 3 - With under 5 years relevant experience ----- 2 6 No certificate holder or artisan of key personnel in relevant field - With over 10 years relevant experience----- 12 (1mark per staff) - With over 5 years relevant experience ----- 6 (0.5 mark per staff) - With under 5 years relevant experience -----4 (0.5 mark per staff)		28
3	<u>Contracts completed in the last five (5) years (Max of 5No. Projects) - Provide Evidence of completion certificates for Electrical works signed by the project manager / Engineer.</u> - Project of similar nature, complexity and magnitude -----30 marks project - Project of similar nature, complexity but of lower value which is not below 50% of the one in consideration -----10marks per project - Project of similar nature but of lower value which is below 50% of the one in consideration -----2 marks per project - No completed project of similar nature ----- 0		30
4	<u>On-going projects – Provide Evidence (Max of 4No. Projects-)</u> - Project of similar nature, complexity and magnitude -----20 (Each project 4 mark) - Projects of similar, nature but low value-----8 (Each project 2 mark) - No project of similar nature, complexity and magnitude----- 0		20
5	Schedule of contractors equipment and transport (proof or evidence of ownership/Lease) a) Relevant Transport (Provide evidence e.g. logbook copies, photos not allowed.) - Means of Transport (Vehicle) ----- 6 - No means of Transport ----- 0 b) Relevant Equipment (Provide evidence e.g. purchase receipt copies, photos not allowed) - Has relevant equipment for work being tendered ----- 6 - No relevant equipment for work being tendered ----- 0		12
	TOTAL		100

A bidder must score a minimum of 70 points to proceed for further evaluation.

c) Contractor Capacity Technical Evaluation- Mechanical Works

Item	Description	Points Scored	Max. Point
1	<u>No of Years in Business</u> g) 1-5 Years h) 6-10 Years i) Over 10 Years	4 8 10	10
2	Key Personnel (Attach evidence) Director of the firm - Holder of degree in relevant Engineering field ----- 7 - Holder of diploma in relevant Engineering field ----- 5 - Holder of certificate in relevant Engineering field-----4 - Holder of trade test certificate in relevant Engineering field----- 3 - No relevant certificate ----- 0 At least 1No. degree/diploma holder of key personnel in relevant field - With over 10 years relevant experience ----- 7 - With over 5 years relevant experience ----- 4 - With under 5 years relevant experience ----- 3 6 No certificate holder or artisan of key personnel in relevant field - With over 10 years relevant experience----- 12 (2 mark per staff) - With over 5 years relevant experience ----- 6 (1 mark per staff) - With under 5 years relevant experience -----1.8 (2 mark per staff)		7 7 12
3	Contracts completed in the last five (5) years (Max of 5No. Projects) - <u>Provide Evidence of completion certificates for Mechanical works signed by the project manager / Engineer.</u> - Project of similar nature, complexity and magnitude (AT LEAST 2NO MEDICAL GAS) -----7 marks project - Project of similar nature, complexity but of lower value which is not below 50% of the one in consideration (AT LEAST 2NO MEDICAL GAS) ----5marks per project - Project of similar nature but of lower value which is below 50% of the one in consideration (AT LEAST 2NO MEDICAL GAS)-----3 marks per project - No completed project of similar nature ----- 0		35
4	On-going projects – <u>Provide Evidence</u> (Max of 4No. Projects-) - Project of similar nature, complexity and magnitude -----16 (Each project 4 mark) - Projects of similar, nature but low value-----8 (Each project 2 mark) - No project of similar nature, complexity and magnitude----- 0		16
5	Schedule of contractors equipment and transport (proof or evidence of ownership/Lease)		7
	a) Relevant Transport (Provide evidence e.g. logbook copies, photos not allowed.) - Means of Transport (Vehicle) ----- 7 - No means of Transport ----- 0		6
	b) Relevant Equipment (Provide evidence e.g. purchase receipt copies, photos not allowed) - Has relevant equipment for work being tendered -----6 - No relevant equipment for work being tendered ----- 0		0
	TOTAL		100

A bidder must score a minimum of 70 points to proceed for further evaluation.

FINANCIAL EVALUATION

Tenders shall be checked for unacceptable arithmetic errors, abnormally low tenders, abnormally high tenders and tenders that are front loaded.

DUE DILIGENCE

A due diligence will only be carried out for the lowest evaluated tender to verify information provided in their tenders. Any false information provided will lead to disqualification

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	Describe 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 items			
1				
2				
3				
4				
5				
6				
	TOTAL COST LOCAL CONTENT		XXXXX	
	PERCENTAGE OF CONTRACT PRICE			

2. **FORMEQU: EQUIPMENT**

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

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Tenderer.

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

4. **FORM PER - 2:**

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

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

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

Project	Role	Duration of involvement	Relevant experience
<i>[main project details]</i>	<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): _____

Countersignature 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.

51 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: _____
1. Attached are copies of original documents of ☐ 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 ☐ In case of JV, letter of intent to form JV or JV agreement, in accordance with ITT 3.5 ☐ In case of state-owned enterprise or institution, in accordance with ITT 3.8, documents establishing: • Legal and financial autonomy • Operation under commercial law 1. Establishing that the Tenderer is not under the supervision of the Procuring Entity 2. Included are the organizational chart and a list of Board of Directors

52 FORM ELI -1.2

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

Date:_____

ITT No. and title:_____

Tenderer's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name:_____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of ☐ 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. ☐ In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Procuring Entity, in accordance with ITT 3.5. 2. Included are the organizational chart and a list of Board of Directors.

Historical Contract Non-Performance, Pending Litigation and Litigation History

Tenderer's Name: _____

Date: _____

JV Member's Name _____

ITT No. and title: _____

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
☐ Contract non-performance did not occur since 1 st January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1.			
☐ Contract(s) not performed since 1 st January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, requirement 2.1			
☐ Contract(s) withdrawn since 1 st 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			
☐ No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3.			
☐ Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.			

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: Status of dispute: _____	
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
☐ No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4.			
☐ Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.			

Year of dispute	Amount in dispute (currency)	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.

54 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 equivalent)				
	Year 1	Year 2	Year 3	Year 4	Year 5
Statement of Financial Position (Information from Balance Sheet)					
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:

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

☐ Attached are copies of financial statements¹ for the _____ years required above; and complying with the requirements

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

Average Annual Construction Turnover

Tenderer's Name: _____

Date: _____

JV Member's Name _____

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>		
Average Annual Construction Turnover *			

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

56 FORM FIN – 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 contract or contracts as specified in Section III, Evaluation and Qualification Criteria

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

57 FORM FIN – 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.

Current Contract Commitments					
No.	Name of Contract	Procuring Entity's Contact Address, Tel,	Value of Outstanding Work [Current Kenya Shilling /month Equivalent]	Estimated Completion Date	Average Monthly Invoicing Over Last Six Months [Kenya Shilling /month]
1					
2					
3					
4					
5					

General Construction Experience

Tenderer's Name: _____

Date: _____

JV Member's Name _____

ITT No. and title: _____

Page _____ of _____ pages

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

59 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 ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount	Kenya Shilling			
If member in a JV or sub-contractor, specify participation in total Contract amount				
Procuring Entity's Name:				
Address:				
Telephone/fax number				
E-mail:				

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 ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount	Kenya Shilling			
If member in a JV or sub-contractor, specify participation in total Contract amount				
Procuring Entity's Name:				
Address:				
Telephone/fax number				
E-mail:				

5.9 FORM EXP - 4.2 (a) (cont.)

Specific Construction and Contract Management Experience (cont.)

Similar Contract No.	Information
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

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

Construction Experience in Key Activities

Tenderer's Name: _____

Date: _____

Tenderer's JV Member Name: _____

Sub-contractor's Name² (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.

1. Key Activity No One: _

Information				
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount	Kenya Shilling			
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)	
Year 1				
Year 2				
Year 3				
Year 4				
Procuring Entity's Name:				
Address: Telephone/fax number E-mail:				

² If applicable

	Information
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:	

2. Activity No. Two

3.

OTHER FORMS

6. FORM OF TENDER

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

INSTRUCTIONS TO TENDERERS

- a) *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 sum³ of Kenya Shillings [[Amount in figures] _____] Kenya Shillings [amount in words] _____

The above amount includes foreign currency⁴ 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.
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

³ This sum should be carried forward from the Summary of the Bills of Quantities.

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

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, incase of one lot: Total priceis: *[insert the total price of the Tender in words and figures, indicating the various amounts and the respective currencies]*; or
- Option2, in case of multiple lots:
- (a) Total price of each lot *[insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]*; and
- (b) Total price of all lots (sum of all lots) *[insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies]*;
- vii) Discounts: The discounts offered and the methodology for their application are:
- viii) The discounts offered are: *[Specify in detail each discount offered.]*
- ix) The exact method of calculations to determine the net price after application of discounts is shown below: *[Specify in detail the method that shall be used to apply the discounts]*;
- x) Tender Validity Period: Our Tender shall be valid for the period specified in TDS 18.1 (as amended, if applicable) from the date fixed for the Tender submission deadline specified in TDS 22.1 (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- xi) Performance Security: If our Tender is accepted, we commit to obtain a Performance Security in accordance with the Tendering document;
- xii) One Tender Per Tender: We are not submitting any other Tender(s) as an individual Tender, and we are not participating in any other Tender(s) as a Joint Venture member or as a sub-contractor, and meet the requirements of ITT 3.4, other than alternative Tenders submitted in accordance with ITT 13.3;
- xiii) Suspension and Debarment: We, along with any of our subcontractors, suppliers, Engineer, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Public Procurement Regulatory Authority or any other entity of the Government of Kenya, or any international organization.
- xiv) State-owned enterprise or institution: *[select the appropriate option and delete the other]* *[We are not a state-owned enterprise or institution]/[We are a state-owned enterprise or institution but meet the requirements of 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

	ITEM	DESCRIPTION
1	Name of the Procuring Entity	
2	Reference Number of the Tender	
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	Nationality	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).....

iii) Give details of Directors as follows.

	Names of Director	Nationality	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			

(i) 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	Tenderer receives or has received any direct or indirect subsidy from another tenderer.		
3	Tenderer has the same legal representative as another tenderer		
4	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.		
5	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.		
6	Tenderer would be providing goods, works, non-consulting services or consulting services during implementation of the contract specified in this Tender Document.		
7	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		

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
	Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract.		
8	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.		
9	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 _____

Signature

[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. Boxbeing 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 Procurement and Asset Disposal and my responsibilities under the Code.

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

Name of Authorized signatory.....

Sign.....

Position.....

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

E-mail.....

Name of the Firm/Company.....

Date.....

(Company Seal/ Rubber Stamp where applicable)

Witness

Name.....

Sign.....

Date.....

(d) APPENDIX 1 - FRAUD AND CORRUPTION

(Appendix 1 shall not be modified)

1. Purpose

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

2. Requirements

- 2.1 The Government of Kenya requires that all parties including Procuring Entities, Tenderers, (applicants/proposers), Consultants, Contractors and Suppliers; any Sub-contractors, Sub-consultants, Service providers or Suppliers; any Agents (whether declared or not); and any of their Personnel, involved and engaged in procurement under Kenya's Laws and Regulation, observe the highest standard of ethics during the procurement process, selection and contract execution of all contracts, and refrain from Fraud and Corruption and fully comply with Kenya's laws and Regulations as per paragraphs 1.1 above.
- 2.2 Kenya's public procurement and asset disposal act (*no. 33 of 2015*) under Section 66 describes rules to be followed and actions to be taken in dealing with Corrupt, Coercive, Obstructive, Collusive or Fraudulent practices, and Conflicts of Interest in procurement including consequences for offences committed. A few of the provisions noted below highlight Kenya's policy of no tolerance for such practices and behavior:
- 1) A person to whom this Act applies shall not be involved in any corrupt, coercive, obstructive, collusive or fraudulent practice; or conflicts of interest in any procurement or as set disposal proceeding;
 - 2) A person referred to under subsection (1) who contravenes the provisions of that sub-section commits an offence;
 - 3) Without limiting the generality of the subsection (1) and (2), the person shall be: -
 - a) disqualified from entering into a contract for a procurement or asset disposal proceeding; or
 - b) if a contract has already been entered into with the person, the contract shall be voidable;
 - 4) The voiding of a contract by the procuring entity under subsection (7) does not limit any legal remedy the procuring entity may have;
 - 5) An employee or agent of the procuring entity or a member of the Board or committee of the procuring entity who has a conflict of interest with respect to a procurement: -
 - a) Shall not take part in the procurement proceedings;
 - b) shall not, after a procurement contract has been entered into, take part in any decision relating to the procurement or contract; and
 - c) shall not be a subcontractor or for the tender to whom was awarded contract, or a member of the group of tenderers to whom the contract was awarded, but the subcontractor appointed shall meet all the requirements of this Act.
 - 6) An employee, agent or member described in subsection (1) who refrains from doing anything prohibited under that subsection, but for that subsection, would have been within his or her duties shall disclose the conflict of interest to the procuring entity;
 - 7) If a person contravenes subsection (1) with respect to a conflict of interest described in subsection (5)(a) and the contract is awarded to the person or his relative or to another person in whom one of them had a direct or indirect pecuniary interest, the contract shall be terminated and all costs incurred by the public entity shall be made good by the awarding officer. Etc.

3. In compliance with Kenya's laws, regulations and policies mentioned above, the Procuring Entity:

- a) Defines broadly, for the purposes of the above provisions, the terms set forth below as follows:
- i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
 - ii) “fraudulent practice” is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
 - iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party; “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
 - iv) “obstructive practice” is:
 - Deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede investigation by Public Procurement Regulatory Authority (PPRA) or any other appropriate authority appointed by Government of Kenya into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
 - acts intended to materially impede the exercise of the PPRA's or the appointed authority's inspection and audit rights provided for under paragraph 2.3 e. below.
- b) Defines more specifically, in accordance with the above procurement Act provisions set forth for fraudulent and collusive practices as follows:
- “fraudulent practice” includes a misrepresentation of fact in order to influence a procurement or disposal process or the exercise of a contract to the detriment of the procuring entity or the tenderer or the contractor, and includes collusive practices amongst tenderers prior to or after tender submission designed to establish tender prices at artificial non-competitive levels and to deprive the procuring entity of the benefits of free and open competition.
- c) Rejects a proposal for award¹ 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 inspect² 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.

¹For 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.

²Inspections 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.

FORM OF TENDER SECURITY-[Option 1–Demand Bank Guarantee]

Beneficiary: _____

Request for Tenders No: _____

Date: _____

TENDER GUARANTEE No.: _____

Guarantor: _____

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)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

FORMAT OF TENDER SECURITY [Option 2–Insurance Guarantee]

TENDER GUARANTEE No.: _____

1. Whereas [Name of the tenderer] (hereinafter called “the tenderer”) has submitted its tender dated [Date of submission of tender] for the [Name and/or description of the tender] (hereinafter called “the Tender”) for the execution of _____ under Request for Tenders No. _____ (“the ITT”).
2. KNOW ALL PEOPLE by these presents that WE of [Name of Insurance Company] having our registered office at (hereinafter called “the Guarantor”), are bound unto [Name of Procuring Entity] (hereinafter called “the Procuring Entity”) in the sum of (Currency and guarantee amount) for which payment well and truly to be made to the said Procuring Entity, the Guarantor binds itself, its successors and assigns, jointly and severally, firmly by these presents.

Sealed with the Common Seal of the said Guarantor this ____ day of _____ 20__.

3. NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Applicant:
 - 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 thereto provided by the Principal; or
 - b) having been notified of the acceptance of its Tender by the Procuring Entity during the Tender Validity Period or any extension thereto 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 Procuring Entity's Tendering document.

then the guarantee undertakes to immediately pay to the Procuring Entity up to the above amount upon receipt of the Procuring Entity's first written demand, without the Procuring Entity having to substantiate its demand, provided that in its demand the Procuring Entity shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

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) twenty-eight 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.

[Date]

[Witness]

[Signature of the Guarantor]

[Seal]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

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

SECTION V - GENERAL CONDITIONS OF CONTRACT (GCC)

[Name of Procuring Entity]

[Name of Contract]

[Architect Name and Address]

General Conditions of Contract

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.

“Tests on 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

131 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- a) In writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Special Conditions of Contract; and
- b) delivered, sent or transmitted to the address of the recipient's communications as stated in the Special Conditions of Contract. However:
 - i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and
 - ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

132 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

141 The Contract shall be governed by the laws of **Kenya**.

142 The ruling language of the Contract shall be **English**.

1.5 Priority of Documents

The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:

- a) The Contract Agreement,
- b) The Letter of Acceptance,
- c) The Special Conditions – Part A,
- d) the Special Conditions – Part B
- e) the General Conditions of Contract
- f) the Form of Tender,
- g) the Specifications and Bills of Quantities
- h) the Drawings, and
- i) the Schedules and any other documents forming part of the Contract.

If an ambiguity or discrepancy is found in the documents, the Architect shall issue any necessary clarification or instruction.

1.6 Contract Agreement

The Parties shall enter into a Contract Agreement within 14 days after the Contractor receives the Contract Agreement, unless the Special Conditions establish otherwise. The Contract Agreement shall be based upon the form annexed to the Special Conditions. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Procuring Entity.

1.7 Assignment

The Contractor shall not assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, the contractor:

- a) May assign the whole or any part with the prior consent of the Procuring Entity, and
- b) may, as security in favor of a bank or financial institution, assign its right to moneys due, or to become due, under the Contract.

1.8 Care and Supply of Documents

- 1.81 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.
- 1.82 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.
- 1.83 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.
- 1.84 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

- 1.91 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.
- 1.92 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.

1.93 After receiving this further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

1.94 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

21 Right of Access to the Site

- 2.11 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.
- 2.12 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].
- 2.13 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.
- 2.14 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.
- 2.15 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.

22 Permits, Licenses or Approvals

22.1 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.

23 Procuring Entity's Personnel

The Procuring Entity shall be responsible for ensuring that the Procuring Entity's Personnel and the Procuring Entity's other contractor son the Site:

- a) co-operate with the Contractor's efforts under Sub-Clause 4.6 [Co-operation], and
- b) take action ssimilar 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].

24 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 Clause14 [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 Architectis 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 approvalis required, then (for the purposes of the Contract) the contractor shall require the Architect toprovideevidence 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 shallbedeemedtoactfortheProcuring 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) anyact 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.

32 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.

33 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).

34 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.

35 Determinations

- 35.1 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 or 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, be fit 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.

42 Performance Security

- 421 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.
- 422 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.
- 423 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.
- 424 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.
- 425 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.
- 426 The Procuring Entity shall return the Performance Security to the Contractor within 14 days after receiving a copy of the Taking-Over Certificate.
- 427 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.

43 Contractor's Representative

- 431 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**.
- 432 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.
- 433 The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's Representative or appoint a replacement.
- 434 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.
- 435 The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer].
- 436 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.
- 437 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 savailable during all working hours in a number deemed sufficient by the Engineer.

44 Sub-contractors

- 441 The Contractor shall not subcontract the whole of the Works. The contractor may however subcontract the works as provided in Clause 34.2.
- 442 The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if theyweret heacts 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].
- 443 The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 1.12 [Confidential Details] apply equally to each Subcontractor.
- 444 Wher epracticable, the Contractor shall give fair and reasonable opportunity for contractors from Kenya to be appointed as Subcontractors.

45 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.

46 Co-operation

- 461 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.
- 462 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.
- 463 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.

47 Setting Out of the Works

- 471 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.
- 472 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.

48 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.

49 Quality Assurance

- 49.1 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.
- 49.2 Details of all procedures and compliance documents shall be submitted to the Architect before information for 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.

410 Site Data

- 410.1 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.
- 410.2 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 sub-surface 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.

414 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.

415 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.

416 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.

417 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.

418 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.

419 Electricity, Water and Gas

- 419.1 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.
- 419.2 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.
- 419.3 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.

420 Procuring Entity's Equipment and Free-Issue Materials

- 420.1 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.
- 420.1 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.
- 420.2 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.
- 420.3 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.

421 Progress Reports

- 421.1 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.
- 421.2 Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works. Each report shall include:
- a) charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
 - b) photographs showing the status of manufacture and of progress on the Site;
 - c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:
 - i) commencement of manufacture,
 - ii) Contractor's inspections,
 - iii) tests, and

- iv) shipment and arrival at the Site;
- d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];
- e) copies of quality assurance documents, test results and certificates of Materials;
- f) list of notices given under Sub-Clause 2.5 [Procuring Entity's Claims] and notices given under Sub-Clause 20.1 [Contractor's Claims];
- g) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
- h) comparison so factual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

422 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.

423 Contractor's Operations on Site

423.1 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.

423.2 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.

423.3 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.

424 Fossils

424.1 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.

424.2 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 Subcontractor"

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].

52 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].

53 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].

54 Evidence of Payments

54.1 Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Architect may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

- (a) Submits this reasonable evidence to the Engineer, or
- (b)
 - i) Satisfies the Architect in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and
 - ii) Submits to the Architect reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement, then the Procuring Entity may (at his sole discretion) pay, direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Procuring Entity, the amount which the nominated Subcontractor was directly paid by the Procuring Entity.

6 STAFF AND LABOR

6.1 Engagement of Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, feeding, transport, and, when appropriate, housing. The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labor with appropriate qualifications and experience from sources within Kenya.

6.2 Rates of Wages and Conditions of Labor

6.2.1 The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by Procuring Entity's whose trade or industry is similar

to that of the Contractor.

- 622 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.

63 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.

64 Lab or 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.

65 Working Hours

Nowork 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.

66 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.

67 Health and Safety

- 67.1 The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with loca lhealth 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.
- 67.2 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.
- 67.3 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.
- 67.4 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.

68 Contractor's Superintendence

- 68.1 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.

6.82 Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause 1.4 [Law and Language]) and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.

6.9 Contractor's Personnel

6.9.1 The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Contractor's Key personnel shall be named in the Special Conditions of Contract. The Architect may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:

- a) Persists in any misconduct or lack of care,
- b) Carries out duties in competently or negligently,
- c) fails to conform with any provisions of the Contract,
- d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment, or
- e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works.

6.9.2 If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

6.10 Records of Contractor's Personnel and Equipment

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

6.11 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

6.12 Foreign Personnel

6.12.1 The Contractor shall not employ foreign personnel unless the contractor demonstrates that there are no Kenyans with the required skills.

6.12.2 The Contractor shall be responsible for the return of any foreign personnel to the place where they were recruited or to their domicile. In the event of the death in Kenya of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial.

6.13 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

6.14 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce the danger to their health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

6.15 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of Kenya, onsite, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift, barter or disposal thereof by Contractor's Personnel.

6.16 Prohibition of Forced or Compulsory Labour

The Contractor shall not employ forced labor, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of

involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

6.17 Prohibition of Harmful Child Labor

The Contractor shall not employ children in a manner that is economically exploitative, or is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Where the relevant labour laws of Kenya have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18 years shall not be employed in dangerous work.

6.18 Employment Records of Workers

The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the Engineer. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment].

6.19 Workers' Organizations

The Contractor shall comply with the relevant labor laws that recognize workers' rights to form and to join workers' organizations of their choosing without interference.

6.20 Non-Discrimination and Equal Opportunity

The Contractor shall base the labour employment on the principle of equal opportunity and fair treatment and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment, retirement, and discipline.

7. PLANT, MATERIALS AND WORKMANSHIP

7.1 Manner of Execution

The Contractor shall carry out the manufacture/assemble of plant, the production and manufacture of Materials, and all other execution of the Works:

- a) In the manner (if any) specified in the Contract,
- b) in a proper workman like and careful manner, in accordance with recognized good practice, and
- c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the Contract.

7.2 Samples

The Contractor shall submit the following samples of Materials, and relevant information, to the Architect for consent prior to using the Material in or for the Works:

- a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and
- b) additional samples instructed by the Architect as a Variation.

Each sample shall be labeled as to origin and intended use in the Works.

7.3 Inspection

7.3.1 The Procuring Entity's Personnel shall at all reasonable times:

- a) Have full access to all parts of the Site and to all places from which natural Materials are being obtained, and
- b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials.

7.3.2 The Contractor shall give the Procuring Entity's Personnel full opportunity to carry out these activities,

including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.

- 733 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.

74 Testing

- 741 This Sub-Clause shall apply to all tests specified in the Contract.
- 742 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.
- 743 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.
- 744 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.
- 745 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.
- 746 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.
- 747 The Contractor shall promptly forward to the Architect duly certified reports of the tests. When the specified tests have been completed, 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.

75 Rejection

- 751 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.
- 752 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.

76 Remedial Work

- 761 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.

- 7.62 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).
- 7.63 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.
- 7.64 If the contractor repeatedly delivers defective work, the Procuring Entity may consider termination in accordance with Clause 15.

7.7 Ownership of Plant and Materials

Except as otherwise provided in the Contract, each item of Plant and Materials shall become the property of the Procuring Entity at whichever is the earlier of the following times, free from liens and other encumbrances:

- a) When it is incorporated in the Works;
- b) when the Contractor is paid the corresponding value of the Plant and Materials under Sub-Clause 8.10 [Payment for Plant and Materials in Event of Suspension].

7.8 Royalties

Unless otherwise stated in the Specification, the Contractor shall pay all royalties, rents and other payments for:

- a) Natural materials obtained from outside the Site, and
- b) the disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal are as within the Site are specified in the Contract.

8 COMMENCEMENT, DELAYS AND SUSPENSION

8.1 Commencement of Works

- 8.1.1 Except as otherwise specified in the Special Conditions of Contract, the Commencement Date shall be the date at which the following precedent 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 6.2 [Termination by Contractor].
- 8.1.3 The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date and shall then proceed with the Works with due expedition and without delay.

8.2 Time for Completion

The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:

- a) Achieving the passing of the Test 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.

832 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.

833 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.

834 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.

84 Extension of Time for Completion

841 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.

842 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.

85 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].

86 Rate of Progress

- 86.1 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.
- 86.2 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.
- 86.3 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.

87 Delay Damages

- 87.1 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.
- 87.2 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.

88 Suspension of Work

- 88.1 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.
- 88.2 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.

89 Consequences of Suspension

- 89.1 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.
- 89.2 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.
- 89.3 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].

810 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 1.4 [Failure to Remedy Defects].

10. PROCURING ENTITY'S TAKING OVER

10.1 Taking Over of the Works and Sections

- 10.1.1 Except as stated in Sub-Clause 9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Procuring Entity when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.
- 10.1.2 The Contractor may apply by notice to the Architect for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.
- 10.1.3 The Architect shall, within 30 days after receiving the Contractor's application:
- a) Issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or
 - b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under 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.

103 Interference with Tests on Completion

- 103.1 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.
- 103.2 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.
- 103.3 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.
- 103.4 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

104 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 defects or damage occurring more than two years after the Defects Notification Period for the Plant and/ or Materials would otherwise have expired.

11.4 Failure to Remedy Defects

- 11.4.1 If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by the Engineer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.
- 11.4.2 If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Procuring Entity may (at his option):
- (a) Carry out the work itself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity the costs reasonably incurred by the Procuring Entity in remedying the defect or damage;
 - (b) Require the Architect to agree or determine a reasonable reduction in the Contract Price in accordance with Sub-Clause 3.5 [Determinations]; or
 - (c) if the defect or damage deprives the Procuring Entity of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract otherwise, the Procuring Entity shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.

11.5 Removal of Defective Work

If the defect or damage cannot be remedied expeditiously on the Site and the Procuring Entity gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.

11.6 Further Tests

- 11.6.1 If the work of remedying of any defect or 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 or 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.

11.92 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.

11.93 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 EVALUATION

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 Materials or other applicable Schedules.

123 Evaluation

- 123.1 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 one 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.
- 123.2 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.
- 123.3 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.
- 123.4 However, for a new item of work, a new rate or price shall be appropriate for such item of work if:
- a) The work is instructed under Clause 13 [Variations and Adjustments],
 - b) no rate or price is specified in the Contract for this item, and
 - c) no specified rate or price is appropriate because the item of work is not of similar character, or is not executed under similar conditions, as any item in the Contract.
- 123.5 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.
- 123.6 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.
- 123.7 Where the contract price is different from the corrected tender price, in order to ensure the contractor is not paid less or more relative to the contract price (*which would be the tender price*), payment valuation certificates and variation orders on omissions and additions valued based on rates in the Bill of Quantities or schedule of rates in the Tender, will be adjusted by a plus or minus percentage. The percentage already worked out during tender evaluation is worked out as follows: $(\text{corrected tender price} - \text{tender price}) / \text{tender price} \times 100$.

124 Omissions

Whenever the omission of any work forms part (or all) of a Variation, the value of which has not been agreed, if:

- a) The Contractor will incur (or has incurred) cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount;
- b) The omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and
- c) this cost is not deemed to be included in the evaluation of any substituted work; then the Contractor shall give notice to the Architect accordingly, with supporting particulars. Upon receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

13 VARIATIONS AND ADJUSTMENTS

13.1 Right to Vary

- 13.1.1 Variations may be initiated by the Architect at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal. No Variation instructed by the Architect under this Clause shall in any way vitiate or invalidate the Contract.
- 13.1.2 The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Architect stating (with supporting particulars) that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Architect shall cancel, confirm or vary the instruction.
- 13.1.3 Each Variation may include:
- a) changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),
 - b) changes to the quality and other characteristics of any item of work,
 - c) changes to the levels, positions and/ or dimensions of any part of the Works,

- d) omission of any work unless it is to be carried out by others,
- e) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or
- f) changes to the sequence or timing of the execution of the Works.

13.14 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.

132 Variation Order Procedure

13.21 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 Architect are 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 Materials or Schedule of Daywork Prices. If the rates contained in the Bills of Materials or Daywork 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 Daywork 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 forthwith 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 13.3.

133 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].

- 1323 If a proposal, which is approved by the Engineer, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:
- a) The Contractor shall design this part,
 - b) sub-paragraphs (a) to (d) of Sub-Clause 4.1 [Contractor's General Obligations] shall apply, and
 - c) if this change results in a reduction in the contract value of this part, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts:
 - i) such reduction in contract value, resulting from the change, excluding adjustments under Sub-Clause 13.8 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost], and
 - ii) the reduction (if any) in the value to the Procuring Entity of the varied works, taking account of any improvement in quality, anticipated life or operational efficiencies.

13.3.4 However, if the amount established in item 13.2.3 (c) (i) is less than amount established in item 13.2.3 (c) (ii), there shall not be a fee. However, if the if the amount established in item 13.2.3 (c) (i) is more than amount established in item 13.2.3 (c) (ii), it shall result in a price variation to the Procuring Entity.

13.4 Variation Procedure for Value Engineering proposal

- 1341 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.
- 1342 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.
- 1343 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.
- 1344 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

- 1361 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.
- 1362 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 Sub-Clause shall not apply.
- 13.7.2 Before ordering Goods for the work, the Contractor shall submit quotations to the Engineer. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.
- 13.7.3 Except for any items for which the Daywork Schedule specifies that payment is not due, the Contractor shall deliver each day to the Architect accurate statements induplicate which shall include the following details of the resources used in executing the previous day's work:
- a) The names, occupations and time of Contractor's Personnel,
 - b) the identification, type and time of Contractor's Equipment and Temporary Works, and
 - c) the quantities and types of Plant and Materials used.
- 13.7.4 One copy of each statement will, if correct, or when agreed, be signed by the Architect and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Engineer, prior to their inclusion in the next Statement under Sub-Clause 14.3 [Application for Interim Payment Certificates].

13.8 Adjustments for Changes in Legislation

- 13.8.1 The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of Kenya (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.
- 13.8.2 If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:
- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
 - b) payment of any such Cost, which shall be included in the Contract Price.
- 13.8.3 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.
- 13.8.4 Notwithstanding the foregoing, the Contractor shall not be entitled to an extension of time if the relevant delay has already been taken into account in the determination of a previous extension of time and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of Sub-Clause 13.8 [Adjustments for Changes in Cost].

13.9 Adjustments for Changes in Cost

- 13.9.1 In this Sub-Clause, "table of adjustment data" means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this Sub-Clause shall not apply.
- 13.9.2 If this Sub-Clause applies, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labor, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in Costs is not covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included amounts to cover the contingency of other rises and falls in costs.
- 13.9.3 The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following general type:

Price Adjustment Formula

Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the SCC**. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type specified below applies:

$$P = A + B I_m/I_o$$

where:

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

A and **B** are coefficients **specified in the SCC**, representing then on adjustable and adjustable portions, respectively, of the Contract Price payable and

I_m is the index prevailing at the end of the month being invoiced and **I_o** 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.

- 1394 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. For this 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.
- 1395 In cases 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.
- 1396 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.
- 1397 If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter 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.
- 1398 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 inapplicable, 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:

- 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;
- 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];
- any quantities which may be set out in the Bill of Materials 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 there portion the progress during this month in accordance with Sub-Clause 4.21 [Progress Reports].

- 1432 The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:
- a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);
 - b) any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost];
 - c) any amount to be deducted for retention, calculated by applying the percentage of retention stated in **the Special Conditions of Contract** to the total of the above amounts, until the amount so retained by the Procuring Entity reaches the limit of Retention Money (if any) stated in **the Special Conditions of Contract**;
 - d) any amounts to be added for the advance payment and (if more than one instalment) and to be deducted for its repayments in accordance with Sub-Clause 14.2 [Advance Payment];
 - e) any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause 14.5 [Plant and Materials intended for the Works];
 - f) any other additions or deductions which may have become due under the Contractor otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]; and
 - g) the deduction of amounts certified in all previous Payment Certificates.

144 Schedule of Payments

- 1441 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.
- 1442 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.

145 Plant and Materials intended for the Works

- 1451 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].
- 1452 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.
- 1453 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.

1454 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.

1455 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.

146 Issue of Interim Payment Certificates

1461 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.

1462 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.

1463 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.

147 Payment

1471 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].

- 1472 Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor, in the payment country (forth is currency) specified in the Contract.

148 Delayed Payment

- 1481 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.
- 1482 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.
- 1483 The Contractor shall be entitled to this payment without formal notice and certification, and without prejudice to any other right or remedy.

149 Payment of Retention Money

- 1491 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.
- 1492 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.
- 1493 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.
- 1494 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].
- 1495 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.
- 1496 The Procuring Entity shall return the Retention Money Security guarantee to the Contractor within 14 days after receiving a copy of the Completion Certificate.

1410 Statement at Completion

- 1410.1 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.

14.102 The Architect shall then certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates].

14.11 Application for Final Payment Certificate

14.11.1 Within 60 days after receiving the Completion Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement with supporting documents showing in detail in a form approved by the Engineer:

- a) The value of all work done in accordance with the Contract, and
- b) Any further sums which the Contractor considers to be due to him under the Contract otherwise.

14.11.2 If the Architect disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Architect may reasonably require within 30 days from receipt of said draft and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Architect the final statement as agreed. This agreed statement is referred to in these Conditions as the "Final Statement".

14.11.3 However, if, following discussions between the Architect and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Architect shall deliver to the Procuring Entity (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under Sub-Clause 20.4 [Obtaining Dispute Board's Decision] or Sub-Clause 20.5 [Amicable Settlement], the Contractor shall then prepare and submit to the Procuring Entity (with a copy to the Engineer) a Final Statement.

14.12 Discharge

When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.

14.13 Issue of Final Payment Certificate

14.13.1 Within 30 days after receiving the Final Statement and discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Architect shall deliver, to the Procuring Entity and to the Contractor, the Final Payment Certificate which shall state:

- a) The amount which he fairly determines is finally due, and
- b) After giving credit to the Procuring Entity for all amounts previously paid by the Procuring Entity and for all sums to which the Procuring Entity is entitled, the balance (if any) due from the Procuring Entity to the Contractor or from the Contractor to the Procuring Entity, as the case may be.

14.13.2 If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Architect shall request the Contractor to do so. If the Contractor fails to submit an application within a period of 30 days, the Architect shall issue the Final Payment Certificate for such amount as he fairly determines to be due.

14.14 Cessation of Procuring Entity's Liability

14.14.1 The Procuring Entity shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:

- a) in the Final Statement and also,
- b) (except for matters or things arising after the issue of the Taking-Over Certificate for the Works) in the Statement at completion described in Sub-Clause 14.10 [Statement at Completion].

14.14.2 However, this Sub-Clause shall not limit the Procuring Entity's liability under his indemnification obligations, or the Procuring Entity's liability in any case of fraud, deliberate default or reckless misconduct by the Procuring Entity.

14.15 Currencies of Payment

The Contract Price shall be paid in the currency or currencies named in the Schedule of Payment Currencies. If more than one currency is so named, payments shall be made as follows:

- a) If the Accepted Contract Amount was expressed in Local Currency only:
 - i) the proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Schedule of Payment Currencies, except as otherwise agreed by both Parties;
 - ii) payments and deductions under Sub-Clause 13.5 [Provisional Sums] and Sub-Clause 13.7 [Adjustments for Changes in Legislation] shall be made in the applicable currencies and proportions; and
 - iii) other payments and deductions under sub-paragraphs (a) to (d) of Sub-Clause 14.3 [Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in sub-paragraph (a) (i) above;
- b) payment of the damages specified in the Special Conditions of Contract, shall be made in the currencies and proportions specified in the Schedule of Payment Currencies;
- c) other payments to the Procuring Entity by the Contractor shall be made in the currency in which the sum was expended by the Procuring Entity, or in such currency as may be agreed by both Parties;
- d) if any amount payable by the Contractor to the Procuring Entity in a particular currency exceeds the sum payable by the Procuring Entity to the Contractor in that currency, the Procuring Entity may recover the balance of this amount from the sums otherwise payable to the Contractor in other currencies; and
- e) if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and determined by the Central Bank of Kenya.

15 TERMINATION BY PROCURING ENTITY

15.1 Notice to correct any defects or failures

If the Contractor fails to carry out any obligation under the Contract, the Architect may by notice require the Contractor to make good the failure and to remedy it within 30 days.

15.2 Termination by Procuring Entity

- 15.2.1 The Procuring Entity shall be entitled to terminate the Contract if the Contractor breaches the contract based on following circumstances which shall include but not limited to:
- a) fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],
 - b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,
 - c) without reasonable excuse fails:
 - i) to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or
 - ii) to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 30 days after receiving it,
 - d) subcontracts the major part or whole of the Works or assigns the Contract without the consent of the Procuring Entity,
 - e) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or
 - f) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an induce mentor reward:
 - i) for doing or for bearing to do any action in relation to the Contract, or
 - ii) for showing or for bearing to show favor or disfavor to any person in relation to the Contract, or
 - iii) if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such induce mentor reward as is described in this sub-paragraph (f). However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination, or
 - g) If the contract or repeatedly fails to remedy delivers defective work,

- h) based on reasonable evidence, has engaged in Fraud and Corruption as defined in paragraph 2.2 of the Appendix B to these General Conditions, incompetently for or in executing the Contract.

- 1522 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 subparagraph (e) or (f) or (g) or (h), the Procuring Entity may by notice terminate the Contract immediately.
- 1523 The Procuring Entity's election to terminate the Contract shall not prejudice any other rights of the Procuring Entity, under the Contract otherwise.
- 1524 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.
- 1525 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.
- 1526 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.

153 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.

154 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.

155 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].

156 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 14.7 [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].

1632 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.

1633 The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract otherwise.

164 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.

165 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 act or 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 act or 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.

1722 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.

1723 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.

1724 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.

173 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.

174 Consequences of Procuring Entity's Risks

174.1 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.

174.2 If the Contractor suffers delay and/ or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) An extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs (e) and (g) of Sub-Clause 17.3 [Procuring Entity's Risks], Accrued Costs shall be payable.

174.3 After receiving this further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

175 Intellectual and Industrial Property Rights

175.1 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.

175.2 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.

- 1753 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.

1754 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.

1755 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.

1756 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 right (without the right 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.

176 Limitation of Liability

176.1 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 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].

176.2 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.

176.3 This Sub-Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

177 Use of Procuring Entity's Accommodation/Facilities

177.1 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).

177.2 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 Contract, 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 in Clause 18) with insurers from any eligible source country.

182 Insurance for Works and Contractor's Equipment

- 182.1 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.
- 182.2 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]).
- 182.3 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.
- 182.4 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) a part 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) a part 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].
- 182.5 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].

183 Insurance against Injury to Persons and Damage to Property

- 183.1 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.
- 183.2 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.
- 183.3 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.

184 Insurance for Contractor's Personnel

- 184.1 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.
- 184.2 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.
- 184.3 The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Clause.

19 FORCE MAJEURE

19.1 Definition of Force Majeure

- 19.1.1 In this Clause, "Force Majeure" means an exceptional event or circumstance:
 - a) Which is beyond a Party's control,
 - b) Which such Party could not reasonably have provided against before entering into the Contract,
 - c) which, having arisen, such Party could not reasonably have avoided or overcome, and
 - d) which is not substantially attributable to the other Party.
- 19.1.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:
 - a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
 - b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
 - c) riot, commotion, disorder, strike or lock out by persons other than the Contractor's Personnel,
 - d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and
 - e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

19.2 Notice of Force Majeure

- 19.2.1 If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.
- 19.2.2 The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.
- 19.2.3 Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

19.3 Duty to Minimize Delay

Each Party shall at all times use all reasonable endeavors to minimize any delay in the performance of the Contract as a result of Force Majeure. A Party shall give notice to the other Party when it ceases to be affected

by the Force Majeure.

194 Consequences of Force Majeure

194.1 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].

194.2 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

195 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.

196 Optional Termination, Payment and Release

196.1 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].

196.2 Upon such termination, the Architect shall determine the value of the work done and issue a Payment Certificate which shall include:

- a) the amount 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.

197 Release from Performance

Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:

- a) The Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and
- b) The sum payable by the Procuring Entity to the Contractor shall be the same as would have been payable under Sub-Clause 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub-Clause 19.6.

20. SETTLEMENT OF CLAIMS AND DISPUTES

20.1 Contractor's Claims

- 20.1.1 If the Contractor considers itself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give Notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 30 days after the Contractor became aware, or should have become aware, of the event or circumstance.
- 20.1.2 If the Contractor fails to give notice of a claim within such period of 30 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.
- 20.1.3 The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.
- 20.1.4 The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at an other location acceptable to the Engineer. Without admitting the Procuring Entity's liability, the Architect may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/ or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Architect to inspect all these records and shall (if instructed) submit copies to the Engineer.
- 20.1.5 Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Architect fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/ or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:
- a) This fully detailed claim shall be considered as interim;
 - b) The Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/ or amount claimed, and such further particulars as the Architect may reasonably require; and
 - c) The Contractor shall send a final claim within 30 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.
- 20.1.6 Within 42 days after receiving a Notice of a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Architect and approved by the Contractor, the Architect shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars but shall nevertheless give his response on the principles of the claim within the above defined time period.
- 20.1.7 Within the above defined period of 42 days, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.
- 20.1.8 Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.
- 20.1.9 If the Architect does not respond within the time frame defined in this Clause, either Party may consider that the claim is rejected by the Architect and any of the Parties may refer the dispute for amicable settlement in accordance with Clause 20.3.
- 20.1.10 The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/ or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause 20.3.

202 Procuring Entity's Claims

- 202.1 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.
- 202.2 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.
- 202.3 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].
- 202.4 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.

203 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.

204 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.

205 Arbitration

- 205.1 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.
- 205.2 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.
- 205.3 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.
- 205.4 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.

- 2055 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.
- 2056 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.
- 2057 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.
- 2057 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.
- 2058 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.

206 Arbitration with National Contractors

- 206.1 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
- 206.2 The institution written to first by the aggrieved party shall take precedence over all other institutions.

207 Arbitration with Foreign Contractors

- 207.1 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.
- 207.2 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].

208 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.

209 Failure to Comply with Arbitrator's Decision

- 209.1 The award of such Arbitrator shall be final and binding up on the parties.
- 209.2 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 VI - 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.

Conditions	Sub-Clause	Data
Part A - Contract Data		
Procuring Entity's name and address	Heading	Nyeri County Department of Health Services P.O.Box 1112-10100, Nyeri
Name and Reference No. of the Contract	Heading and 1.1	CGN/HEALTH/12/2024-2025
Engineers Name and address	Heading and 3.1.1	The Chief Officer, Infrastructure Nyeri County
Contractor's Representative's 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.	52 weeks
Defects Notification Period	1.1	24 weeks
Sections	1.1	Not applicable
Electronic transmission systems	1.3	
Time for the Parties entering into a Contract Agreement	1.6	Within 30days
Commencement Date	8.1.1	
Time for access to the Site	2.1.1	No later than the Commencement Date, and not later than _____7_____ days after Commencement Date
Architect Duties and Authority	3.1.6 (b) (ii)	Variations resulting in an increase of the Accepted Contract Amount in excess of <u> 0 </u> % shall require approval of the Procuring Entity. -
Performance Security	4.2.1	The performance security will be in the form of a Bank Guarantee in the amount(s) of 5 percent of the Accepted Contract Amount and 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)	<u> 0.05 </u> % of the Contract Price per day.
Maximum amount of delay damages	8.7.1	<u> 5 </u> % of the final Contract Price.
Provisional Sums	13.6. (b)(ii)	As determined by the Engineer/ _____ %
Adjustments for Changes in Cost	13.9	Not applicable
Total advance payment	14.2.1	Not applicable
Repayment amortization rate of advance payment	14.2.5 (b)	Not applicable
Percentage of Retention	14.3.2 (c)	<u> 10 </u> %
Limit of Retention Money	14.3.2 (c)	<u> 5 </u> % of the Accepted Contract Amount
Plant and Materials	14.5.3(b)(i)	If Sub-Clause 14.5 applies: Plant and Materials for payment Free on Board _____ [list].
	14.5.3(c)(i)	Plant and Materials for payment when delivered to the Site <i>Plant and materials to be incorporated into permanent works</i>

Conditions	Sub- Clause	Data
Minimum Amount of Interim Payment Certificates	14.6.2	Not applicable
Publishing source of commercial interest rates for financial charges in case of delayed payment	14.8	Central Bank of Kenya
Maximum total liability of the Contractor to the Procuring Entity	17.6.2	As per applicable laws
Periods for submission of insurance: a. evidence of insurance. b. relevant policies	18.1.6	<u>As per applicable law</u>
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	18.3.2	<i>As per applicable laws</i>
The place of arbitration	20.7.2	, Kenya

SECTION VII - 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 Drawings will be provided during implementation.

SECTION VIII - 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 in sufficient 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
 - d) Daywork Schedule; and
 - e) Provisional items
 - f) 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 part 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 ³ or cu m	millimetre	mm
hectare	ha	month	mon
hour	h	number	nr
kilogram	kg	square meter	m ² or sq m
lump sum	ls	square millimeter	mm ² or sq mm
meter	m	week	wk
metric ton	t		

- 4.3 The Bills of Quantities shall be read in conjunction with the Instructions to Tenders, General and Special Conditions of Contract, Technical Specifications, and Drawings.
- 4.4 The quantities given in the Bills of Quantities are estimated and partly provisional and are given to provide a common basis for tendering. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Architect and valued at the rates and prices tendered 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.

45. 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.
46. 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.
47. 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.
48. 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.
49. 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.
410. 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.
411. 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

51. 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.
52. 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.
53. 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.
54. 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.
55. All items that have not been measured and therefore not subject to tender 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.

- 56 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.

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COST ESTIMATE

BILL NO.1: PRELIMINARIES					
ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>The contractor is advised to read and understand all preliminary items.Prices SHALL BE INSERTED against items of preliminaries. The Contractor shall be deemed to have included in his prices for all costs involved in complying with all the requirements for the proper execution of the whole of the works in the Contract</u> <u>BID SECURITY</u> The contractor shall provide a bid security duly signed, sealed and stamped from an approved Bank or Insurance company of required the amount. <u>SIGNBOARD</u> 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. <u>PERFORMANCE GURANTEEE</u> A bond of 5 % of the contract sum will be required. In form of Bank Guarantee from an approved Bank or from a Central Bank Registered bank. No payment on account for the works executed will be made to the contractor until he has submitted the required Performance Gurantee. <u>INSURANCE</u> The Contractor shall insure as required in Conditions No. 30 of 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.				
A					
B					
C					
D					
TOTAL CARRIED TO COLLECTION					
PR/1					

COST ESTIMATE

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	<u>COMPLIANCE WITH LABOUR LAWS</u>				
	Allow for complying with all Government Labour Law and Regulations in regard to the safety, health and welfare of the workers. This should include allowing for provision of site safety training and provision of safety gear.				
	<u>LABOUR CAMPS</u>				
	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.				
B	<u>PROJECT MANAGER OFFICE</u>				
	The Contractor shall provide, erect and maintain where directed on site and afterwards dismantle a site office complete with furniture and necessary sanitation facilities. 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 leveling staff, ranging rods and 50 metre metallic or linen tape.				
C	<u>SITE SECURITY</u>				
	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.				
D					
TOTAL CARRIED TO COLLECTION					
PR/2					

COST ESTIMATE

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	<u>WATER AND ELECTRICITY SUPPLY FOR THE WORKS</u> 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.				
	<u>SANITATION OF THE WORKS</u> 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				
	<u>STORAGE OF MATERIALS</u> 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 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.				
	<u>HOARDING</u> The Contractor shall secure the roof area during the re-roofing with strong nets to ensure no dangerous objects falls to the ground thus avoiding any injuries to people moving around the building.				
TOTAL CARRIED TO COLLECTION					
PR/3					

COST ESTIMATE

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	<u>SAMPLES</u>				
	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. 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.				
	<u>EXISTING SERVICES AND PROPERTY</u>				
B	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.				
C	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.				
	TOTAL CARRIED TO COLLECTION				
PR/4					

COST ESTIMATE

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>PROTECTION OF THE WORKS.</u>				
A	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.				
	<u>PLANT, TOOLS AND VEHICLES</u>				
B	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.				
	<u>CLEARING AWAY</u>				
C	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.				
D	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.				
	TOTAL CARRIED TO COLLECTION				
PR/5					

COST ESTIMATE

[illegible]

BILL NO. 2 : FIRST FLOOR COMPLETION WORKS					
ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>FIRST FLOOR</u> <u>ELEMENT NO. 1</u> <u>DEMOLITIONS AND ALTERATIONS</u> <u>(ALL PROVISIONAL)</u> <u>Items of demolitions and removal shall include shoring making good disturbed areas to match existing and loading and carting away debris unless otherwise specified</u>				
A	Carefully demolish existing 200mm thick masonry walling; make good disturbed surfaces and preserve arising materials as directed by the Project Manager	11	SM		
B	Carefully hack 75mm deep (average) to expose existing beam reinforcement bars and prepare surfaces to receive suspended slab to Structural Engineer's detail and approval; make good disturbed surfaces to match existing and cart away debris;	5	SM		
TOTAL FOR DEMOLITIONS AND ALTERATIONS CARRIED TO FIRST FLOOR COMPLETION WORKS SUMMARY					
BW/1					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>ELEMENT NO. 2</u>				
	<u>CONCRETE WORKS</u>				
	<u>Vibrated reinforced concrete grade 20/20 (1:2:4) in:</u>				
A	150mm thick suspended slab	38	SM		
B	Allow for application of 'Sika Latex' admixture in accordance to manufacturer's printed instructions or other equal and approved; to Structural Engineer's	10	SM		
	<u>Sawn cypress formwork to:</u>				
C	Suspended soffits	38	SM		
D	Edges of slab exceeding 75mm but n.e 150mm	67	LM		
	<u>Steel reinforcement as described including cutting to length, bending, hoisting and fixing including all necessary tying wires and spacing blocks (All Provisional)</u>				
E	12mm diameter bars	650	KG		
F	10mm diameter bars	405	KG		
TOTAL FOR CONCRETE WORKS CARRIED TO FIRST FLOOR					
COMPLETION WORKS SUMMARY					
BW/2					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	<u>ELEMENT NO. 3</u>				
	<u>WALLING</u>				
	<u>External Walling</u>				
	<u>Approved smooth machine cut natural stone walling in cement and sand (1:4) mortar reinforced with and including 25 x 3mm thick hoop iron in every alternate course</u>				
	200mm thick walling	65	SM		
B	<u>Internal Walling</u>				
	<u>Approved smooth machine cut natural stone walling in cement and sand (1:4) mortar reinforced with and including 25 x 3mm thick hoop iron in every alternate course</u>				
B	200mm thick walling	708	SM		
C	Ditto but 150mm thick	251	SM		
D	<u>Precast concrete louvred block walling</u>				
	<u>Approved precast concrete louvred block walling bedded and jointed in cement and sand (1:3) mortar including reinforcing with 20 x 3mm thick hoop iron in every alternate course</u>				
	200mm thick walling	31	SM		
E	<u>Aluminium partitioning</u>				
	<u>Supply and fix powder coated aluminium partition not exceeding 1,800mm high; standard hollow or angle sections; horizontal and vertical frame members mitred at corners including reinforcing cleats and all necessary ironmongery; fixing with steel screws; plugging or fixing to concrete, block work or masonry walling; complete with 6mm clear glass panel; sealing with mastic; oiling and adjusting on completion: to Architect's design and approval</u>				
E	Aluminium partitioning; over 300mm wide	610	SM		
TOTAL FOR WALLING CARRIED TO TO FIRST FLOOR COMPLETION WORKS SUMMARY					
BW/3					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	<u>ELEMENT NO. 4</u> <u>DOORS</u>				
	<u>Metal Doors</u>				
	<u>The following purpose made mild steel panel doors complete with hanging and locking accessories fabricated in accordance with Architectural designs and once primed with red oxide before delivery to the site, cutting pinning fixing lugs to walls and plastering reveals and in cement (1:3) mortar with</u>				
	Double leaf pannelled main door size 1,500 x 3,000mm high overall comprising 50 x 25 x 3mm thick framing with 50 x 25mm RHS vertical infills flush welded and jointed to full width of door	1	NO		
	<u>Flush Doors</u>				
	<u>45mm thick solid core flash doors faced both sides with plain internal quality "Mahogany" veneer and hardwood lipped all edges to approval with and including 5mm thick obscure glass view panel (m.s); including weatherstripping and sealing; to Architect's design and approval</u>				
	B Double leaf door size 1,800 x 2,100mm high	10	NO		
	C Double leaf door size 1,500 x 2,100mm high	5	NO		
	D Ditto but 900 x 2,100mm high	27	NO		
	<u>45mm thick semi-solid core flush doors in composite wood door frame: 3mm thick HDF pressed "lamine" on both sides; hardwood lipped all</u>				
E Door overal size 900 x 2,100mm high	14	NO			
	<u>Timber Louvred duct doors</u>				
F	900 x 3,000mm blockboard double leaf door with 4 No 300 x 500mm aluminium louvres	4	NO		
	<u>Wrot Hardwood or other equal and approved :-</u>				
G	150mm x 50mm rebated frame with two labours	226	LM		
H	Ditto but 100 x 50mm	72	LM		
J	45 x 20mm architrave	298	LM		
TOTAL CARRIED TO COLLECTION					
BW/4					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	25mm diameter quadrant	298	LM		
	<u>Glass and Glazing</u>				
B	30 x 30mm glazing bead	125	LM		
C	5mm thick obscure glass 0.10 - 0.50sm	4	SM		
	<u>SUPPLY AND FIX the following ironmongery as 'Union' catalogue or equal and approved including matching handles, screws and fixing accessories</u>				
D	3 lever brass coated union cylinder lockset complete with furniture	46	NO		
E	150mm brass; heavy duty 2 ball bearing hinges	106	PRS		
F	Double action spring hinge as per Union	65	PRS		
G	Tower bolt in stainless steel; size 200mm	30	NO		
H	Pull handle; stainless steel; size 225 x 19mm	30	NO		
J	Union stainless steel push plate; size 300 x 75mm	27	NO		
K	Union restricted profile Euro Key & Turn Cylinder	10	NO		
L	Rubber door stops, oval : "Union Cat no. DS - 01PB or equal and approved, fixed with and including rawl bolt to concrete surface	46	NO		
M	Heavy duty satin chrome "Vacant / Engaged" Indicator bolt : Union Cat No.8094 SS or equal and approved	14	NO		
N	Heavy duty door closer as 'Bricon' brass coated or equal and approved (<i>to be approved</i>)	46	NO		
P	1.2mm thick stainless steel satin kick plate to doors; to Architect's detail and approval	34	SM		
	<u>Prepare and apply three coats 2- pack clear polyurethane varnish as 'Crown' or other equal and approved) on: -</u>				
Q	General surfaces of timber	284	SM		
R	Surfaces exceeding 200mm but n.e 300mm girth	226	LM		
S	Surfaces exceeding 100mm but n.e 200mm girth	72	LM		
T	Surfaces n.e 100mm girth	721	LM		
TOTAL CARRIED TO COLLECTION					
BW/5					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>COLLECTION</u> TOTAL CARRRIED FORWARD FROM PAGE BW/4 TOTAL CARRRIED FORWARD FROM PAGE BW/5				
TOTAL FOR DOORS CARRIED TO FIRST FLOOR COMPLETION WORKS SUMMARY					
BW/6					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	<u>ELEMENT NO. 5</u>				
	<u>WINDOWS</u>				
A	<u>Curtain rods</u>				
	Specialized approved 32mm diameter brass coated curtain rod laid on mild steel metal brackets, drilled into wall at each end including painting and making good disturbed wall surfaces	146	LM		
B	<u>Window Blinds</u>				
	Purpose made sunscreen roller blinds on powder coated aluminium rollers; complete with all necessary accessories	28	SM		
TOTAL FOR WINDOWS CARRIED TO FIRST FLOOR COMPLETION					
WORKS SUMMARY					
BW/7					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>ELEMENT NO. 6</u>				
	<u>EXTERNAL FINISHES</u>				
A	Key pointing with neat horizontal joints and pointing vertically to external surfaces of walls	65	SM		
	<u>Eaves filling</u>				
	<u>Wrot T & G boarding</u>				
B	25mm wrot T & G boarding fabricated from prime grade cypress including all necessary anchorage	149	SM		
	<u>Touch up primer and apply one undercoat and two finishing coats of first quality polyurethane paint</u>				
C	General surfaces of timber	149	SM		
TOTAL FOR EXTERNAL FINISHES CARRIED FIRST FLOOR					
COMPLETION WORKS SUMMARY					
BW/8					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>ELEMENT NO. 7</u>				
	<u>INTERNAL FINISHES</u>				
	<u>WALL FINISHES</u>				
	<u>Cement and sand (1:3) plaster</u>				
A	12mm thick plaster to wall surfaces	2,428	SM		
	<u>Cement and sand (1:4) backing</u>				
B	15mm thick screed prepared to receive ceramic wall tiles (m.s)	139	SM		
	<u>APPROVED polished Ceramic wall tiles as 'Saj Ceramics' or other equal and approved; fixed to prepared cement and sand (1:4) backing with approved adhesive and grouted in matching colour; cleaned with approved detergent</u>				
C	600 x 400 x 6mm thick wall tiles	139	SM		
	<u>MDF wall panels</u>				
	<u>Supply and fix 20mm thick moisture resistant laminated MDF boards with and including timber framing/supports; to Architect's design and</u>				
D	Over 300mm wide	50	SM		
	<u>Mahogany dado railing</u>				
E	200 x 25mm thick mahogany dado rails fixed to walls	180	LM		
	<u>Prepare and apply three coats of premium quality paint as 'Basco Paints - Duracoat' or 'Crown Paints' or equal and approved to:-</u>				
F	Plastered surface of walls	2,289	SM		
	<u>Knot, prime, prepare and apply three coats of polyurethane to:</u>				
G	Surfaces of timber exceeding 200 but n.e 300mm girth	180	LM		
TOTAL CARRIED TO COLLECTION					
BW/9					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>CEILING FINISHES</u>				
	<u>Suspended semi-recessed L.I.G fine fissured 600 x 600 x 15mm Acoustic Armstrong Tegular Cortega on 24mm wide white lay-in grid as Trulok F24 complete with white perimeter and curved trims and wall angles as necessary; with and including all other necessary accessories and fittings; to Architect's approval in:-</u>				
A	Ceiling: over 300mm wide	1,090	SM		
	<u>Heavy duty PVC curtain rail/track</u>				
B	Heavy duty PVC curtain rail/track curved to profile and anchored to accoustic ceiling (m.s) complete with fixing brackets, rollers, laps, runners and end stops; to Architect's approval (<i>to be approved</i>)	118	LM		
	<u>FLOOR FINISHES</u>				
	<u>Cement and sand (1:4) screeding smooth trowelled</u>				
C	25mm thick screed prepared to receive non-slip granitto floor tiles (m.s)	69	SM		
D	Ditto but to receive polished white cement based terrazzo (m.s)	38	SM		
E	Ditto but to receive polished granitto tiles (m.s)	366	SM		
F	Ditto but to receive epoxy floor finish (m.s)	488	SM		
	<u>APPROVED non-slip 'Granito' floor tiles as 'Saj Ceramics' fixed to prepared cement and sand (1:4) backing with approved adhesive and grouted in matching colour</u>				
G	400 x 400 x 8mm thick floor tiles	69	SM		
	<u>Polished white cement based terrazzo</u>				
H	10mm thick polished white cement based terrazzo laid on cement and sand (1:4) screed (m.s) including 20 x 4mm pvc terrazzo strips to approved pattern, polished	38	SM		
J	Ditto but 10mm thick x 150mm high skirting	22	LM		
TOTAL CARRIED TO COLLECTION					
BW/10					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>APPROVED polished 'Granito' floor tiles as 'Sai Ceramics' fixed to prepared cement and sand (1:4) backing with approved adhesive and grouted in matching colour</u>				
A	600 x 600 x 8mm thick floor tiles	366	SM		
B	Ditto but 150mm high x 8mm thick skirting	220	LM		
	<u>Epoxy floor finish</u>				
	<u>Supply and apply expoxy floor system including grinding surface to remove surface laitance and expose defects, repairing defects and cracks, fill control joints with shrinkage compressed mortar; apply moisture barrier and wash with approved acid; apply primer and finishing coat in accordance to manufacturer's printed instructions; to Architect's annroval</u>				
C	4mm thick on cement and sand (1:4) screed (m.s)	488	SM		
D	Ditto but 4mm thick x 150mm high monolithic skirting	261	LM		
TOTAL CARRIED TO COLLECTION					
<u>COLLECTION</u>					
TOTAL CARRRIED FORWARD FROM PAGE BW/9					
TOTAL CARRRIED FORWARD FROM PAGE BW/10					
TOTAL CARRRIED FORWARD FROM PAGE ABOVE					
TOTAL FOR INTERNAL FINISHES CARRIED FIRST FLOOR					
COMPLETION WORKS SUMMARY					
BW/11					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>ELEMENT NO. 8</u>				
	<u>FITTINGS AND FIXTURES</u>				
	<u>Vibrated reinforced concrete grade 20/20 (1:2:4) in:</u>				
A	100mm thick concrete worktop	35	SM		
	<u>Sawn cypress formwork to:</u>				
B	Suspended soffits	35	SM		
C	Edges of slab exceeding 75mm but n.e 150mm	61	LM		
	<u>Steel reinforcement as described including cutting to length, bending, hoisting and fixing including all necessary tying wires and spacing blocks (All Provisional)</u>				
D	8mm diameter bars	200	KG		
	<u>Worktop finishes</u>				
	<u>The following in Granite worktop tiles:</u>				
	<u>Approved colour high quality polished granite top by by an approved supplier fixed with approved adhesive with and including cement and sand backing (1:3) with moulded edges as described in: -</u>				
E	18mm thick worktop tiles	35	SM		
	<u>18mm thick laminated Medium Density Boards: complete with all doors, drawers, shelving and divisions: cupboard door locks and other ironmongery to doors and drawer units as "union" or equal and approved: to Architect's detail</u>				
F	Low level cabinets overall sizes 4,500mm long x 600mm wide x 900mm high	1	NO		
G	Ditto but 4,200mm long overall	1	NO		
H	Ditto but 3,300mm long overall	3	NO		
J	Ditto but 2,200mm long overall	3	NO		
K	High level cabinets overall size 4,300mm long x 300mm wide x 600mm high	1	NO		
TOTAL CARRIED TO COLLECTION					
BW/12					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	Ditto but 1,500mm long overall	2	NO		
B	Built in cabinet overall size 2,700mm long x 600mm wide x 2,700mm high	1	NO		
C	Ditto but 2,000mm long overall	4	NO		
D	Ditto but 1,500mm long overall	2	NO		
E	Ditto but 1,200mm long overall	2	NO		
TOTAL CARRIED TO COLLECTION					
<u>COLLECTION</u>					
TOTAL CARRIED FORWARD FROM PAGE BW/12					
TOTAL CARRIED FORWARD FROM PAGE ABOVE					
TOTAL FOR FITTINGS AND FIXTURES CARRIED FIRST FLOOR					
COMPLETION WORKS SUMMARY					
BW/13					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>MAIN BLOCK SUMMARY</u>				
	DEMOLITIONS AND ALTERATIONS				
	CONCRETE WORKS				
	WALLING				
	DOORS				
	WINDOWS				
	EXTERNAL FINISHES				
	INTERNAL FINISHES				
	FITTINGS AND FIXTURES				
TOTAL FOR FIRST FLOOR COMPLETION WORKS CARRIED TO BUILDERS WORK SUMMARY					
BW/14					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	<u>WALKWAY</u> <u>ELEMENT NO. 1</u> <u>DEMOLITIONS AND ALTERATIONS</u> <u>(ALL PROVISIONAL)</u> <u>Items of demolition and removal shall include</u> <u>shoring and making good disturbed areas to match</u> <u>existing and loading and carting away debris unless</u> <u>otherwise specified</u>	8	SM		
	Carefully demolish existing 100mm thick concrete floor slab complete with and including BRC fabric reinforcement and hardcore below; cart away debris				
TOTAL FOR DEMOLITIONS AND ALTERATIONS CARRIED TO WALKWAY SUMMARY					
BW/15					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>ELEMENT NO. 2</u>				
	<u>SUBSTRUCTURES</u>				
	<u>(ALL PROVISIONAL)</u>				
A	Clear site of all grass, bushes, shrubs, undergrowth and small trees including grubbing up roots and burn arisings	130	SM		
B	Cutting down of trees overall girth 900 - 1,200mm (including necessary approvals)	1	NO		
C	Excavate oversite to remove vegetable soil commencing from reduced levels not exceeding 150mm deep	130	SM		
D	Excavate oversite to reduce levels not exceeding 1,500mm deep commencing from stripped level	39	CM		
E	Excavate trenches for strip foundation not exceeding 1,500mm commencing from reduced level	81	CM		
F	Allow for keeping excavations free from all water; by draining or otherwise; keeping all works free from water as necessary over the entire contract period		ITEM		
	<u>Backfilling</u>				
G	Return, fill and ram selected excavated material around foundations and columns	43	CM		
	<u>Disposal</u>				
H	Load and cart away surplus excavated material and spread over site not exceeding 10m away	77	CM		
	<u>Imported filling</u>				
J	300mm thick hardcore fill in making up levels; well watered, rolled and compacted in layers of 150mm, to Structural Engineer's approval	30	CM		
K	50mm selected fine material to hardcore surfaces, well rolled and levelled to receive concrete	100	SM		
	TOTAL CARRIED TO COLLECTION				
BW/16					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>Damp-Proof membrane</u>				
A	Polythene sheet; 1,000 gauge, 200mm welted laps (no allowance made to laps), horizontal; 1 no. layer laid on compacted quarry dust blinding	100	SM		
	<u>Anti-termite treatment</u>				
B	Premise 200 SC' or other equal and approved anti-termite insecticide treatment with ten years guarantee, applied strictly in accordance with manufacturer's instructions by an approved specialist, to tops of fill and foundation walls	100	SM		
	<u>Concrete Class (1:3:6) in 50mm thick blinding under:-</u>				
C	Strip footing	68	SM		
	<u>Vibrated reinforced concrete grade 20/20 (1:2:4) in:</u>				
D	Strip footing	14	CM		
E	150mm thick ground bed	100	SM		
	<u>Sawn cypress formwork to:</u>				
F	Sides of strip footing	45	SM		
G	Edges of floor slab exceeding 75mm but n.e 150mm wide	105	LM		
	<u>Steel reinforcement as described including cutting to length, bending and fixing including all necessary tying wires and spacing blocks (All Provisional)</u>				
H	10mm diameter bars	477	KG		
	<u>Steel fabric mesh reinforcement to B.S. 4483</u>				
J	B.R.C fabric mesh reinforcement ref. A142 weighing 2.22kg/m ² laid with 200mm laps to ground floor slab	100	SM		
	<u>Approved natural stone walling as 'KIGANJO' in cement and sand mortar (1:3) with minimum crushing strength of 7.0 N/mm²; reinforced with 25x3mm thick hoop iron in every alternate course</u>				
K	200mm thick walling	136	SM		
	TOTAL CARRIED TO COLLECTION				
BW/17					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>Plinths</u>				
A	12mm thick cement and sand (1:3) render to plinths	37	SM		
B	Prepare and apply three coats bituminous paint to rendered plinths	37	SM		
TOTAL CARRIED TO COLLECTION					
	<u>COLLECTION</u>				
	TOTAL CARRIED FORWARD FROM PAGE BW/16				
	TOTAL CARRIED FORWARD FROM PAGE BW/17				
	TOTAL CARRIED FORWARD FROM PAGE ABOVE				
TOTAL FOR SUBSTRUCTURES CARRIED TO WALKWAY SUMMARY					
BW/18					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>ELEMENT NO. 3</u> <u>STRUCTURAL STEELWORK</u> <u>The following in structural steel; to conform to B.S 5950 fabricated from standard universal sections; including two coats of zinc chromate primer before fixing and touched up with one coat after fixing; with and including all welding, bolts, fixing plates, cleats, caps, stiffeners, joint accessories and any other sundries; smooth ground joints; fixing to position by hoisting or otherwise; to Structural Engineer's detail and approval in:-</u>				
A	100mm diameter x 2,400mm high 'Class B' mild steel black pipe top end with welded U-holder butt for 100 x 75mm timber beam (m.s) including welding on 200 x 200 x 6mm thick plate, fixing 4no. Hold down bolts and all necessary excavations and mass concrete (1:3:6) footing	99	LM		
	<u>Painting and decoration</u>				
B	Prepare and apply 3 coats of gloss oil paint to general surfaces of metal; exceeding 300mm girth	25	SM		
TOTAL FOR STRUCTURAL STEELWORK CARRIED TO WALKWAY SUMMARY					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>ELEMENT NO. 4</u>				
	<u>ROOF CONSTRUCTION (ALL PROVISIONAL)</u>				
	<u>The following double pitched timber trusses in 1st grade sawn approved cypress timber well cured by pressure impregnation and hoisting 3,000mm high above ground and tying all scarf joints with 25 x 2mm thick hoop-iron adequately nailed including metal gussets</u>				
A	150 x 50mm rafters	146	LM		
B	Ditto ceiling joist	86	LM		
C	Ditto kingpost	22	LM		
D	100 x 50mm ties and struts	26	LM		
E	75 x 50mm purlins	400	LM		
F	100 x 75mm wrot cypress timber beam	100	LM		
G	225 x 25 mm thick wrot cypress fascia /barge boards fixed to ends of rafters (m/s)	107	LM		
	<u>Roof Covering</u>				
H	APPROVED Pre-painted IT-5 gauge 28 roofing sheets as 'MRM' or any other equal and approved nailed to timber purlins (m.s)	111	SM		
J	Ditto but translucent roofing sheets	60	SM		
	<u>Accessories, fixing as necessary to roofing sheets</u>				
K	Matching ridge/hip cap	50	LM		
	<u>Rain water goods</u>				
	<u>Gutters</u>				
L	180mm Diameter half round heavy gauge UPVC gutter as 'Metro' or equal and approved fixed to fascia boards (m/s) with click fit gutter fixing brackets at 1,000mm centres with running outlet with and including all necessary accessories	100	LM		
M	Extra over gutter for stopped ends	10	NO		
N	110mm Diameter UPVC down pipe fixed to wall with matching brackets at 1,000mm centres	24	LM		
	TOTAL CARRIED TO COLLECTION				
BW/20					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	Extra over downpipe for 110mm bend	20	NO		
B	Extra over for shoe	10	NO		
	<u>Decoration and painting</u>				
	<u>Knot, stain prepare and apply three coats oil gloss paint to:</u>				
C	Ditto but exceeding 200mm but n.e 300mm girth	107	LM		
TOTAL CARRIED TO COLLECTION					
<u>COLLECTION</u>					
TOTAL CARRIED FORWARD FROM PAGE BW/20					
TOTAL CARRIED FORWARD FROM PAGE ABOVE					
TOTAL FOR ROOF CONSTRUCTION CARRIED TO WALKWAY SUMMARY					
BW/21					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	<u>ELEMENT NO. 5</u>				
	<u>INTERNAL FINISHES</u>				
	<u>FLOOR FINISHES</u>				
	<u>Cement and sand (1:4) screeding smooth trowelled</u>				
	25mm thick	100	SM		
TOTAL FOR INTERNAL FINISHES CARRIED TO WALKWAY SUMMARY					
BW/22					

ITEM	DESCRIPTION	QTY	UNIT	RATE	
	<u>WALKWAY SUMMARY</u>				
	DEMOLITIONS AND ALTERATIONS				
	SUBSTRUCTURES				
	STRUCTURAL STEELWORK				
	ROOF CONSTRUCTION				
	INTERNAL FINISHES				
TOTAL FOR WALKWAY CARRIED TO BUILDERS WORK SUMMARY					
BW/23					

[illegible]

**PROPOSED COMPLETION OF ACCIDENT AND EMERGENCY BLOCK
(PHASE II) AT KARATINA SUB-COUNTY HOSPITAL**

VOL. 2 OF 3

**SPECIFICATIONS & BILLS OF QUANTITIES FOR
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL
INSTALLATION WORKS**

COMPLIANCE WITH TECHNICAL SPECIFICATIONS

Note:

On compliance with Technical Specifications, bidders shall supply equipment/items which comply with the technical specifications set out in the bid document. In this regard, the bidder will be required to submit relevant technical brochure/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:

- (i) Standards of manufacture;*
- (ii) Performance ratings/characteristics;*
- (iii) Material of manufacture;*
- (iv) Electrical power ratings; and*
- (v) All other requirements as indicated in the technical specifications of the bid.*

The bids will then be analyzed, using the information in the technical brochures, to determine compliance with technical specifications for the works/items as indicated in the tender document. Bidders not complying with **any** of the technical specifications shall be adjudged technically non-responsive while those meeting all technical specifications shall be considered technically responsive.

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/Equipments they propose to supply.

Tender Evaluation Committee to evaluate compliance to all technical specifications (Electrical Installation Works) as detailed in the Section D (Particular specs) of this document

GENERAL SPECIFICATIONS

OF

MATERIALS AND WORKS

SECTION 1 GENERAL SPECIFICATIONS OF MATERIALS AND WORKS –ELECTRICAL INSTALLATION WORKS

1. General
2. Standard of Materials
3. Workmanship
4. Procurement of Materials
5. Shop Drawings
6. Record Drawings
7. Regulations and Standards
8. Setting out Works
9. Position of Electrical Plant and Apparatus
10. M.C.B Distribution Panels and Consumer Units
11. Fused Switchgear and Isolators
12. Conduits and Conduit Runs
13. Conduit Boxes and Accessories
14. Labels
15. Earthing
16. Cables and Flexible Cords
17. Armoured PVC Insulated and Sheathed Cables
18. Cable Supports; Markers and Tiles
19. PVC Insulated Cables
20. Heat Resisting Cables
21. Flexible Cords
22. Cable Ends and phase Colours
23. Cable Insulation Colours
24. Sub-circuit Wiring
25. Space Factor

26. Insulation
27. Lighting Switches
28. Sockets and Switched sockets
29. Fused Spur Boxes
30. Cooker Outlets
31. Connectors
32. Lamp holders
33. Lamps
34. Lighting Fittings Street Lighting Lanterns
35. Position of Points and Switches
36. Street/Security Lighting Columns
37. Timing Control Switch
38. Wiring System for Street Lighting
39. Metal control Pillar
40. Current Operated Earth leakage circuit breaker
41. MV Switchboard
42. Steel Conduits and Steel Trunking
43. Testing on Site

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. 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.

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.

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.

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.

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.

7. REGULATIONS AND STANDARDS

All work executed by the Sub-contractor shall comply with the current edition of the "Regulations" for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, and with the Regulations of the Local Electricity Authority.

Where the two sets of regulations appear to conflict, they shall be clarified with the Engineers. All materials used shall comply with relevant Kenya Bureau of Standards Specification.

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.

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 anywork is carried out.

10. MCB DISTRIBUTION PANELS AND CONSUMER UNITS

All cases of MCB Panels and consumer units shall be constructed in heavy gauge sheet with hinged covers.

Removable undrilled gland plates shall be provided on the top and bottom of the cases. Miniature circuit breakers shall be enclosed in moulded plastic with the tripping mechanism and arc chambers separated and sealed from the cable terminals.

The operating dolly shall be tripfree with a positive movement in both make and break position. Clear indication of the position of the handle shall be incorporated.

The tripping mechanism shall be on inverse characteristic to prevent tripping in temporary overloads and shall not be affected by normal variation in ambient temperature.

A locking plate shall be provided for each size of breaker; A complete list of circuit details on typed cartridge paper glued to stiff cardboards and covered with a sheet of Perspex, and held in position with four suitable fixings, shall be fitted to the inner face of the lids of each distribution panel. The appropriate MCB ratings shall be stated on the circuit chart against each circuit in use: Ivorine labels shall be secured to the insulation barriers in such a manner as to indicate the number of the circuits shown on the circuit chart.

Insulated barriers shall be fitted between phases, and neutrals in all boards, and to shroud live parts.

Neutral cables shall be connected to the neutral bar in the same sequence as the phase cables are connected to the MCB's. This shall also apply to earth bars when installed.

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.

12. CONDUITS AND CONDUIT RUNS

Conduit systems are to be installed so as to allow the loop-in system of wiring:

All conduits shall be black rigid super high impact heavy gauge class 'A' PVC in accordance with KS 04 – 179: 1988 and IEE Regulations. No conduit less than 20mm in diameter shall be used anywhere in this installation.

Conduit shall be installed buried in plaster work and floor screed except when run on wooden or metal surface when they will be installed surface supported with saddles every 600mm. Conduit run in chases shall be firmly held in position by means of substantial pipe hooks driven into wooden plugs.

The Sub-contractor's attention is drawn to the necessity of keeping all conduits entirely separate from other piping services such as water and no circuit connections will be permitted between conduits and such pipes.

All conduits systems shall be arranged wherever possible to be self-draining to switch boxes and conduit outlet points for fittings:

The systems, when installed and before wiring shall be kept plugged with well-fitting plugs and when short conduit pieces are used as plugs, they shall be doubled over and tied firmly together with steel wire; before wiring all conduit systems shall be carried out until the particular section of the conduit installation is complete in every respect.

The sets and bends in conduit runs are to be formed on site using appropriate size bending springs and all radii of bends must not be less than 2.5 times the outside diameter of the conduit. No solid or inspection bends, tees or elbows will be used.

Conduit connections shall either be by a demountable (screwed up) assembly or adhesive fixed and water tight by solution. The tube and fittings must be clean and free of all grease before applying the adhesive. When connections are made between the conduit and switch boxes, circular or non-screwed boxes, care shall be taken that no rough edges of conduit stick out into the boxes.

Runs between draw in boxes are not to have more than two right angle bends or their equivalent. The sub-contractor may be required to demonstrate to the Engineers that wiring in any particular run is easily withdrawable and the sub-contractor may, at no extra cost to the contract; be required to install additional draw-in boxes required. If conduit is installed in straight runs in excess of 6000mm, expansion couplings as manufactured by Egatube shall be used at intervals of 6000mm.

Where conduit runs are to be concealed in pillars and beams, the approval of the Structural Engineer, shall be obtained. The sub-contractor shall be responsible for marking the accurate position of all holes chases etc, on site, or if the Engineer so directs, shall provide the Main Contractor with dimensional drawings to enable him to mark out and form all holes and chases. Should the sub-contractor fail to inform the main contractor of any inaccuracies in this respect they shall be rectified at the sub-contractor's expense.

It will be the Sub-contractor's responsibility to ascertain from site, the details of reinforced concrete or structural steelwork and check from the builder's drawings the positions of walls, structural concrete and finishes. No reinforced concrete or steelwork may be drilled without first obtaining the written permission of the Structural Engineer.

The drawings provided with these specifications indicate the appropriate positions only of points and switches, and it shall be the Sub-Contractors responsibility to mark out and centre on site the accurate positions where necessary in consultation with the Architect and the Engineer. The sub-contractor alone shall be responsible for the accuracy of the final position.

13. CONDUIT BOXES AND ACCESSORIES

All conduit outlets and junction boxes are to be either malleable iron and of standard circular pattern of the appropriate type to suit saddles being used or super high impact PVC manufactured to KS 04 – 179 : 1983.

Small circular pattern boxes are to be used with conduits up to and including 25mm outside diameter. Rectangular pattern adaptable boxes are to be used for conduits of 32mm outside diameter and larger. For drawing in of cables in exposed runs of conduit, standard pattern through boxes are to be used:

Boxes are to be not less than 50mm deep and of such dimensions as will enable the largest appropriate number of cables for the conduit sizes to be drawn in without excessive bending.

Outlet boxes for lighting fittings are to be of the loop-in type where conduit installation is concealed and the sub-contractor shall allow one such box per fitting, except where fluorescent fittings are specified when two such boxes per fitting shall be fitted flush with ceiling and if necessary fitted with break joint rings. Pattresses shall be fitted where required to outlets on surface conduit runs.

Adaptable boxes are two of PVC or mild steel (of not less than 12swg) and black enamelled or galvanised finish according to location. They shall be of square or oblong shape location. They shall be of square or oblong shape complete with lids secured by four 2 BA brass roundhead screws; No adaptable box shall be less than 75mm x 75mm x 50mm or larger than 300mm x 300mm x 75mm and shall be adequate in depth in relation to the size of conduit entering it. Conduits shall only enter boxes by means of conduit bushes.

14. LABELS

Labels fitted to switches and fuse boards; -

- (i) Shall be Ivory 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.

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 the Institute of Electrical Engineers of Great Britain.

- (ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross sectional area Copper tape shall be provided and all equipment including the lead sheath and armouring of cables, distribution boards and metal frames shall be bonded thereto.
- (iii) The earth tape in Sub-clause (ii) shall be connected by means of a copper tape or cable of suitable cross sectional area to an earth electrode which shall be a copper earth rod (see later sub-clause).
- (iv) All tapes to be soft high conductivity copper, untinned except where otherwise specified and where run underground on or through walls, floors, etc., it shall be served with corrosion resisting tape or coated with corrosion compound and braided
- (v) Where the earth electrode is located outside the building a removable test link shall be provided inside the building as near as possible to the point of entry to the tape, for isolating the earth electrode for testing purposes.
- (vi) Earthing of sub-main equipment shall be deemed to be satisfactory where the 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.

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 1.5mm² 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.

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.

18. CABLE SUPPORTS, MARKERS AND TILES

All PVC/SWA/PVC cables run inside the building shall be fixed in rising ducts or on ceilings by means of die cast cable hooks or clamps, of appropriate size to suit cables, fixed by studs and back nuts to their channel sections.

Alternatively, fixing shall be by BICC claw type cleating system with die-cast cleats and galvanised mild steel back straps or similar approved equal method. For one or two cables run together the cleats shall be fixed a special channel section supports or backstraps described above which shall in turn be secured to walls or ceilings of ducts by rawbolts.

In excessively damp or corrosive atmospheric conditions special finishes may be required and the Sub-contractor shall apply to the Engineer for further instructions before ordering cleats and channels for such areas.

The above type of hooks and clamps and channels or cleats and blackstraps shall also be used for securing cables in vertical ducts.

Cables supports shall be fixed at 600mm maximum intervals, the supports being supplied and erected under this Sub-contract. Saddles shall not be used for supporting cables nor any other type of fixing other than one of the two methods described above or other system which has received prior approval of the Engineer;

Cables are to be kept clear of all pipe work and the Sub-contractor shall work in close liaison with other services Sub-contractors.

The Sub-Contractor shall include for the provision of fixing of approved type coloured slip on cables end markers to indicate permanently the correct phase and neutral colours on all ends.

Provision shall be made for supplying and fixing approved non-corrosive metal cable markers to be attached to the outside of all PVC/SWA/PVC cables at 15mm intervals indicating cable size and distinction.

Where PVC/SWA/PVC cables are outside the building they shall be laid underground 750mm deep with protecting concrete interlocking cover tiles laid over which shall be provided and laid under this Sub-contract.

All necessary excavations and reinstatement of ground including sanding or trenches will be carried out by the Sub-Contractor, unless otherwise stated.

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.

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.

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).

22. CABLE ENDS AND PHASE COLOURS

All cable ends connected up in switchgear, MCB panels etc, shall have the insulation carefully cut back and the ends sealed with Hellerman rubber slip on cable end markers.

The markers shall be of appropriate phase colour for switch and all other live feeds to the details of the "Cable Insulation Colours" clause. Black cable with black end markers shall only be used for neutral cables.

23. CABLE INSULATION COLOURS

Unless otherwise stated in later clauses the insulation colours shall be in accordance with the following table.

Where other systems are installed the cable colours shall be in accordance with the details stated in the appropriate clause.

<u>SYSTEM</u>	<u>INSULATION COLOUR</u>	<u>CABLE END MARKER</u>
1) Main and Sub-Main		
a) Phase	Red	Red
b) Neutral	Black	Black
2) Sub-Circuits Single Phase		
a) Phase	Red	Red
b) Neutral	Black	Black

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) 1.5mm² for all lighting circuits indicated on the drawing.

Power circuits P.V.C cable (minimum sizes).

- (ii) 2.5mm² for one, two or three 5Amp sockets wired in parallel.

- (iii) 2.5mm² for one 15Amp socket.

- (iv) 2.5mm² 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.

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.

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.

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

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

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

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

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.

32. LAMPHOLDERS

Shall be of extra heavy H.O skirted and shall be provided for every specified lighting fitting and shall be B.C., E.S., or G.E.S as required. All E.S. and G.E.S. holders shall be heavy brass type (except for plain pendants where the reinforced bakelite type shall be used). The screwed cap of the E.S and G.E.S. holders shall be connected to the neutral.

Where lampholders are supported by flexible cable, the holders shall have "cord grip" arrangements and in the case of metal shades earthing screws shall be provided on each of the holders.

The Sub-Contractor must order the appropriate type of holder when ordering lighting fittings, to ensure that the correct types of holders are provided irrespective of the type normally supplied by the manufacturers.

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.

34. LIGHTING FITTINGS AND STREET LIGHTING LANTERNS

This Sub-Contract shall include for the provision, handling charges, taking the delivery, safe storage, wiring (including internal wiring) assembling and erecting of all lighting fittings shown on the drawings.

All fittings and pendants shall be fixed to the conduit boxes with brass R/H screws. These to be in line with metal finish of fittings. The lighting fittings are detailed for the purpose of establishing a high standard of finish and under no circumstances will substitute fittings be permitted.

In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to the central conduit box fittings. Supports shall be provided and fixed by the Sub-Contractor.

The whole of the metal work of each lighting fittings shall be effectively bonded to earth. In the case of ball and/or knuckle joints short lengths of flexible cable shall be provided, bonded to the metal work on either side of the joints. If the above provisions are not made by the manufacturers -, the Sub-contractor shall include cost of additional work necessary in his tender. See "Flexible Cords" clause for details of internal wiring of lighting fittings.

Minimum size of internal wiring shall be 20/0.20mm (23/0067). Each lighting fitting shall be provided with number type and size of lamps as detailed on the drawings. It is to be noted that some fittings are suspended as shown on the drawings.

Where two or more points are shown adjacent to each other on the drawings, e.g. socket outlet and telephone outlet, they shall be lined up vertically or horizontally on the centre lines of the units concerned.

Normally, the units shall be lined up on vertical centre lines, but where it is necessary to mount units at low level they shall be lined up horizontally.

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.

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.

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.

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 1.5mm² 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 murrum at least 50mm thick and covered with a concrete surrounded 150mm thick.

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.

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.

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.

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 35mm² 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 of fuseboards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

Where vertical sections of trunking are used which exceed 4.5m in length, staggered tie off points shall be provided at 4.5m intervals to support the weight of cables.

Unless otherwise stated, all trunking systems shall be painted as for conduit.

Where a wiring system incorporates galvanised conduit and trunking, the trunking shall be deemed to be galvanised unless specified otherwise.

The number of cables to be installed in trunking shall be such as to permit easy drawing in without damage to the cables, and shall in no circumstances be such that a space factor of 45% is exceeded.

Conduit and trunking shall be mechanically and electrically continuous. Conduit shall be tightly screwed between the various lengths so that they butt at the socketed joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects.

Oil and any other insulating substance shall be removed from the screw threads; where conduits terminate in fuse-gear, distribution boards, adaptable boxes, non-spouted switchboxes, etc., they shall, unless otherwise stated, be connected thereto by means of smooth bore male brass bushes, compression washers and sockets. All exposed threads and abrasions shall be painted using an oil paint for black enameled tubing and galvanizing paint for galvanised tubing immediately after the conduits are erected. All bends and sets shall be made cold without altering the section of the conduit.

The inner radius of the bend shall not be less than four (4) times the outside diameter of the conduit. Not more than two right angle bends will be permitted without the inter-position of a draw-in-box. Where straight runs of conduit are installed, draw-in-boxes shall be provided at distances not exceeding 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.

43. TESTING ON SITE

The Sub-contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specification and the Electric Supply Company's By-Laws.

- (a) Tests shall be carried out to prove that all single pole switches are installed in the 'live' conductor.
- (c) Tests shall be carried out to prove that all socket outlets and switched socket outlets are connected to the 'live' conductor in the terminal marked as such, and that each earth pin is effectively bonded to the earth continuity system. Tests shall be carried out to verify the continuity of all conductors of each 'ring' circuit.
- (d) Phase tests shall be carried out on completion of the installation to ensure that correct phase sequence is maintained throughout the installation. Triplicate copies of the results of the above tests shall be provided within 14 days of the witnessed tests and the 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.

APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

The electrical sub-contractor shall comply with the following: -

1. Government Electrical Specifications No. 1 and No. 2.
2. All requirements of Kenya Power and Lighting Company Limited, and Communications Authority of Kenya (CA).

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;

County Electrical Engineer
Department of Transport, Infrastructure and Public Works

at Nyeri Public Works Offices, during normal working hours.

The drawings shall however be availed, on award of the tender, to the sub-contractor.

PARTICULAR SPECIFICATIONS

1.00 DESCRIPTION OF THE SITE

The site of the proposed works is at **Proposed Accident and Emergency Block (Phase II) At Karatina Sub-County Hospital.**

2.00 DESCRIPTION OF THE SCOPE OF WORKS OF THE PROJECT

The works to be carried out under this sub-contract comprise supply, installation, testing and commissioning of the following: -

- a) Electrical Installation Points
- b) Data Point and CCTV
- c) Lightning Protection
- d) Fire Alarm
- e) Public Address System
- f) Access Door Control System

3.00 MATERIALS FOR THE WORKS

Materials shall be as specified in Section B and in the Bills of Quantities of this document which shall be read in conjunction with contract drawings. Alternative materials shall be accepted only after approval by the Project Manager.

4.00 BROCHURES AND TECHNICAL LITERATURE FOR ELECTRICAL EQUIPMENT AND FITTINGS

For consideration and qualification, tenderers shall, at their own cost, provide colored manufacturer's brochures detailing technical literature and specifications where applicable. Tenderers must enclose together with their submitted bids brochures detailing technical Literature and specifications of the electrical equipment & fittings. The brochures shall be used to evaluate the suitability of these items.

Any bid submitted without the brochures shall be considered technically non-responsive, and may subsequently be disqualified.

1.1: PARTICULAR TECHNICAL SPECIFICATIONS - LED LIGHTING FIXTURES

1.11: Minimum Requirements General

Item No.	Parameters	Minimum Specifications	Proposed Solution
1.	Brand	State the brand, model and attach Technical Brochure (Mandatory)	
2.	Operation	➤ Voltage range: 180-260 V ac ➤ Frequency range: 50-60Hz ➤ Power factor ≥ 0.9 lagging ➤ Total Harmonic Distortion (THD)<15% ➤ Ambient temperature range -10 to +35°Operating ➤ Colour Consistency ≤ 5SDCM	
3.	LED Luminous Flux Efficiency (Lumens/watt)	System efficacy >150 Lumens/Watt	
4.	Colour Rendering	>80% accurate	
5.	Power Factor	>0.9 lagging	
6.	Protection Function	Open Circuit and Short Circuit Protection	
7.	Life Expectancy	At least 50,000 Hours	
8.	Maximum Light Decay	15% in 5years Linear decay	
9.	Color Temperature	3000-6500K	
10.	THD	>10%	
11.	Working Humidity	10 to 90% RH6	

1.11: Minimum Requirements General Continued

Item No.	Parameters	Minimum Specifications	Proposed Solution
12.	Working Temperature	5 to 50 degrees	
13.	Average Lighting Angle (Beam Angle)	>120 Degree	
14.	Make of LED Chip		
15.	Lamp Starting Time	Instantaneous, Less than 2 Seconds	
16.	System Efficacy (%)	Greater than 90%	
17.	Ingress Protection	IP20, IP44 & IP65	
18.	Class of Protection	II	
19.	Light Output	Minimum 20 Lux when measured at the periphery of 4 meter diameter from a height of 4 meter. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher Light Output will be preferred	

BILLS OF QUANTITIES

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 included 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 **Value Added Tax (V.A.T)**, **Withholding tax and all other taxes applicable at the time of tender**).

In accordance with Government policy, the Value Added Tax (V.A.T) and Withholding Tax **shall be deducted** from all payments made to the tenderer, and the same shall be forwarded to the **Kenya Revenue Authority (KRA)**.

3. All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part thereof.
4. The brief 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 **Grand Price Summary Page of the Bills of Quantities for Main Works**.
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.

ELECTRICAL WORKS					
ELEMENT NO.1 ELECTRICAL POINTS (POWER POINT / LIGHTING POINTS)					
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	<u>Supply, Install, Test and Commission the following;</u>				
	i) Lighting point wired in 3x1.5mm sq. SC Cable in 20mm HG PVC Conduit for 1 way switching	No.	134		
2	ii) Lighting point wired in 3x1.5mm sq. SC Cable in 20mm HG PVC Conduit for 2 way switching	No	110		
	<u>Light fittings</u>				
	i)600X600mm,50 Watt LED Backlit Surface Mounted Panel as RR for Class room/Restaurant/Entrance canopy and Offices	No	120		
	ii)150mm,17 watt Round Surface Mounted LED downlighter as Philips Meson for Wash rooms	No	21		
	iii)250mm,24 watt Round Surface Mounted LED downlighter as Philips Meson/Illumatt for Corridor and Walkways	No	61		
	iv)100mm,12 watt IP66,Round Surface Mounted LED downlighter as Philips Meson for Open Court yard and reception	No	10		
	vi)1200mm,18 watt IP66,Surface Mounted LED Batten as Philip for Mirror Light	No	15		
3	vi)300mm,5 watt IP66,Surface Mounted 3Hr Emergency Exit LED panel as Illumatt	No	37		
	<u>Ligthing Switches</u>				
	i) 10A 1 gang 1 way as Himel	No	42		
	ii) 10A 1 gang 2 way as Himel	No	43		
	iii) 10A 2 gang 1 way as Himel	No	38		
	iv) 10A 3 gang 1 way as Himel	No	26		
	v) 10A 1 gang Intermediate as Himel	No	13		
SUB TOTAL 1					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Power Points</u>				
4	Socket Power points wired in 3x2.5mm S/C PVC cables in 20mm Heavy Gauge Conduit	No.	45		
	i)13A Twin Socket Outlets as Himel	No.	119		
	ii)13A Single Water proof Socket Outlets as Himel	No.	11		
5	Hand drier Power points wired in 3x2.5mm S/C PVC cables in 20mm Heavy Gauge Conduit	No	12		
	i)20A Double pole Switch as Himel	No	12		
6	Urinal Sensor Power points wired in 3x2.5mm S/C PVC cables in 20mm Heavy Gauge Conduit	No	12		
	i)20A Double pole Switch as Himel	No	12		
7	Instant Shower Power points wired in 3x4.0mm S/C PVC cables in 20mm Heavy Gauge Conduit	No	12		
	i)20A Double pole Switch as Himel	No	12		
9	300x300mmx75mm Steel Adaptable Box	No.	2		
10	38mm PVC Heavy gauge conduit from DB IN GROUND FLOOR TO FIRST FLOOR	Lm	35		
	SUB TOTAL 2				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>Power Distribution</u>				
11	100A 12-WAY SPN Consumer as Schneider Easy 9 but excluding Outgoing MCBs.	No	4		
12	Single Pole Curve C MCBs as Schneider				
	i) 10A SP MCB	No	25		
	ii) 20A SP MCB	No	32		
	iii) 32A SP MCB	No	32		
	iv) 63A TPN MCB	No	12		
13	4X50mm Submain Cable in 63mm Pvc Conduit from POWER ROOM to first floor	Lm	75		
	4X35mm Cable in 63mm Pvc Conduit from THE DUCT to first floor	Lm	120		
	4X10mm CPC Single Core PVC Submain Cable in 50mm Pvc Conduit Measured FROM THE DB TO THE INDUTSIAL SOCKET POINTS IN THE PLANT	NO	5		
	32A TPN+E ,IP67 5 Pin Surface Mount Socket and Plug	No	5		
	telephone outlet point compraising of 20mm hg pvc conduit and complete with draw wire	NO	20		
	<u>SUMMARY BASEMENT</u>				
	SUB TOTAL EW/3				
	SUB TOTAL EW/2				
	SUB TOTAL EW/1				
	TOTAL FOR ELECTRICAL POINTS (POWER POINT / LIGHTING POINTS) CARRIED TO SUMMARY				

EW/3

ELEMENT NO. 2 FIRE ALARM

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Supply,Install,Test and Commision the following;				
1	Addressable fire alarm panel complete with 72Hrs Back Up Batteries as Cooper Menvier/Zeta	No.	1		
2	Fire alarm point wired in 3x1.5mm Heat retardant PVC insulated Cable as Firetuff	No	66		
3	Addressable Optical Smoke /Heat Detector as Cooper Menvier/Zeta	No	31		
3	Addressable Manual call point breakglass as Cooper Menvier/Zeta	No	24		
4	Addressable Electronic Sounder with flashing Beacon as Cooper Menvier/Zeta	No	11		
5	Allow for Testing and Commisioning of the whole works	Item	1		
TOTAL FOR FIRE ALARM CARRIED TO SUMMARY					

ELEMENT NO.3 DESIGNING, SUPPLYING, INSTALLATION, TESTING AND COMMISSIONING OF PUBLIC ADDRESS SYTEM					
Item N	Description	Unit	Qty	Unit Rate (kshs.)	Rate, Rs (Inclusive All) in Words
A	DESIGNING, SUPPLYING, INSTALLATION, TESTING AND COMMISSIONING of PUBLIC ADDRESS SYTEM including following items as per specification and direction of engineer-in-charge-				
1	Gooseneck Desktop Meeting Conference Cable Microphone	Nos	5		
2	70V 100V in-Ceiling Speaker Lth-8315 5" 20W	Nos	30		
3	Peavey Cs4000 Professional Power Amplifier 4000 Watts	Nos	1		
4	4 CORE Speaker Cable WEATHERPROOF	LM	2500		
5	Audio Cable	LM	1500		
6	Connectors	Lot	1		
7	Equipment Rack	No.	2		
B	DESIGNING, SUPPLYING, INSTALLATION, TESTING AND COMMISSIONING of COUNTER COMMUNICATION SYTEM including following items as per specification and direction of engineer-in-charge-				
1	Speaker: Condensor Cartridge Unit, Amp Output: 2W or More in each Amplfier, Mic: Minimum Electret Condenser in both the units with Min 20" Long Gooseneck, Amplifier Feature- Auto Mute On required to be Enabled after 30 Seconds (Approx), Power Requirement: AC 220-240 V, 50/60 Hz, Protections Circuit: AC Fuse 1 x 0.5 Amp, Control of Mic: Separate control is required for both Microphones	Set	4		
2	P6A point wiring with necessary swich sockets including all lead and lift in aproved make material.	Set	4		
C	SUPPLYING, INSTALLATION, TESTING, COMMISSIONING AND SERVICEING of DTH HD TV CONNECTION WITH ANTENA & SET-TOP BOX including following items as per specification and direction of engineer-in-charge-				
1	SET-TOP BOX	Set	1		
2	CABLES & MOUNTING RACK WITH BRAKET	Set	1		
TOTAL FOR DESIGNING, SUPPLYING, INSTALLATION, TESTING AND COMMISSIONING OF PUBLIC ADDRESS SYTEM CARRIED TO SUMMARY					

ELEMENT NO. 4 DATA POINT AND CCTV					
ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
1	data point wired with cat 6 cable with power intergrated clipped with RJ45 clips both end in 20mm HG PVC Conduit	94	NO		
	Dual CAT 6 Data Socket – Gold | High-Speed Internet with a Touch of Elegance	94	NO		
	Video system IP, Housing type Ceiling (dome) / DIRRECTIONAL CAMERAS , Direction adjustment□2-axis, Image sensor□1/3", Progressive Scan CMOS, Sensitivity 0.028 lx @ (F2.0, AGC ON), 0 lx in IR mode, Lens 2.8 mm @ F2.0 / 100o, Resolution 2560 x 1440 pixels, Frame rate 20 fps at 2560 x 1440, 25 fps at lower res., Compression H.265+/H.265/H.264+/H.264/MJPEG, Number of video streams□2, Bit rate range□32 kbps – 8 Mbps, IR range Up to 30 m, Video processing 3D- DNR, DWDR, BLC, Alarm events Motion detection, video tampering, Corridor mode Yes, Recording NAS (NFS/SMB/CIFS), FTP (screenshots), Supported standards, ONVIF (S, G profiles), ISAPI, IP and IK ratings IP67, IK10, Power 12 VDC ± 25%, Power consumption□Max. 5 W, Dimensions□Φ111 × 82 mm, Weight 0.57 kg or its equivalent	57	NO		
4	18U Free Standing Cabinet 600 x 800 (Black) Glass Front Door 19" Front & Rear Rack Mount Profiles Vented Steel Rear Door Removable Side Panels Shipped on Standard Castors for ease of transport Available in Heights 9U to 47U Widths available – 600mm, 800mm Depths available – 600mm, 800mm (Deduct 130mm for internal depth)	2	NO		
TOTAL CARRIED TO COLLECTION					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
5	Superior performance and design Standard HDMI 2.0 cable, Supports UHD resolutions up to 4096x2160@60Hz 4:2:0 8bit, Triple shielded cable, corrosion resistant, high performance tinned copper 24 AWG conductors, HDMI 2.0 compliant, 3D, 4K, 10.2Gbps, HEC, ARC, CEC, Dolby True HD, DTS-HD Master Audio; HDMI ATC certified; 10 year warranty	4	NO		
6	D-Link DES-1210-28P Web Smart 24-Port 10/100 PoE Switch OR pproved equivalent WITH 16TB HARDISK STORAGE	4	NO		
7	Samsung 55" UA55CU7000UXKE Smart 4k Crystal UHD Tv – New Model or approved equivalent	2	NO		
8	VXB65TSAM LCD Bracket (40"-60") Swivel or approved equivalent	2	NO		
9	1 KVA UPS -Output power capacity 700 Watts / 1.0kVA,Output Connections, (8) IEC 320 C13 (Battery Backup) (2) IEC Jumpers (Battery Backup), Nominal Output Voltage 230V, Nominal Input Voltage 230V Input Connections IEC 320 C14 or its equivalent	2	NO		
10	13A DOUBLE SOCKET	25	NO		
11	Socket Power points wired in 3x2.5mm S/C PVC cables in 20mm Heavy Gauge Conduit	25	ITEM		
13	48 port D-link Cat 6 patch panel or approved equivalent	4	NO		
14	Network Faceplates; Single	46	NO		
15	Network Faceplates; dual	26	NO		
TOTAL CARRIED TO COLLECTION					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	8 PORT SWITCH, POE - 16 10/100 Base-TX Ethernet ports, one 10/100/1000 Base-T Ethernet port and one 10/100/1000 Base-X SFP optical module port, Ports 1 – 16 are 10/100 Mbps downlink ports and comply with IEEE 802.3af and IEEE 802.3at, The maximum of 30W port output PoE power and the maximum of 135W total output PoE power, Support four network modes: Priority, Standard, Isolate and Extend, 4K MAC address and MAC address learning, 7.2 Gbps backplane bandwidth, 13 inch length and 1 U standard height size allow it to be mounted on subrack, Ports 10/100 Mbps RJ45: 16 10/100/1000 Mbps RJ45: 1 1000 Mbps SFP: 1 Independent High-priority Port: Port 1 – 8, Lightning- proof Ranking: 4 kV, Switching Capacity: 7.2 Gbps, PoE Power, Maximum Port Output: 30 W, Maximum Total Output: 135 W, Power Input 100~240 V AC, 50/60 Hz, Transmission Speed, Ethernet: 10 Mbps (Half Duplex) / 20 Mbps (Full Duplex) or its equivalent	2	NO		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
18	16 PORT SWITCH, POE - 16 10/100 Base-TX Ethernet ports, one 10/100/1000 Base-T Ethernet port and one 10/100/1000 Base-X SFP optical module port, Ports 1 – 16 are 10/100 Mbps downlink ports and comply with IEEE 802.3af and IEEE 802.3at, The maximum of 30W port output PoE power and the maximum of 135W total output PoE power, Support four network modes: Priority, Standard, Isolate and Extend, 4K MAC address and MAC address learning, 7.2 Gbps backplane bandwidth, 13 inch length and 1 U standard height size allow it to be mounted on subrack, Ports 10/100 Mbps RJ45: 16 10/100/1000 Mbps RJ45: 1 1000 Mbps SFP: 1 Independent High-priority Port: Port 1 – 8, Lightning- proof Ranking: 4 kV, Switching Capacity: 7.2 Gbps, PoE Power, Maximum Port Output: 30 W, Maximum Total Output: 135 W, Power Input 100~240 V AC, 50/60 Hz, Transmission Speed, Ethernet: 10 Mbps (Half Duplex) / 20 Mbps (Full Duplex) or its equivalent	2	NO		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
19	DS-7732-NI/K4/16P 32 Channel NVR Up to 4 SATA interfaces connectable for recording and backup Storage space effectively saved by 50% to 70% with the use of H.264+ decoding format	2	ITEM		
20	Transcend 16TB StoreJet 25H3 External Hard Drive	4	ITEM		
24	Panasonic WCHG255322W Extension Cable - 5 Metres 6 way	3	LOT		
	ADAPTOR BOX complete with its accessories	150	NO		
	NanoStation loco M2 2.4GHz Indoor/Outdoor Frequency : 2.4 Ghz Throughput : 150+ Mbps Range : 5+ km POE injector / power supply Compact design Cost effective	2	NO		
	Logitech M185 2.4GHz Wireless Mouse	5	NO		
	Ultra HD 4K 4 Port HDMI Splitter 1×4	4	NO		
	Excavation and backfilling and making goods to QS approval	1	ITEM		
24	TESTING AND COMMISIONING	1	LOT		
TOTAL CARRIED TO COLLECTION					
<u>COLLECTION</u>					
TOTAL CARRIED FORWARD FROM PAGE EW/6					
TOTAL CARRIED FORWARD FROM PAGE EW/7					
TOTAL CARRIED FORWARD FROM PAGE EW/8					
TOTAL CARRIED FORWARD FROM PAGE EW/9					
TOTAL CARRIED FORWARD FROM PAGE ABOVE					
TOTAL FOR DATA POINTAND CCTV CARRIED TO SUMMARY					

ELEMENT NO. 5 LIGHTNING PROTECTION SYSTEM					
ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, test and commission the following:-				
	<u>Air Termination</u>				
1	600mm long x 15mmØ multiple point pure copper air terminal with spikes as Furse Cat. No. RA 600 mounted on bracket.	2	No		
2	Copper air terminal base as Furse Cat. No. SD 105.	6	No		
3	Copper junction clamps for tape.	6	No		
4	25mm x 3mm turned copper tape as Furse Cat. No. TC 230.	70	m		
5	Copper ridge saddle as Furse Cat. No. CD 115.	20	No		
6	Direct Coupling tape clip as Furse Cat. No. CP 210.	10	No		
7	Copper rod-to-tape coupling.	12	No		
8	Bondex waterproof paste	2	Kg		
	<u>Down Conductors</u>				
9	25mm x 3mm turned copper tape as Furse Cat. No. TC 230.	140	m		
10	Direct Coupling tape clip as Furse Cat. No. CP 210.	20	No		
11	Oblong test/junction clamp as Furse Cat. No. CN 105.	6	No		
12	38mmØ HG PVC conduits for the down conductors above.	40	m		
	<u>Earth Termination</u>				
13	16mmØ x 1500mm long solid copper earth rod as Furse Cat. No. RC 020, complete with driving stud and spike.	6	No		
15	Concrete inspection earth pit/chamber, 300mmx300mm masonry type c/w removable cover Cat. No. PT 005 with 5 hole earth bar as Furse Cat. No. PT 006.	1	No		
	<u>Bonding</u>				
16	Bonding and clamping 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.	1	Item		
17	Surge diverter as FURSE ESP 415 or approved equivalent, c/w purpose made enclosure with viewing window	1	Item		
TOTAL FOR LIGHTNING PROTECTION CARRIED TO SUMMARY					

<u>COLLECTION PAGE</u>					
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	TOTAL FROM ELECTRICAL POINTS				
2	TOTAL FROM FIRE ALARM				
3	TOTAL FROM PUBLIC ADDRESS SYSTEM				
4	TOTAL FROM DATA POINT AND CCTV				
5	TOTAL FROM LIGHTNING PROTECTION				
6	ALLOW PROVISION FOR DOOR CONTROL SUYSTEM				500,000.00
	TOTAL FOR ELECTRICAL WORKS CARRIED TO GRAND SUMMARY				

Total Amount in Words (Kenya Shillings)
.....

Bidder's Name (Domestic) & Official Stamp

P.O. Box.....

Signature.....**Date**.....

PIN NO.....**V.A.T Certificate NO**.....

Witness.....**Address**.....

**TECHNICAL SCHEDULE
OF
ITEMS TO BE SUPPLIED**

TECHNICAL SCHEDULE

1. The technical schedule shall be submitted by tenderers to facilitate and enable the Project Manager to evaluate the tenders, especially where the tenderer intends to supply or has based his tender sum on equipment which differs in manufacture, type or performance from the specifications indicated by the Project Manager.
2. The filling of 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 in this schedule.
3. This schedule shall form part of the technical evaluation criterion, and tenderers are therefore advised to complete the schedule as they shall be considered responsive.

TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED
(To be completed by the Tenderer)

Item	Description	Type/Make	Model	Country of Origin
1.	600mmx600mm LED Panel Lighting Fittings			
2.	High bay Lighting Fixtures			
3.	LED Circular & Fluorescent Lighting Fittings			
4.	Lighting Switches			
5.	Sockets			
6.	DP Switches			
7.	Copper Cables			
8.	Addressable Smoke Detectors			
9.	Addressable Heat Detectors			
10.	Fire Alarm Control Panel			
11.	Distribution Boards, Consumer Units & LV Switchboards			
12.	100w, Integrated All in One LED solar street light			
13.	100w, LED Street lighting Fixture			

SECTION H

STANDARD FORMS

CONTENTS OF SECTION H

	<u>TITLE</u>	<u>PAGE</u>
1.	Key Personnel	H/1
2.	Schedule of Contracts completed in the last five (5) years	H/2
3.	Schedule of on-going projects	H/3
4.	Contractor's Equipment	H/4
5.	Details of Litigation or Arbitration Proceedings	H/5

NOTE:

- 1.0 Tenderers must duly fill these Standard Forms as a mandatory requirement as they will form part the evaluation criteria.

KEY PERSONNEL

Qualifications and experience of key personnel proposed for administration and execution of the Contract.

S/NO.	NAME	HIGHEST QUALIFICATION (Attach proof)	YEARS OF EXPERIENCE (GENERAL)	YEARS OF EXPERIENCE IN PROPOSED POSITION
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

I certify that the above information is correct.

.....

Title

.....

Signature

.....

Date

CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

Work performed on works of a similar nature, complexity and volume over the last 5 years.

PROJECT NAME	NAME OF CLIENT	TYPE OF WORK AND YEAR OF COMPLETION	VALUE OF CONTRACT (KSHS.)

I certify that the above works were successfully carried out and completed by ourselves.

.....

Title

.....

Signature

.....

Date

SCHEDULE OF ON-GOING PROJECTS

Details of on-going or committed projects, including expected completion date.

PROJECT NAME	NAME OF CLIENT	CONTRACT SUM	% COMPLETION	COMPLETION DATE

I certify that the above works are currently being carried out by ourselves.

.....

Title

.....

Signature

.....

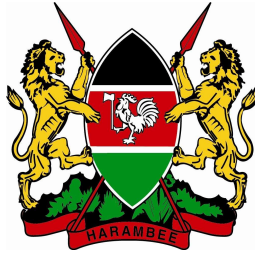
Date

**SCHEDULE OF MAJOR ITEMS OF CONTRACTOR'S EQUIPMENT PROPOSED FOR CARRYING OUT
THE WORKS**

ITEM OF EQUIPMENT	DESCRIPTION, MAKE AND AGE (Years)	CONDITION (New, good, poor) and number available	OWNED, LEASED (From whom?), or to be purchased (From whom?)

DETAILS OF LITIGATION OR ARBITRATION PROCEEDINGS IN WHICH THE TENDERER HAS BEEN INVOLVED AS ONE OF THE PARTIES IN THE LAST 5 YEARS

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.



COUNTY GOVERNMENT OF NYERI

DEPARTMENT OF HEALTH SERVICES

PROPOSED COMPLETION OF ACCIDENT AND EMERGENCY BLOCK (PHASE II) AT KARATINA SUB-COUNTY HOSPITAL

VOLUME 3 OF 3

TENDER REF NO. CGN/HEALTH/17/2024-2025

TENDER SPECIFICATIONS AND BILLS OF QUANTITIES

FOR

**SUPPLY, DELIVERY, TESTING AND COMMISSIONING OF
INTERNAL PLUMBING, INTERNAL DRAINAGE, FIRE
PROTECTIN, MECHANICAL VENTILATION AND MEDICAL GAS
INSTALLATION WORKS**

MARCH, 2025

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PART II - MECHANICAL WORKS
REQUIREMENTS

GENERAL MECHANICAL SPECIFICATIONS

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

PARTICULAR PLUMBING AND DRAINAGE SPECIFICATIONS

GENERAL

SITE LOCATION

The site of the proposed works is as *per Tender Advert*

SCOPE OF WORKS

The works to be carried out under this sub-contract comprise Supply, installation, testing and commissioning of the following: -

- a. Supply, Delivery, Testing and Commissioning of Water Storage, Internal Plumbing, Internal Drainage, Borehole Drilling, Borehole Equipping and Cold Storage Installation Works

BROCHURES FOR DEVICES

For consideration and qualification tenderers shall, at their own cost, provide colored manufacturer's brochures detailing technical literature and specifications where applicable

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:

i. 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.

ii. 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.

iii. CPVC piping

PVC (polyvinyl chloride) that has been chlorinated via a free radical chlorination reaction. CPVC is produced by adding chlorine to PVC in a water slurry or fluidized bed chlorination process. The chlorination reaction is initiated by ultraviolet light. The chlorinated PVC is compounded with ingredients necessary for the desired properties for further processing. The chlorine added to PVC gives CPVC higher temperature performance and improved fire and corrosion resistance.

Should conform to ASTM D2846 standard and ASTM F441 Standard for chlorinated poly vinyl chloride pipes.

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.

b) 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.

c) 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 meter centers. 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 trade name for traps manufactured by this company is 'Grevak'.

3.2.4 Pipe Supports

a) General

This sub-clause deals with pipe supports securing pipes to the structure of buildings for above ground application.

The variety and type of support shall be kept to a minimum and their design shall be such as to facilitate quick and secure fixings to metal, concrete, masonry or wood.

Consideration shall be given, when designing supports, to the maintenance of desired pipe falls and the restraining of pipe movements to a longitudinal axial direction only.

The Sub-contractor shall supply and install all steelwork forming part of the pipe support assemblies and shall be responsible for making good damage to builder's 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 meters for steel and copper pipe and tube is given in the following table for horizontal runs.

Size Nominal Bores	Copper Tube to B.S. 659	Steel Tube to B.S. 1387
15mm	1.25m	2.0m
20mm	2.0m	2.5m
25mm	2.0m	2.5m
32mm	2.5m	3.0m
40mm	2.5m	3.0m
50mm	2.5m	3.0m
65mm	3.0m	3.5m
80mm	3.0m	3.5m
100mm	3.0m	4.0m
125mm	3.0m	4.5m
150mm	3.5m	4.5m

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. They shall be as described in the bill of quantities.

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.

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 galvanized 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.

1.1. TESTING AND INSPECTION

3.4.1 Site Tests – Pipework Systems

a) Above Ground Internal Water Services Installation

All water service pipe system installed above ground shall be tested hydraulically for a period of ten hours 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:

- Apply a coating of suitable filler until the canvas weave disappears and allow to dry.

- 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 sterilization 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
EXTINGUISHER AND HOSE REEL INSTALLATIONS

PARTICULAR SPECIFICATIONS FOR PORTABLE FIRE EXTINGUISHER AND HOSE REEL INSTALLATIONS

4.1 GENERAL

The particular specification details the requirements for the supply and installation and commissioning of the Portable Fire Extinguishers and Boosted Hose Reel System. The Sub-contractor shall include for all appurtenances and appliances not necessarily called for in this specification or shown on the contract drawings but which are necessary for the completion and satisfactory functioning of the works.

If in the opinion of the Sub-contractor there is a difference between the requirements of the Specifications and the Contract Drawings, he shall clarify these differences with the Engineer before tendering.

4.2 SCOPE OF WORKS

The Sub-contractor shall supply, deliver, erect, test and commission all the portable fire extinguishers and Hose Reel which are called for in these Specifications and as shown on the Contract Drawings.

4.3 WATER/CO2 EXTINGUISHERS

These shall be 9-litre water filled CO2 cartridge operated portable fire extinguishers and shall comply with B.S. 1382: 1948 and to the requirements of B.S.4523: 1977. Unless manufactured with stainless steel, bodies shall have all internal surfaces completely coated with either a lead tin, lead alloy or zinc applied by hot dipping. There shall be no visibly uncoated areas.

The extinguishers shall be clearly marked with the following:

- a) Method of operation.
- b) The words 'WATER TYPE' (GAS PRESSURE) in prominent letters.
- c) Name and address of the manufacturer or responsible vendor.
- d) The nominal charge of the liquid in imperial gallons and litres.
- e) The liquid level to which the extinguisher is to be charged.
- f) The year of manufacture.
- g) A declaration to the effect that the extinguisher has been tested to a pressure of 24.1 bar (350 psi.).
- h) The number of British Standard 'B.S' 1382 or B.S. 5423: 1977.

4.4 PORTABLE CARBON DIOXIDE FIRE EXTINGUISHERS

These shall be portable carbon dioxide fire extinguishers and shall comply with B.S. 3326: 1960 and B.S. 5423: 1977.

The body of extinguisher shall be a seamless steel cylinder manufactured to one of the

following British Standards; B.S. 401 or B.S. 1288.

The filling ratio shall comply with B.S. 5355 with valves fittings for compressed gas cylinders to B.S.341. Where a hose is fitted it shall be flexible and have a minimum working pressure of 206.85 bar (3000 p.s.i.). The hose is not to be under internal pressure until the extinguisher is operated.

The nozzle shall be manufactured of brass gunmetal, aluminium or stainless steel and may be fitted with a suitable valve for temporarily stopping the discharge if such means are not incorporated in the operating head.

The discharge horn shall be designed and constructed so as to direct the discharge and limit the entrainment of air. It shall be constructed of electrically non-conductive material.

The following markings shall be applied to the extinguishers:-

- a) The words "Carbon Dioxide Fire Extinguisher" and to include the appropriate nominal gas content.
- b) Method of operation.
- c) The words "Re-charge immediately after use".
- d) Instructions for periodic checking.
- e) The number of the British Standard B.S. 3326: 1960 or B.S. 5423.
- f) The manufacturers name or identification markings

4.5 DRY CHEMICAL POWDER PORTABLE FIRE EXTINGUISHER

The portable dry powder fire extinguishers shall comply with BS3465: 1962 and BS 5423. The body shall be constructed to steel not less than the requirements of BS 1449 or aluminium to BS 1470: 1972 and shall be suitably protected against corrosion.

The dry powder charge shall be not-toxic and retain its free flowing properties under normal storage conditions. Any pressurizing agent used as an expellant shall be in dry state; in particular compressed air.

The discharge tube and gas tube if either is fitted shall be made of steel, brass, copper or other not less suitable material. Where a hose is provided it shall not exceed 1,060mm and shall be acid and alkali resistant. Provision shall be made for securing the nozzle when not in use.

The extinguisher shall be clearly marked with the following information

- a) The word "Dry Powder Fire Extinguisher"
- b) Method of operation in prominent letters.

- c) The working pressure and the weight of the powder charge in Kilogramme.
- d) Manufacturers name or identification mark
- e) The words "RECHARGE AFTER USE" if rechargeable type.
- f) Instructions to regularly check the weight of the pressure container (gas Cartridge) or inspect the pressure indicator on stored pressure types when fitted, and remedy any loss indicated by either.
- g) The year of manufacture.
- h) The Pressure to which the extinguisher was tested.
- i) The number of this British Standard BS 3465 or BS 5423: 1977.
- j) When appropriate complete instructions for charging the extinguisher shall be clearly marked on the extinguisher or otherwise be supplied with the refill.

4.6 AIR FOAM FIRE EXTINGUISHER

These shall be of 9 litres capacity complete with refills cartridges and wall fixing brackets and complying with B.S. 5423 with the following specifications:-

Cylinder: to B.S. 1449

Necking: to be 76mm outside diameter steel EN 3A 2³/₄ 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.

4.7 FIRE BLANKET

The fire blanket shall be made from cloth woven with pre-asbestos yarn or any other fire proof material and to measure 1800 x 1210 mm and shall be fitted with special tapes folded so as to offer instantaneous single action to release blanket from storing jacket.

4.8 BOOSTED HOSE REEL SYSTEM

4.8.1 General

The Particular Specification details the requirements for the supply, installation and commissioning of the hose reel installation. The hose reel installation shall comply in all respects to the requirements set out in C.O.P 5306 Part 1: 1976, B.S 5041 and B.S 5274. The System shall comprise of a pumped system.

4.8.2 Hose Reel Pumps

The fire hose reel pumps shall consist of a duplicate set of multi-line centrifugal pumps from approved manufacturers. The pumps shall be capable of delivering 0.76 lit/sec at a running pressure of 2 bars.

The pump casing shall be of cast iron construction with the impeller shaft of stainless steel with mechanical seal.

4.8.3 Control Panel

The control panel shall be constructed of mild steel 1.0mm thick sheet, be moisture, insect and rodent proof and shall be provided complete with circuit breakers and a wiring diagram enclosed in plastic laminate.

The pump shall be controlled by a flow switch therefore, the control panel shall include the following facilities:

- (a) 'On' push button for setting the control panel to live.
- (b) Green indicator light for indicating control panel live.
- (c) Duty / Stand-by pump auto change over.
- (d) Duty pump run green indicator light.
- (e) Stand-by pump run green indicator light.
- (f) Duty pump fail red indicator light.
- (g) Stand-by pump fail red indicator light.
- (h) Low water condition pump cut-out with red indicator light.

The pumps are to be protected by a low level cut-out switch to prevent dry pump run when low level water conditions occur in the water storage tank.

4.8.4 Hose Reel

The hose reel to the installation shall consist of a recessed, swing-type hose reel as Angus Fire Armour Model III or from other approved manufacturers.

The hose reel shall comply with B.S. 5274: 1975 and B.S 3161: 1970 and is to be installed to the requirements of C.P. 5306 Part 1: 1976.

The hose reel shall be supplied and installed complete with a first-aid Non-kinking hose 30 meters long with a nylon spray / jet / shut-off nozzle fitted. A screw down chrome - plated globe valve to B.S 1010 to the inlet to the reel is to be supplied.

The orifice to the nozzle is to be not less than 4.8mm to maintain a minimum flow of 0.4 lit / sec to jet.

The hose reels shall be installed complete with electro-galvanised cabinet recessed on the wall.

The hose reels shall be installed at 1.5 metres centre above the finished floor level in locations shown in the contract drawings.

4.8.5 Pipe Work

The pipe work for the hose reel installation shall be galvanised wrought steel tubing heavy grade Class C to B.S 1387: 1967 with pipe threads to B.S 21. The pipe work and all associated fittings shall be in approved colour for fire fittings.

4.8.6 Pipe Fittings

The pipe fittings shall be wrought steel pipe fittings, welded or seamless fittings conforming to B.S. 1740 or malleable iron fittings to B.S 143.

All changes in direction will be with standard bends or long radius fittings. No elbows will be provided.

4.8.7 Non-return Valves

The non-return valves up to and including 80mm diameter shall be to B.S. 5153: 1974.

The valves shall be of cast iron construction with gunmetal seat and bronze hinge pin.

4.8.8 Gate Valves

The gate valves up to and including 80mm diameter shall be non-rising stem and wedge disc to B.S 5154: 1974 with screwed threads to B.S. 21 tapes thread

4.8.9 Sleeves

Where pipe work passes through walls, floors or ceilings, a sleeve shall be provided one diameter larger than the diameter of the pipe, the space between them to be packed with mineral wool, to the Engineer's approval.

4.8.10 Earthing

The hose reel installation shall be electrically earthed by a direct earth connection. The installation of the earthing shall be carried out by the Electrical Sub- contractor.

4.8.11 Finish Painting

Upon completion of testing and commissioning the hose reel installation, the pipework shall be primed and finish painted with 2 No. coats of paints to the Engineer's requirements.

4.8.12 Testing and Commissioning

The hose reel installation shall be flushed out before testing to ensure that no builder's debris has entered the system. The installation is to be then tested to one and half times the working pressure of the installation to the approval of the Engineer. Simulated fault conditions of the pumping equipment are to be carried out before acceptance of the System by the Engineer.

4.8.13 Instruction Period

The Sub-contractor shall allow in his contract sum for instructing of the use of the equipment to the Client's maintenance staff. The period of instruction may be within the contract period but may also be required after the contract period has expired.

The period of time required shall be stipulated by the Client but will not exceed two days in which time the Client's staff shall be instructed on the operation and maintenance of the equipment.

4.8.14 Signage-Fire Instruction /Fire Exit

4.8.14.1 Fire Instruction Notice

Print fire instruction on the Perspex plates with White Colour Background measuring 510mm length x 380mm width x 4mm thick as follows;

FIRE INSTRUCTION NOTICE

In the event of fire;

1. Raise the alarm by actuating the nearest alarm system point, Sound Siren /gong or Shout Fire
2. Attack fire using the nearest available equipment
3. Call nearest fire Brigade or Police 999 and inform your switchboard (PABX) Operator
4. Ensure that all personnel not involved in firefighting evacuation to safety outside the building.
5. Close but DO NOT LOCK doors behind as you leave.
6. Evacuate the building using stairs or fire escapes. Do not use Lifts/Escalators. Walk calmly. Avoid panic. Do not stop or return for personal belongings.
7. Assemble as per floor outside the building for roll call.

4.8.14.2 Fire Exit Sign

Print Fire Exit signs on the Perspex plate, 4mm thick, with white colour background as follows:-

1. Lettering IN RED COLOUR of not less than 50mm in height.
2. A pendant sign bearing words, FIRE EXIT and with a directional arrow.

The sign must be capable of being read from both approaches to exit and so is double sided.

4.8.14.3 Hose Reel Label

Print Fire Exit signs on the Perspex plate, 4mm thick, with white colour background as follows:-

1. Lettering IN RED COLOUR of not less than 50mm in height.
2. A pendant sign bearing words, HOSE REEL and with a directional arrow.

The sign must be capable of being read from both approaches to exit and so is double sided.

**PARTICULAR SPECIFICATION FOR MECHANICAL VENTILATION AND
AIR CONDITIONING**

PARTICULAR SPECIFICATION FOR MECHANICAL VENTILATION AND AIR CONDITIONING.

1.0 GENERAL

This section specifies the general requirements for mechanical ventilation and air conditioning plant, equipment and materials forming part of the sub-contract works and shall apply except where specifically stated elsewhere in the Specification or on the Contract Drawings.

1.1 INSTALLATION

Installation of all ductwork, plant and equipment shall be carried out under adequate supervision from skilled staff to the relevant codes and standards specified here-in.

The sub-contractor shall be responsible for ensuring that sufficient provision is made to prevent the transmission of vibration from equipment to the supporting structure. In case of fans, this shall be done by rot and vermin proof flexible connection and an anti-vibration mounting of an approved type.

The Sub-contractor shall ensure that all ducting systems are provided with sufficient access hatches complete with covers, for maintenance purposes.

Dampers and other user equipment shall be installed with adequate access for operation and maintenance. Where dampers and other operational equipment are unavoidably installed beyond normal reach and in such a position as to be difficult to reach from a short step ladder, extension spindles shall be provided.

The variety and type of supports for ducts, and fans shall be kept to a minimum and their design shall be such as to facilitate quick and secure fixing to both metal, concrete, brickwork and wood.

Where the design of the structure is in reinforced concrete, supports shall be secured to the structure by means of rodheads, rawbolts or other approved means. Where the sub-contractor proposes to secure his supports by other means than to the main structural concrete, he shall consult with the Architect/Engineer before proceeding.

1.2 DUCTWORK

The Sub-Contractor shall supply, deliver and erect all ductwork as shown on the Contract Drawings and Approved working Drawings.

All ductwork shall be manufactured in accordance with the Chartered Institute of Building Services engineering specifications (C.I.B.S.E) Specification DW/142, except where stated otherwise.

Ductwork shall be manufactured from galvanized mild steel sheet unless otherwise specified. All external ductwork shall be manufactured from black mild steel sheet and galvanized after manufacture. All seams shall be of lockform type. All ductwork systems shall be complete with all necessary dampers, bends, tees, tapers, transformation and special pieces.

Where removal is required for access or maintenance, ducting shall be provided with steel angle flange joints suitably painted and protected.

Only bends type 1-7 inclusive as detailed in the C.I.B.S.E Specification will be permitted.

Only duct connections type 41-44 inclusive 53 and 54 as detailed in the C.I.B.S.E Specification will be permitted. All joints shall be fixed as to be suitable for the direction of air flow.

All positions of plant and ductwork shall be checked on site before detailed manufacturing drawings are prepared and ductwork manufacture commenced.

Transformation and taper pieces shall, where ever possible be constructed so that the included angle does not exceed 30°

All flanged joints shall be sealed by the use of asbestos string compressed between a the flanges, and where slip joints occur, these shall be sealed by 'Prestik' or other similar suitable jointing compound and adhesive tape 40mm Exposed sheet metal edges shall be painted with galvatite before sealing.

Dampers shall be of **aerofoil** section and manufactured from galvanized mild steel sheet. Damper blades shall not exceed 150mm in width and the edges of the blades shall be sealed with a 3mm thick felt or rubber seal to minimize leakage. Operating quadrants shall be provided with locknuts and the quadrant shall be clearly marked with 'open' and 'closed' positions. **Multileaf** damper blades shall be operated by one arm through a linkage external to the duct and secured by a lock nut.

Diffusers shall be louver faced 4 way diffusers fitted with opposed blade dampers. They shall have a removable cover for ease of cleaning and maintenance. They shall be manufactured from extruded aluminum with a colour to match the ceiling finish. They shall be as **Flowline Grilles** or approved equivalent.

The Sub-contractor shall provide sufficient access doors and handholes in the ductwork for the purpose of maintenance and inspection. **Access doors shall be of the hinged type** and door openings in the ductwork shall be adequately stiffened, and made airtight with purpose made rubber gaskets around the door perimeters.

All support and brackets shall be wire brushed and painted one coat of red oxide paint prior to and after erection. All nuts and bolts shall be spheradized. The fastening of electrical cables to ductwork will not be permitted.

Where ductwork has insulation incorporating an external vapour seal, the ductwork shall be insulated from the support by a rot proof softwood, hardwood or other suitable closed cell insulation of not less than 25mm great thickness than the insulation to be applied so that the vapour seal may be bonded to the face of the timer, all as detailed in clause 6.4 of the C.I.B.S.E specification DW142.

Where ductwork passes through floors and walls, etc. galvanized sheet sleeves or builders work or builders work timer framed shall be provided. The space between the duct and the sleeve or frame shall be packed with mastic to prevent air movements or noise transmission from one space to another. Ducts must not come into direct contact with building fabric.

Hangers and brackets shall be manufactured from rolled mild steel angle or channel section and shall generally be of red drop rod hanger or cantilever type. The hangers shall be spaced to ensure adequate support and where practicable shall be fitted at each ductwork joint.

The Sub-Contractor shall supply and install, where called for, **louvers at inlets and outlets** with insect proof screens. The louvers shall be constructed throughout from extruded aluminum sections and shall have a lacquered or anodized finish to prevent corrosion. The louvers shall be weather-proof and have a free area of not less than 50%.

The sub-contractor shall ensure that wherever fans or similar equipment are connected to the ductwork system, the connections are made with a heavy duty rot and vermin proof of neoprene, or similar material, flexible connection to prevent transmission to the ductwork or building fabric. Flexible connections shall be secured by a pre-drilled mating flange, or when fixing to spigot, the spigot should be beaded and a jubilee clip or split flat iron ring should be used.

The Sub-contractor shall provide test holes in all branch ducts and in the main duct on the discharge of the fan. The holes shall be suitably spaced in accordance with B.S 848, shall be situated on a straight length of duct work and where possible, not less than 2 meters down stream of any bends or dampers. After the completion of testing the sub-contractor shall provide and fix proprietary metal or plastic plugs to all test holes. The use of drubber or cork bungs will not be permitted.

1.3 Axial wall-mounted fans

Axial fans shall have impellers of Aerofoil section with variable pitch angle and manufactured from high quality die cast aluminum. Fan casing shall be L-type, hot dip galvanized steel plate. They shall be as **WOODS** or approved equivalent.

Motors shall be of the totally enclosed type (IP55) with permanently lubricated bearings with speeds of not more than 1440 r.p.m.. They shall be capable of operating in an air stream temperature of upto 50°C. The fans shall be mounted on anti-vibration mountings and connected to ductwork by use of flexible connectors.

1.4 Roof-Mounted Extract Fans

Roof-mounted Centrifugal Fans shall have backward curved wheel in galvanized steel sheet with the upper cover being of techno-polymer. The fans shall be of vertical discharge type with single phase motors.

1.5 Anatomy Laboratory Centrifugal Fans

There will be a supply and extract fan of capacity 2.4m³/s against a pressure drop of 250N/m². The fans shall have backward curved blades and manufactured from steel sheet protected with epoxy paint. The fans shall have mono block supports. The fans shall have three-phase motors.

Fan Controls

Fan control panels shall be fabricated from SWG 18 mild steel sheets powder coated after manufacture and shall have an integral lock. They shall also have an integral isolator which switches off power before the door opens. The panel shall be complete with:

- ◆ Contactors with current overload protection.
- ◆ Phase failure relay with over and under voltage protection.
- ◆ Programmable 24 hour timer switch
- ◆ M.C.Bs
- ◆ Selector switch for Auto or manual operation
- ◆ Indicator lights for fan 'RUN' and 'TRIP'
- ◆ Switches/relays to switch off fans in the event of the Automatic Fire Suppression system being operational.

All panels shall have a **name plate** to indicate what it serves or the zone being served. Panels shall be as manufactured by switch Gear controls or approved equivalent.

1.5 FILTERS

The Filter bank unit shall have a **bellmouth inlet** with an insect screen and washable filters of 65% efficiency with an initial pressure drop of 45 Pa at the rated flow. The filters shall be as **Trox** or approved equivalent. **There shall be differential pressure switches to enable dirty filter indication.**

1.7 SILENCERS

Silencers shall be installed in the plant room, one for the air supply and the other for air extract system.

The silencers shall be the splitter type bend silencers of dimensions 900 x 400 x 1200mm long on each side of the bend.

They shall be packed with rock wool fibre enveloped in melinex material for easier cleaning and to prevent particle accumulation.

The silencers shall be "TECNALCO" or equal and approved.

TESTING AND INSPECTION

Site Tests

The Sub-contractor shall supply all instruments and equipment for the testing of associated equipment which may affect the performance of the plant installed under these sub-contract works.

Site Test –Fans

All fans shall be charged with a suitable lubricant and shall be tested upon completion of the ancillary system erection to ascertain that the performance of each fan complies with the requirements of the Specification.

Completion of Work – Balancing and Commissioning

Following the Site tests and prior to handover, mechanical ventilation systems shall be balanced by means of grilles, dampers and other special controls installed, so as to give the required air flow rates and where applicable the desired temperatures, pressures and humidity conditions in all areas served by the said systems. Balancing shall be carried out as described in the **C.I.B.S.E Commissioning Codes**.

The complete systems shall be balanced and commissioned as a whole. Sectional balancing and commissioning on any one part of the systems where this excludes final complete systems balancing and commissioning, shall not be accepted.

Tests volumes within ducts shall be within $\pm 5\%$ of the design volumes, and volumes at grilles and diffusers shall be within $\pm 10\%$ of the design volumes.

When the system has been balanced to the satisfaction of the D.R, 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 Sub-contractor.

PARTICULAR SPECIFICATION FOR MEDICAL
GASES, COMPRESSED AIR AND VACUUM INSTALLATIONS

INTRODUCTION

This standard specification is intended to form part of the general specification to be included in the Standard Tender document as follows:

- Part (1) General Conditions of contract.
(2) Preliminary clauses (supplementary to General Conditions)
(3) Technical specification(s)
(4) Schedules of works.
(5) Appendices to specifications.

The specification comprises standard clauses, which can be used to complete specifications for Medical Gases, Air and Vacuum installations in Hospitals. **The clauses are so arranged that they can be selected to suit the requirements of individual schemes and guidance notes are included to assist in the selection and completion of the clauses. All the clauses may not apply. It may also be necessary to add clauses to suit particular requirements. These should be considered for future inclusion in the specification.**

Dimensions and values are given in Metric S.I. units; Imperial equivalents are quoted in brackets. Where precision in equivalent values is not important, the nearest practical or rational equivalent in Metric or Imperial units is given.

Note;- This specification does not cover the requirements for Pathology Departments, Laboratories or Workshop. These departments must be treated separately and supplied from installations independent of Medical installations. Specifications will need to be drawn up based on appropriate sections of H.T.M. 22. It is intended that design guidance for Medical installations is obtained from H.T.M. 22 and that the requirements arrived at are written into the specification clauses.

REFERENCES

BRITISH STANDARDS INSTITUTION

- BS 4 Structural steel sections.
BS21 Pipe Threads.
BS3643 I.S.O Metric screw Threads.
BS341 Valve Fittings for compressed Gas Cylinders.
BS1319 Medical Gas Cylinders and Anaesthetic Apparatus.
BS587 Motor Starters and controllers.
BS2613 The Electrical performance of Rotating Electrical Machinery.
BS2960 Dimensions of 3 phase Electric Motors.
BS3979 Dimensions of Electric Motors, Metric Series.
BS89 Direct Acting Electrical indicating instruments.
BS559 Light Gauge copper tube, imperial sizes-inch Bores.
BS2871 Part 1. copper tubes for water, gas and sanitation - Metric outside Diam's.
BS1172 Phosphorous Deoxidised Non-arsenical copper for General Purposes.
BS1845 Filler Metals for Brazing.
BS1723 Specification for Brazing.
BS487 Part 1 : Fusion welded steel air receivers (for pressures not exceeding 5001b/sq.inch).

BS1123 Safety Valves, Gauges and fittings for air receivers and compressed air installations.

BS1780 Bourdon Tube pressure and vacuum gauges.

BS1701 Air Filters for air supply for compressors, etc.

BS 2831 Methods of air filters in filters used in air conditioning and general ventilation.

BS3928 Methods for sodium flame test for air filters.

BS4001 Care and maintenance of underwater breathing apparatus.

Part 1 compressed air open circuit type.

Part 2 standard diving equipment.

BS4275 Selection, use and maintenance of respiratory equipment.

BS 3970 Steam sterilizers.

BS4199 Surgical suction apparatus.

Part 1 and 2 electrically operated surgical suction apparatus.

BS3636 Methods for proving Gas Tightness of vacuum or pressurised plants.

BS1710 Identification of pipelines.

BS4099 Colours and their meanings when used for indicator lights.

CP3009 Underground piping systems.

BS4957 Hospital Medical vacuum pipe line service.

HTM Hospital Technical Memorandum

DHSS PUBLICATIONS

Hospital Technical Memorandum No. 22 (HMSO May 1972) Piped medical gases, medical compressed air and medical vacuum installations. Data sheet EE10.11/12 colour code identification for medical gas terminal units and pipe installations.

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MEDICAL GASES, AIR AND VACUUM

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1. GENERAL

1.1 Extent of Contract.

The work shall include for supplying, installing, testing ,commissioning ,demonstrating and leaving in proper working order a piped centralised supply system for medical gases comprising (**specify either : oxygen, Nitrogen Oxide/Oxygen mixture, carbon dioxide, compressed air and vacuum**) as outlined in this specification. Tenders shall comply in all respects with the specification but the contractor may offer alternatives provided that the differences and advantages are clearly detailed by him on the schedule of alternatives attached which shall be returned with the tender.

1.2 Specialist Contractors.

The work shall be tendered for by approved contractors only who are specialists in the installation of medical gas systems and who have permanently employed staff experienced in this type of work. At the time of tendering the contractor shall confirm in writing that he has suitable qualified personnel who would be employed on the project.

1.3 Contract Drawings.

The contract drawing to be read in conjunctions with this specification are as follows:

<u>Drawing No.</u>	<u>Title</u>
.....	
.....	
.....	

Any discrepancies between the drawings and the specification shall be clarified with the Engineer before tendering.

1.4 As- Installed Drawings

During the course of construction the contractor shall correct one copy of the contract drawings daily as the work proceeds, indicating any change made from the arrangement shown in the contract drawings.

This amended drawing shall remain on site, readily available for inspection, and the amendments must ultimately be transferred to a reproducible copy of the contract drawing.

2. CENTRALISED STORAGE CYLINDER SYSTEMS

2.1 Gases to be dispensed from cylinders

The supply system (s) for ((specify either : **oxygen, Nitrogen Oxide/Oxygen mixture, carbon dioxide, compressed air and vacuum**)) shall (each) comprise a centralised battery of cylinders, complete with support tacks, headers ,automatic manifold distribution panel (s) and shall necessary controls ,safety devices ,alarms ,pipework ,valves and terminal units for distributing the gases to the required positions as listed on the schedule of terminal units.

Note: The following shall be supplied from plant installations as specified later.

- (a) Oxygen
- (b) Compressed Air.
- (c) Vacuum.

2.2 Location of cylinders.

The cylinders shall be located on the medical gases manifold room(s) as indicated on contract drawing(s) No (s).

2.3 Initial complement of cylinders.

The Hospital authority shall be responsible for providing the full complement of cylinders for each gas as required and these will be used initially for purging and commissioning and handing over the system(s) in proper working order.
(see 10.14 and 10.15)

2.4 Capacity of System(s)

The capacity of the storage cylinder system(s) shall be as follows; providing equal banks of cylinders, one for 'duty' and one for 'standby' for oxygen, a total of cylinders arranged in two separate banks each cylinder having a capacity of litres(.....cu.ft) for nitrous oxide, a total of cylinders arranged in two separate banks each cylinder having a capacity of..... litres(.....cu.ft) for nitrous oxide oxygen mixture a total of cylinders arranged into separate banks each cylinder having a capacity of.....litres(.....cu.ft).

For carbon dioxide a total of..... cylinders arranged in two separate banks each cylinder having a capacity oflitres (.....cu. Ft) for compressed air a total of..... cylinders arranged in two separate banked cylinder having a capacity of litres (.....cu. ft).

2.5 Cylinder support racks.

The supporting steelwork for the cylinders shall hold them in an **inclined** position against the wall and shall consist of mild steel bulb angle section 178mm x176mm '**rag**' bolted to the floor and a separate mild steel angle section 102mm x 76mm x 13mm thick '**rag**' bolted to the wall. The steel sections to be to BS.4. The angle section shall have neatly formed semi-circular cut-outs to space and support the cylinders in banks. All securing bolts shall be provided by the specialist contractor who shall mark out the position of holes in floor and walls for drilling by the building contractor. Any grouting in shall be done by the specialist contractor, who shall also erect the steelwork.

2.6 Additional Racks for Spare Cylinders.

The following additional storage racks shall be provided and installed in the position(s) shown on the contract drawing(s) numbers(s).....

The racks to be in accordance with BS. 1319.

.....(specify).....Rack(s) each for oxygen cylinders
.....litres(.....cu.ft) capacity.

.....Rack(s) each for Nitrous oxide cylinders of litres.....cu.ft) capacity.

.....Rack(s) each forNitrous oxide/oxygen mixture cylinders of.....
litres(.....cu.ft) capacity.

.....Rack(s) each forCarbon dioxide cylinders of..... litres(.....cu.ft)
capacity.

.....Rack(s) each forCompressed air cylinders of..... litres(.....cu.ft)
capacity.

Note;- In cold weather N_2O/O_2 mixture tends to separate and the cylinders received should be stored horizontally for 24 hours before use. The racks shall be designed for horizontal storage only. The ambient room temperature shall be within the range of 10°C to 25°C.

2.7 Automatic manifold assembly.

The manifolds for all the specified gases (and air) shall be as far as possible identical in construction and the following clauses refer to the assemblies any of the “gases”.

2.7.1 Manifold Headers

Each bank of cylinders shall be located beneath a high-pressure manifold header securely mounted control panel. The headers shall carry flexible spiral tail pipes on the underside for connecting to the cylinders and each tail pipe shall incorporate a renewable non-return valve on the manifold header to allow removal and replacement of the cylinder without interrupting the supply from others in the same bank.

2.7.2 Non-interchange ability of cylinder connections

The screwed connections of the tail pipes to the cylinder valves shall be designed such that cross connection of the pipe for any one gas cannot be made to any cylinders for the gases, the exception being oxygen and air which to BS. 341 part 1 are identical.

2.7.3 Testing of Headers.

The manifold and tail pipe assembly shall be capable of withstanding a maximum working gauge pressure of 136 bar (1980 p.s.i.) and shall be tested to twice this pressure by the manufacturer at his work and a test certificate supplied.

2.7.4 De-Greasing

The assembly shall be de-greased and delivered to site in a sealed polythene bag or cover and labelled to the effect that it is de-greased and shall on no account be contaminated by dirt oil or grease during erection of afterwards.

2.7.5 Manifold Control Panel

Each pair of headers shall connect to a control panel which shall automatically reduced the high pressure gas or air to a low distribution gauge pressure of 4.14 bar+ 0.14 bar (60 p.s.i.+ 2 p.s.i) for gases or 7.3bar + 0.15 bar (105p.s.i. + 2.5p.s.i) for air.

2.7.6 Automatic Operation

The control panel shall dispense gas (or air) from each of the two cylinder banks in turn via a common distribution pipe and when the “duty” bank pressure falls to 7 bar g.(100 p.s.i.) on “gas” manifolds or 10 bar g. (145 p.s.i.) on air manifolds, the panel shall automatically switch over to the “reserve” bank without any interruption of the supply.

The panel shall incorporate a pressure regulator, a pressure switch and automatic valve to each bank in order to carry out the above operations.

It shall be possible to select either bank of cylinders as the duty bank and to change over manually to the reserve bank despite any electrical supply failure.

A reserve pressure regulator to each bank shall automatically take over if the changeover valve fails to operate or if the low-pressure regulator fails to open sufficiently. It shall be possible to carry out maintenance work on the pressure regulators and parts for one bank without affecting the supply from the other bank.

Automatic panel shall be capable of passing 300 litres per minute at a gauge pressure of 4.14 bar (60 p.s.i.) for “gases” and 7.3 bar (105 p.s.i) for air.

2.7.7 Pressure Gauges

The control panel shall incorporate three pressure gauges: one high pressure gauge to each cylinder bank and one common low pressure gauge on the outgoing supply to the distribution pipework.

The gauges shall conform to BS.1780 and be graduated in bars and p.s.i.

Each gauge shall carry the name of the gas on the dial face with warning- “USE NO OIL OR GREASE” Gauge shall be degreased and maintained in this condition before and after installation.

The dials shall be marked with a blue line at the normal working pressure and a red line at the minimum allowable.

2.7.8 Control Panel Identification

Each panel shall carry in large letters on the front the name of the gas being controlled the letters shall be embossed engraved or otherwise marked on so as to be indelible. Painting or adhesive lettering shall not be permitted.

2.7.9 Heated Manifold for Nitrous Oxide and Nitrous Oxide/Oxygen Mixture.

On the Nitrous oxide and Nitrous Oxide/oxygen mixture manifolds, electric heating elements shall be incorporated.

2.7.10 Electricity supply

The manifolds shall be suitable for operating from a volts ,single phase/3 phase and neutral..... Hertz, A.C. supply.

Any internal wiring in the panel shall have a flame- retardant sheathe to comply with I.E.E regulation B. 16.

2.7.11 Precautions against Leakages.

All parts of the control panel shall be constructed of materials, which will not deteriorate during service and lead to leakages. Diaphragm gaskets of pressure regulators shall not be of fibre but brass.

2.8 Service or Emergency Point.

Each gas (or air) installation shall include a service or emergency point in the manifold room on the wall near to the control panel and on the outgoing distribution pipe into which a supply can be connected manually from a standby cylinder when the control panel is to be serviced or has failed.

The service point shall be in form of a terminal unit complete with check valve and isolating valve, into which a flexible pipe with probe can be inserted. See 6.11.8 for details.

The unit shall be capable of passing 275 litres/min. minimum at a nominal gauge pressure of 4.1 bar (60 p.s.i.) with a pressure loss not exceeding 0.55 bar (8 p.s.i.).

The unit shall be rigidly piped up to the distribution main and the height of the unit above floor level shall be such that the flexible pipe probe can be inserted easily by a person of average height standing on floor level.

The service point shall be identified indelibly with the name of the gas and by colour code to B.S. 1710 (1971), schedule No. 13 of this specification.

2.8.1 Standby Cylinder and Rack.

The standby cylinder shall be complete with pressure reducing set with safety relief, high and low pressure gauges, on/off control valve, flexible pipe and probe.

The supply of the cylinder shall be the responsibility of the hospital authority but a supporting steel work rack on the lines of those for the main banks and reducing sets, gauges and valves shall be included in this contract.

Regulators should have a working capacity of 300 litres min. and be set to operate at a gauge pressure of 4.1 bar (60 p.s.i.) for oxygen, for nitrous oxide 4.1 bar (60 p.s.i.) and for compressed air 7.2 bar (105 p.s.i.).

The probe and the connection of the pipe to the pressure regulator shall be non-interchangeable with other gases.

2.8.2 Main Stop Valve.

A main stop valve shall be fitted on the distribution main before the service point is reached in order to allow the control panel to be isolated.

The valve shall be in readily accessible position so that it can also serve as an emergency valve and being located in the manifold room. It need not be housed in a valve box.

2.9 Safety Relief Valve.

A self-closing safety relief valve shall be fitted on the distribution pipe-in between the control panel and the main stop valve. The valve shall have a flow capacity at a head equal to the maximum flow rate of the control panel and shall be set to operate at 25% above the distribution pressure.

The valve shall be of a type which can be locked or sealed and shall be non-ferrous material.

It shall be coupled to a copper vent pipe one size larger than the distribution pipe and vented to atmosphere at a suitable level and position outside the building. The end of the vent pipe shall terminate in an inverted "U" bend with wire mesh and a suitable shield to protect against snow.

and ice. The discharge point shall be finally agreed on site by the engineer and contractor to ensure that there is no danger of fire, injury to personnel, contamination or interference with air intakes or windows. The safety valve and vent pipe shall be supplied and installed in a degreased condition. Weatherproof notices shall be fixed at each discharge point stating- DANGER KEEP CLEAR. MEDICAL GAS DISCHARGE POINT.

2.10 Electrical Installation work.

All electrical equipment shall be supplied and installed by the specialist contractor.

The interconnecting wiring shall be carried out to separate specification by the contractor/others.

The specialist contractor shall in all cases supply duplicate wiring diagrams and instruction within.....weeks of being awarded the contract.

Liquid Oxygen Plant

3.1 Extent of Specialist Contractors Work

The oxygen supply to the distribution system shall be from a medical liquid oxygen plant which shall be installed by a specialist oxygen supplier under a separate contract negotiated by the engineer.

The specialist contractor's work shall commence at the valved distribution position installed by the specialist oxygen supplier at the position shown on the Contract Drawing No

3.2 Work Specialist Oxygen Supplier

The work shall comprise the supply and installation of a medical liquid oxygen plant at the position shown on Contract Drawing No

The plant shall be the vacuum insulated evaporator type and have a capacity equal tom³ (.....cu..ft.) of gaseous oxygen.

The plant will remain the property of the selected supplier who shall remain and re-fill with the liquid oxygen as necessary.

The plant shall include a standby oxygen cylinder twin manifold which shall come into operation immediately the liquid plant ceases to operate from any cause whatsoever.

The manifold assembly shall also remain the property and responsibility of the specialist supplier as regards regular inspection and maintenance but daily running of manifold and replacement of cylinder as required shall be responsibility of the Hospital Authority.

The cost of re-filling evaporator and cylinders will be chargeable to the Hospital Authority.

The manifold shall be located in the open with the liquid plant and shall have a weatherproof covering.

The manifold shall be located in the manifold room as shown on the Contract Drawing Numberbut shall remain the property of the specialist supplier.

3.3 Extent of Specialist oxygen supplier's work, builders work, installation work, insurance

The specialist oxygen supplier shall confirm at the time of commencement of works the following:

1. Supply of drawings and instructions for associated work required to be carried out by others.
2. Identification of pipe work to B.S. 1710 (1971) up to distribution point;
3. Commissioning of plant.
4. Insurance of plant.

3.4 Extent of associated work to be carried out by other contractors on behalf of the Health Authority.

The following will be carried out by others (**under separate contracts**):

1. Provision of access roads to the plant to take road tankers
2. Hard standing pad of non-porous concrete for tanker when filling the plant
3. Drainage of pad and plant foundation by surface fall to drains at least 6meters away.

4. Access road to manifold room where used
5. Electricity supply to suitable agreed distribution point. Wiring from distribution board to control panels on liquid oxygen evaporator and standby manifold and to tanker moptor starter box. Wiring from panels to alarm system
6. Electricity supply and lighting equipment to illuminate the plant
7. Fire Protection to Fire Officer's requirements
8. Lighting protection if required,.

3.5 Requirements for Buried Oxygen Pipework

The oxygen pipeline from to
..... is to be run underground and this shall be carried in protective glazed earthenware pipe laid on the bottom of a trench 460mm wide x 460mm deep approximately.

The oxygen pipe shall be wrapped in protective tape of approved material. Backfilling of the trench shall be left until the oxygen pipeline has satisfactorily passed pressure tests.
In areas where traffic passes over, steel protective pipes shall be used. The steel pipe shall be coated or wrapped to prevent corrosion.

Medical Compressed Air Plant

4.1 General requirements

The specialist contractor shall supply and install at the position shown on contract drawing numbera medical compressed air plant having (**Specify either one/ two/ horizontal/ vertical air receiver(s)**)..... (each) served by two identical air compressor units and complete with all necessary controls, safety devices, alarms, oil and moisture separators and air dryers.

4.2 Quality of Air

The air finally delivered to the ward, room or theatre shall be oil free, dust free and dry as specified later. (Clause 4.21)

4.3 Distribution pressure

The pressure in the distribution pipe work shall be initially 7.3 bar $\pm$ 0.15 bar (105 p.s.i. $\pm$ 2.5 p.s.i.) gauge on leaving the plant room, with reducing valve(s) as indicated on the contract drawing(s) to give a pressure of 4.14 bar $\pm$ 0.14bar (60 p.s.i $\pm$ 2 p.s.i) gauge. See clause 4.22 for further details.

4.4 Maintenance

The plant shall be designed and arranged to facilitate easy and efficient inspection and maintenance, to the satisfaction of the engineer.

4.5 Precautions against vibration and noise

Flexible pipe work connections and resilient mountings shall be provided where necessary to prevent the transmission of vibration and noise to the building and distribution pipe work. The specialist contractor shall be responsible for ensuring that rigid connections are not made either by themselves or others.

4.6 Builder's Work

The specialist contractor shall supply and fix all holding down bolts, anti-vibration mountings and supply details of all foundations and hole positions for the building contractor to provide. The concrete foundation block shall be of adequate mass placed on suitable resilient foundations to damp out vibrations.

4.7 Air Compressor Unit

4.7.1 Definition

Each air compressor unit shall comprise a compressor driven by an electric motor mounted together on a common base plate having anti-vibration mountings.

4.7.2 Duty

Each compressor unit shall be identical and have a free air delivery of ...(specify)....m³ (.....cu. ft.) per minute and shall be capable of dealing with the normal load on its own and maintain the gauge pressure in the receiver atbar (+ -.....bar)p.s.i (+-.....p.s.i.). The two compressors shall be arranged so that one compressor is on duty while the other is on standby.

4.7.3 Type

The compressors shall be of the(specify)....., suitable for continuous operation and having efficient oil seals of

proved reliability to the lubricated parts of the machine. (See clause 4.21 for oil mist limit)
Compressors with P.T.F.E. rings or seals shall not be allowed because possible overheating would liberate offensive gases from this material.

4.7.4 Intercooling and Aftercooling

The compressors shall be of two-stage design with intercooling between stages and final after cooling, so that the air leaving temperature is kept as low as possible in order to reduce condensation and ensure subsequent satisfactory air dryer performance.

4.7.5 Safety Valve

The intercooler shall be air cooled by means of fans integral with the compressor and if thought necessary due to warm site conditions the air supply to the fans shall be ducted from outside in order to provide air as cool as possible.

The specialist contractor shall advise on the necessary for ducted air and shall include for any ductwork in their contract.

4.7.6 Automatic drain traps

Both intercoolers and aftercooler shall be provided with an automatic drain trap with manual by pass each lead via copper tundishes piped to a suitable gully.

4.7.8 Water Cooling

The coolers and cylinders shall be water-cooled and the water supply shall be taken from a storage tank supply in order to ensure that the compressors have a non- interrupted supply. A break tank shall be incorporated between the main tank and the circulating pumps.

4.7.9 Storage Tank

A suitable storage tank supply is available and a connection to this system is made at(**Specify location**).....by the specialist contractor. A storage tank is to be provided oflitres (.....gallons) capacity and is to be (specify either included in this contract/ provided by others under a separate contract). The specialist contractor shall make the necessary connections from this system.

4.7.10 Water Treatment

The hardness of the local water supply is and local treatment of the water before entering the compressors shall be included in this contract.

4.7.11 Non -Recirculated water

The cooling water shall be run to waste via copper tundishes piped to a suitable gully.

4.7.12 Re-circulated Water

The cooling water shall be re-circulated and suitable cooling arrangements shall be included in this contract.

4.7.13 Circulation Control

The cooling water shall be controlled by a thermostatic immersion on the outflow so that the circulation pump is stopped when a pre-determined low temperature setting is reached. The

circulation pump is stopped when a pre-determined low temperature setting is reached. The circulation pump shall be installed in duplicate for study purposes.

4.7.14 Thermometers

Thermometers of the dial type shall be provided at the inlet and outlet of points of the coolers to show compressed air temperatures.

4.7.15 Excessive Air Temperature Protection

In the event of a higher than normal air exit temperature a thermostat shall switch off the compressor(s) and give warnings as described later. The standby manifold shall then be automatically brought into use.

4.7.16 Valves on delivery pipe to receiver.

The two compressors shall supply air to the receiver either through separate delivery pipes or the pipes may join into one common delivery pipe.

An isolating non-return valve shall be fitted on the delivery pipe from each compressor prior to entering the receiver.

4.7.17 Air Unloading Valves

Each delivery type shall carry an automatic air unloading valve, prior to the non-return valve; and operated when the compressor stops so that the high pressure air in this portion of the pipe is released and the compressor can the re-start under no conditions. At the manufacturer's discretion this valve may be omitted on compressor can re-start under no load conditions. At the manufacturers discretion this valve may be omitted on the compressors with less than 5.h.p. motors

4.7.18 Flexible Pipework

The final connection of the delivery pipe or pipes to the receiver shall be in flexible pipe of "armour" quality, to prevent transmission of vibration from the compressors.

4.8 Air Intake Filter

4.8.1 Type and Efficiency

The air intake to each compressor shall be through a filter of the dry medium type to B.S 1701 which shall have dust retaining efficiencies of 98% minimum, grade CA, when tested in accordance with that standard.

4.8.2 Sitting of Intakes

The sitting of air intakes shall be outdoors in the open at the position shown on contract Drawing Number but if considered necessary the position may be modified after a final inspection of the site and agreement between the medical officer , the engineer and the contractor, in order to ensure clean air is drawn in.

The length and cross section of the intake shall be approved by the compressor manufacturer to ensure that compressor efficiency is not reduced

4.8.3 Weather Protection

The intakes shall be adequately protected by cowls or other means from the ingress of rain, snow, ice and excessive dust.

4.8.4 Maintenance

The filters shall be arranged for easy access for maintenance servicing and renewal, to the renewal, to the satisfaction of the engineer.

4.9 Air Silencers

The intake filters shall pass the air into silencer assemblies from which the compressors will draw air.

4.10 Permissible Noise Levels

The overall effect of silencers, anti-vibration mountings and compressors (both running) shall not produce sound pressures greater than I.S.O Rating of 75, measured 1.8m away from sides and above the plant.

The contractor shall state the sound pressure levels of the plant being tendered, and this shall be checked and proved on completion of the installation to the satisfaction of the engineer.

4.11 Compressor Electric Motor

Each electric motor shall be continuously rated for the maximum duty to be performed and shall be of T.E.F.C. type forvolts, phase, 50 hertz A.C. supply and conform to B.S. 2613 and B.S 3979 (metric dimensions) with Class E insulation.

The motor shall drive the compressor either by Vee belts or a flexible coupling, which in either case shall be efficiently guarded to satisfy the requirements of the Factories Act.

4.12 Motor starters

Each motor shall have a starter which shall be rated for frequent duty in accordance with B.S 587 and have thermal overload protection.

The starters shall be of the automatic type so that once switched on the motor will be capable of re-starting automatically should the supply be interrupted. This feature shall be indicated by a suitable warning notice displayed on or near the motors. A time delay shall be incorporated to ensure that the two compressors do not start together. Three phase motors shall have single phasing preventors. Each star delta starter shall be electrically and mechanically interlocked to prevent simultaneous star and delta connection.

4.13 Ammeter

An industrial grade ammeter to B.S 89 shall be connected in the yellow phase connection to each motor, the dial will be 75mm diameter.

4.14 Compressor Controls

4.14.1 Duty Selection switch

The two compressors shall run alternately so that one is on duty while the other is on stand by and a change over duty switch shall be provided so that manual selection can be made.

4.14.2 Hour Counter

An "Hour Counter" shall be provided on each compressor to record its total running time and assist in the running time and assist in even running of compressors.

4.14.3 Switches

Each compressor shall have a “hand-off-auto” switch to allow choice of either automatic or manual hand control.

4.14.4 Pressure switches

The compressors shall be controlled by two pressure switches connected to and sensing the air pressure in the receiver.

The “high” pressure switch shall be set to operate the duty motor starter, when the receiver gauge pressure falls to bar (p.s.i.) and to stop the motor when the gauging pressure rises tobar (.....p.s.i.) and to stop the motor when the gauge pressure rises tobar (....p.s.i).when the compressors are on “hand/manual” control and cut off the motor when maximum pressure is reached.

4.15 Control Cabinet

4.15.1 Compartment Arrangement

The compressor controls shall be arranged together in one metal cabinet with three separate fireproof compartments. The centre compartment shall contain the duty selector switch, wiring and accessories common to both compressors, while the outer compartments each contain the controls for one compressor and its associated equipment.

A drawing of the panel shall be submitted to the engineer before commencing manufacture.

4.15.2 Isolating Switch

The cabinet shall house a load breaking isolating switch interlocked with the cover and the circuits and apparatus shall be protected by H.R.C. fuses.

4.15.3 Regulations

Warning notices shall be incorporated for each compartment to warn the presence of medium voltage.

4.15.4 Manufacture

The cabinet shall be manufactured from sheet steel, rust proofed (zintec) or electro-coated rust inhibited and not less than 2.0 mm (14s.w.g) thick and adequately braced.

The cabinet shall have an external finish of semi-gloss stoved or cellulose enamel to B.S colour Untreated parts shall have a rust inhibitor coat and an undercoat applied before manufacture. The internal finish shall be white.

4.16. Air Receiver

4.16.1 Type

Each air receiver shall be of the (**specify either vertical/ horizontal type**) and have a capacity ofm³ (.....cu.ft.) of “water” and be designed to conform B.S 487 Part 1, Class 3D. (Fusion welded steel air receivers).

4.16.2 Safety Requirements

Each receiver shall be complete with safety valve and fusible plug to B.S 1123 and the safety valve shall be arranged to discharge to a safe position.

4.16.3 Inspection, Cleaning and Draining

Each receiver shall have an inspection cover and cleaning outlet, an automatic condensate drain trap with isolating valve and a manual drain valve, both of which shall discharge via a copper tundish piped to a suitable gully.

4.16.4 Pressure Gauge

A pressure gauge to B.S 1780 shall be fitted on each receiver, the dial to be 150mm (6") diameter graduated in bars and p.s.i. to $1\frac{1}{2}$ times working pressure. The gauge shall be complete with isolating valve or cock.

4.16.5 Pressure Switch Connections

Provision shall be made on the receiver for tappings to suit the pressure switch connections for compressor control and for standby manifold control.

4.16.6 Tests Certificates

The receiver(s) shall have been pressure tested and at the manufacturers works in accordance with B.S 487, part 1 and certificates provided.

4.17 Separators and Filters

4.17.1 Duty

The air from the receiver shall pass through a separator and filter assembly installed in duplicate, each assembly to be rated for continuous use of the full free air delivery of the compressor, with the air super saturated with water (100% R.H) at the compressor exit air and temperature.

The assembly shall be suitably valved to allow manual selection of either assembly as required.

4.17.2 Automatic Drain Trap

Each separator shall be complete with an automatic drain trap, with manual bypass valve, draining via a copper tundish piped to a suitable gully.

The traps shall be capable of dealing with moisture and oil droplets and mist carried over the compressors.

4.17.3 Filter Type and Efficiency

When oil free compressors are used, the filters shall be of the oil free dry medium type and have an efficiency of not less than 95% when tested with Test Dust No.2 in accordance with B.S 2831 at the design flow.

When lubricated compressors are used the filters shall have a penetration not exceeding 0.5% when tested by the sodium flame test in accordance with B.S 3928, at the design flow.

4.18 Air Dryers

4.18.1 Type and duty

The air from the separator and filter assemblies shall pass through a desiccant type air dryer assembly, installed in duplicate and of twin column design, each column being capable of dealing with the maximum flow of air (as 4.17.1) while the other is being dried out.

4.18.2 Design

The columns shall be constructed to comply with appropriate requirements for pressure vessels to B.S 487, Part 1, class III D.

The columns shall be designed to facilitate filling with or emptying of desiccant material without the need to disturb pipework connections.

4.18.3 Safety Relief Valve. pressure gauge

Each pair of columns shall be provided with a safety valve to B.S 1780 with dial 100mm (4") diameter, arranged to discharge to a safe position and a pressure gauge to B.S 1780 with a dial 100mm (4") diameter, graduated in bars and psi to $1\frac{1}{2}$ times working pressure. The safety valve and gauge to be fitted beyond the final filters.

The gauges shall be complete with isolating valve or cock. The dials shall be marked with a blue sector showing the working pressure range of the column.

4.18.4 Regeneration Process

The regeneration process to drive of the moisture form the saturated column shall be effected by(specify either through electric heating (this method is to be preferred) or bleed from dry air pipe.....).

If the electric heating method is preferred, the heating elements shall be designed to give long life and have thermostatic control to prevent overheating.

The heating or drying medium shall be adequate rating so that the time required to dry out a column shall be less than that taken to saturate a column working at full load.

The drying out process shall be controlled so that the heating medium is not used continuously once the column is dry. Heating elements and thermostat elements, if fitted shall be easily removable without disturbing desiccant bed or pipe work connections.

4.18.5 Automatic Air Release on Columns

An automatic operated bleed air valve on each column shall allow the column requiring regeneration to release the high pressure via a silencer discharging into copper tundish piped to a suitable gully, one tundish being provided to each pair of columns.

4.18.6 Automatic Re-Pressurization of Columns

When the column has been dried out, automatic re-pressurization of it shall follow to prevent shock when change over from the saturated column takes place.

4.18.7 Controls

The air dryer assemblies shall be complete with an automatic electric control panel to operate and sequence the valves and change over from one column to the other in a pair.

Change over from one dryer assembly to the other shall be effected by a hand change over switch operating automatic valves to allow either of the assemblies to be selected for duty.

4.18.8 Desiccant Material

The dryer columns shall contain activated alumina desiccant of the non-dusty type in pellet, spherical or tablet form. The grade of desiccant shall such that pre-filters to the final filter on the outgoing side of the dryers are not necessary.

4.18.9 Desiccant Bed Life

Each dryer assembly, with two columns, shall be designed to provide a desiccant bed life of not less than two years on continuous full load so that the installation comprising of two dryer assemblies shall give a total life of two years when operated on a "duty" and "standby" basis.

4.19 Dryness of Air

The dew point of air leaving the dryer shall be minus 40°C (minus 40°F) at atmospheric pressure, equivalent to minus 18°C (0°F) at gauge pressure of 7.3 bar (105 p.s.i)

4.20 Final Filter

A filter of the oil free dry medium type shall be fitted on the outgoing side of each dryer assembly. The filters shall have a penetration not exceeding 0.5% when tested by the sodium flame test in accordance with B.S 3928, at the design flow.

4.21 Final Condition of Air at Terminal Units

The air delivered to the terminal units shall be free from deleterious, toxic, flammable, objectionable, products, vapors or odours.

A sample of air at standard temperature and pressure shall not contain more than the following substances in accordance with B.S 4275:-

- 0.5 mg /m³ of oil mist particulate.
- 5.5 mg/ m³ of carbon monoxide (5 parts per million)
- 900mg/ m³ of carbon dioxide (500 parts per million)
- dew points as paragraph 4.19

Where sterile air and fine air control is required at the point of use, this is beyond the performance of the plant specified above and will call for additional fine pressure regulators and sterilizable type filters beyond the terminal unit and mounted within the room or theatre. Ensure that the Medical Officers are aware of this.

This equipment is not included in this contract and shall be the subject of a separate contract by the Hospital Authority and thus should be made aware of the same.

4.22 Pressure Regulation on Distribution Main

Pressure regulators shall be fitted on the outgoing main, in duplicate for standby purposes, to control the pressure of the air as it leaves the plant room.

The pressure shall be maintained at a gauge pressure of 7.3 bar (105 p.s.i.) ± 0.15 bar (±2.5.p.s.i.)

The pressure shall be reduced along the system at the positions indicated on the contract drawing(s) number (s)(specify the drawings no's).....to gauge pressure of 4.14 bar (60 p.s.i.) ±0.14 bar (± 2 p.s.i).

4.23 Pressure Gauge and Safety Valve on Distribution Main.

One the pressure gauge and one safety relieve valve shall be fitted on the outgoing main following the pressure regulating valves. They shall be of the type and size as described for the receiver vessel. The relief valve shall be vented via copper pipework to a safe position.

4.24 Standby Air Cylinder Manifold

4.24.1 Location

The specialist contractor shall supply and install in the(give location of manifold/drawing no.)...(Contract Drawing Number).....a Standby Medical Quality Air Cylinder Manifold which shall come into operation automatically should the compressed air plant fail.

The ordering of the initial full complement of cylinders and any future replacement cylinders shall be the responsibility of the Hospital Authority.

4.24.2 Capacity

The cylinder supports and headers shall comprise of two banks each withcylinders oflitres (.....cu.ft.) capacity. A stand by supply of one day is recommended.

One bank shall be on duty while the other is on standby

4.24.3 Standby Operation

The standby manifold shall come into operation for any of the following reasons: -
Compressors faulty - not maintaining pressure- air temperature too high. Dryer faulty- dew point high. Line pressure 15% below normal.

4.24.4 Manifold Assembly

The requirements of the Standby Manifold shall be as described for medical gas manifolds covering:-

- Manifold headers
- Non-interchangeability of cylinder connectors
- Testing of headers
- Degreasing

Control Panel with :-

- Either Automatic Operation for “changeover” Or Manual Operation for “changeover” (specify)
- Pressure gauges
- Identification

4.24.5 Electricity Supply

The standby manifold shall be suitable for operating from a volt, single phase/ 3 phase / and neutral,hertz, A.C. supply.

4.24.6 Connection Point into Distribution System

The air, which will be of the correct quality and dryness, will not require further filtering or drying and the standby supply shall be permanently connected into the distribution main in the plant room at a point beyond the pressure gauge and safety valve at the plant room wall.

A non-return valve shall be fitted prior to the above gauge and relief valve to prevent back pressure to the dryers, etc. from the cylinder supply.

A stop valve shall be provided to allow the standby connection to be isolated.

4.24.7 Electrical Installation Work

All electrical equipment shall be supplied and installed by the Specialist Contractor.

The interconnecting wiring shall be carried out to separate specification by the Specialist Contractors /others.

The specialist Contractor shall in all cases supply duplicate wiring diagrams and instructions within weeks of being awarded the contract.

5. MEDICAL VACUUM PLANT

5.1 General Requirements

The Specialist Contractor shall supply and install at the position shown on the Contract Drawing No a Medical Vacuum Plant having (**specify** either one/ two/ horizontal/ vertical reservoir vessels(s)) (each) served by two identical vacuum plant units and complete with all necessary controls, drainage traps and bacterial filters. Discharge into an aerobics septic chamber is not permissible due to potential health hazards.

5.2 Degree of Vacuum

The overall design of the system shall be such that the degree of vacuum in the distribution pipework at the back of the remotest terminal unit is not less than 400mm Hg below a standard atmospheric pressure of 760 mm Hg (360 Hg absolute).

5.3 Total Design Flow

The total design flow of the system shall belitres of free air per minute minimum.

5.4 Maintenance

The plant shall be designed and arranged to facilitate easy and efficient inspection and maintenance, to the satisfaction of the engineer

5.5 Precautions against Vibrations and Noise

Flexible pipework connections and resilient mountings shall be provided where necessary to prevent the transmission of vibration and the noise to the building and distribution pipe work.

The specialist contractor shall be responsible for ensuring that rigid connections are not made either by themselves or others.

5.6 Builder's Work

The specialist contractor shall supply and fix all holding down bolts, anti-vibration mountings and supply details of foundations and hole positions for the building contractor to provide. The concrete foundation block shall be of adequate mass placed on suitable resilient foundations to damp out vibrations.

5.7 Vacuum Pump Unit

5.7.1 Definition

Each vacuum plant unit shall comprise a vacuum pump driven by an electric motor mounted together on a common base plate having anti vibration mountings.

5.7.2 Duty

Each vacuum plant unit shall be identical and have a capacity of(**specify**)..... litres /minute of free air equivalent to a volumetric through output of litres per minute at a vacuum of minusmm Hg (.....mm Hg absolute).

The two vacuum pumps shall be arranged so that one pump is on duty while the other is on standby and each shall be capable of dealing with 75% of the total design flow and running continuously at this load.

5.8 Water Sealed Pumps

The pumps shall be of the water sealed type and the water supply shall be from a break tank situated to provide the necessary head on the seal water lines.

A self- cleaning strainer shall be from a storage tank in order to ensure that the pumps have a non- interrupted supply

5.8.1 Water Supply

The water supply to the break tank shall be from a storage tank in order to ensure that the pumps have a non-interrupted supply.

5.8.2 Storage Tank

A suitable storage tank supply is available and a connection to this system is to be made atby the Specialist Contractor.

A storage tank is to be provided of (**specify**)...litres (..... gallons) capacity and is to be included in this Contract / provided by others under a separate contract. The Specialist Contractor shall make the necessary connections from this system.

5.8.3 Water Treatment

The hardness of the local water supply is (**specify**) and local treatment of the water before entering the pumps shall be included in this contract.

5.8.4 Over Flow

The overflow from the vacuum pumps shall discharge via copper tundishes piped to a suitable gully to waste. The water shall not be recycled.

5.9 Lubricated Type Pumps- Air /Water Cooled

The overflow from the vacuum pumps shall be of the (**specify**)type, having oil lubricated cylinders which shall be designed so that the lubricating oil consumption is kept to a minimum.

5.9.1 Water Supply for Cooling

The cooling water shall be taken from a storage tank supply in order to ensure that the vacuum pumps have a non-interrupted supply. A break tank shall be incorporated between the main tank and the circulating pumps.

5.9.2 Storage Tank

A suitable storage tank supply is available and a connection to this system is made atby the Specialist Contractor.

*(20) A storage tank is to be provided oflitres (.....gallons) capacity is to be included in this contract / provided by others under a separate contract. The Specialist Contractor shall make the necessary connections from this system.

5.9.3 Water Treatment

The hardness of the water supply is and local treatment of the water before entering the pumps shall be included in this contract.

5.9.4 Non- Recirculated Water

The cooling water shall be run to waste via copper tundishes piped to a gully.

5.9.5 Re-Circulated Water

The cooling water shall be re-circulated and suitable cooling arrangements shall be included under this contract.

5.9.6 Circulation Control

The cooling water shall be controlled by a thermostatic immersion switch on the outflow so that the circulation pump is stopped when a pre-determined low temperature setting is reached. The circulation pumps shall be installed in duplicate for standby purposes.

5.10 Vacuum Pump Exhaust System

5.10.1 Silencers

The discharge from the vacuum pumps shall pass through silencers in order to keep the noise level down to a minimum. (see also 5.10.5)

5.10.2 Location of discharge pipes

The discharge pipes shall terminate outdoors at high level at the position shown on the Contract Drawing Number but if considered necessary the position may be modified after a final inspection of the site and agreement between the Medical Officer, the Engineer and the Contractor in order to ensure that the discharge cannot constitute a health hazard.

5.10.3 Weather protection

The discharge of pipes shall be adequately protected by cowls or other means from the ingress of rain, snow, ice and wind pressure and sited away from windows and air intakes.

5.10.4 Back Pressure

The exhaust system shall be designed so that the back pressure does not exceed 50 mm Hg (1.0 p.s.i) at the peak demand and this figure shall be taken into account when sizing the pumps.

5.10.5 Permissible Noise Levels

The overall effect of silencers, anti vibration mountings and pumps (both running) shall not produce sound pressure greater than I.S.O rating of 75, measured 1.8 m (6 feet) away from sides above the plant.

The Contractor shall state the sound pressure levels of the plant being tendered and this shall be checked and proved on completion of the installation to the satisfaction of the Engineer.

5.11 Vacuum Pump Electric Motor

Each electric motor shall be continuously rated for the maximum duty to be performed and shall be of T.E.F.C type forvolts,phase, 50-hertz a.c. supply and conform to B.S 2613 and B.S 3979 (metric dimensions) with class e insulation.

The motor shall drive the pump either by vee belts or flexible coupling, which in either case shall be efficiently guarded to satisfy the requirements of the Factories Act.

5.12 *(25) Motor Starters

Each motor shall have a starter which shall be rated for frequency in accordance with B.S. 587 and have a thermal overload protection.

The starters shall be of the automatic type so that once switched on the motor will be capable of re-starting automatically should the supply have been interrupted. This feature shall be indicated by a suitable warning notice displayed on or near the motors. A time delay shall be incorporated to ensure that the two pumps do not start together. 3 phase motors shall have single phasing preventors. Each star delta starter shall be electrically and mechanically interlocked to prevent simultaneous star and delta connection.

5.13 Ammeter

An industrial grade ammeter to B.S 89 shall be connected in the yellow phase connection to each motor, the dial to be 75mm diameter.

5.14 Vacuum Pump Controls

5.14.1 Duty Selection Switch

The two pumps shall be run alternatively so that one is on duty while the other is on standby and a change-over duty switch shall be provided so that manual selection can be made.

5.14.2 Hour Center

An hour counter shall be provided on each pump to record its total running time and assist in even running of the pumps.

5.14.3 Switches

Each pump shall have a “hand/manual-off-auto” switch to allow choice of either automatic or hand/manual control.

5.14.3 Pressure Switches

The pumps shall be controlled by two pressure switches connected to and sensing the vacuum in the reservoir.

The “high” pressure switch shall be set to operate the duty motor starter when the reservoir gauge pressure falls tomg Hg and to stop the motor when the gauge pressure rises tomm Hg.

The “low” pressure switch shall be set to operate the standby motor starter when the reservoir gauge pressure falls tomm Hg and to stop the motor when the gauge pressure rises tomm Hg.

When the pumps are on hand control and cut-off the motor when maximum working vacuum is reached.

5.15 Control Cabinet

5.15.1 Compartment Arrangement

The vacuum plant controls shall be arranged together in one metal cabinet with three separate fireproof compartments.

The center compartment shall contain the duty selector switch, wiring and accessories common to both pumps, while the other compartments each contain the controls for one pump and its associated equipment. A drawing of the panel shall be submitted to the Engineer before commencing manufacture.

5.15.2 Isolating Switch

The cabinet shall house a load breaking isolating switch interlocked with the cover and the circuits and apparatus shall be protected by H.R.C fuses.

5.15.3 Regulations

Warning notices shall be incorporated from each compartment to warn the presence of medium voltage, to conform to I.E.E regulations A.17 and A.19.

5.15.4 Manufacture

The cabinet shall be manufactured from iron sheet, rust proofed (zintec) or electro-coated rust inhibited and not less than 2.0 mm (14 S.W.G) thick and adequately braced.

The cabinet shall have an external finish of semi-gloss stoved or cellulose enamel to B.S Untreated parts shall have a rust inhibitor coat and an undercoat applied before manufacture.

The internal finish shall be white.

5.16 Vacuum Reservoir Vessel

5.16.1 Type Design

Each Vacuum Reservoir Vessel shall be of the vertical/ horizontal (specify) type and be designed to conform to B.S 487, Part 1, Class III D (Fusion Welded Steel Air Receivers).

5.16.2 Capacity

The capacity of the vessel shall belitres “water capacity”.

The capacity is intended to be such that the number of start/ stop cycles of the pump on duty does not exceed 30times per hour.

5.16.3 Safety Requirements

Where inadvertent reversal of the pump motor could occur on 3 phase supply, a pressure switch on the inlet pipe between reservoir and pump shall switch off the motor on sensing a positive pressure. A non-return valve shall also be fitted as a further safeguard.

5.16.4 Inspection, Cleaning, Draining

The reservoir(s) shall have an inspection cover, a cleaning outlet and a manual drain valve which shall discharge via copper tundish piped to a suitable gully.

5.16.5 Vacuum Gauge

A vacuum gauge to B.S 1780 shall be fitted on each reservoir, the dial to be 150 mm (6") diameter, calibrated 0-760 mm HG and reading Zero (0) at atmospheric pressure.

The gauge shall be complete with isolating valve or cock. The dial shall be marked with a blue line at the normal working vacuum and a red line at the minimum allowable vacuum.

5.16.6 Pressure Switch Connections

Provision shall be made on the reservoirs for tappings to suit the pressure switch connections for vacuum pump control.

5.16.7 Tests Certificates

The reservoir(s) shall have been pressure tested at the manufacturer's works in accordance with BS 487 Part I to 10.3 bar (150 p.s.i.) gauge.

5.17 Drainage Traps

5.17.1 Duty

The intake to the vacuum vessel from the distribution pipeline shall first pass through a drainage trap, installed in duplicate, each trap being sized to deal with the total maximum flow.

5.17.2 Sterilizing

The bowls of the traps shall be sterilizable by the following methods:-

- a) By means of moist steam at 2.2 bar gauge (32 p.s.i.) and 138°C (280°F) in a porous load sterilizer

to B.S 3970.

- b) By means of dry heat at 160°C (320°F) for at least 60 minutes.

The trap bowls shall either be transparent or have transparent windows.

5.17.3 Spare Trap Bowls

Two sets of spare trap bowls shall be included initially to cater for frequency of sterilizing required and to ensure that a sterilized set is available always for change-over purposes.

5.18 Bacterial Filters

5.18.1 Duty

A bacterial filter shall be fitted between each drainage trap and vessel, each filter being capable of dealing with the total maximum flow.

The filter housing shall be distinctly marked with the words "BIO-HAZARD".

5.18.2 Efficiency

The penetration of the filters when tested by the sodium flame test in accordance with B.S 3928 shall not exceed 0.05% at the design flow.

5.19 Operations of Traps and Filters

The traps and filters shall be operated on a duty and standby basis and manually operated valves shall be provided so that either of the sets can be selected and to allow for isolation for maintenance and changing of trap bowls and filters.

5.20 Standby Vacuum Facilities

Standby Emergency Vacuum Facilities are not covered under this contract. An emergency service from portable electric suction apparatus to BS 4199 should be arranged by the Hospital Authority.

5.21 Electrical Installation

All electrical equipment shall be supplied and installed by the Specialist Contractor.

The interconnecting wiring shall be carried out to separate specification by the Specialist contractor / Others.

The specialist contractor shall in all cases supply duplicate wiring diagrams and instructions, within weeks of being awarded the contract.

6. DISTRIBUTION PIPEWORK SYSTEM

6.1 Extent of Pipework

The Specialist contractor shall supply, install, connect up and test all the pipework and valves required from the supply source to the distribution terminals for each gas, air and vacuum.

The pipe sizes and valve positions shall be as given on the Contract Drawings and test procedure as described later.

6.2 Spare Pipeline

The Specialist Contractor shall include for one spare pipeline with valves from the (specify location)to the following departments(specify location).....as shown on the Contract Drawing(s) Number(s).....

The pipeline will be used in the future for..... and the pipe sizes and valve position are to be given on the Contract Drawing(s).

The pipeline shall be tested as specified later and left ready in a capped condition for future connection in the manifold room, the terminal end as to be specified later.

6.3 Pipe Installation

6.3.1. Fixing

All pipework shall be fixed without any springing or forcing. A clearance of 150mm (6”) shall be maintained between the pipework and other services. Where pipework crosses other services a clearance of 25mm (1”) minimum shall be maintained.

6.3.2. Gradients

Gradients are not required on gas, air or vacuum pipelines.

6.3.3 Drainage

A full way drain lock is to be provided at the bottom of each main vertical run on the air and vacuum pipework.

Branches on horizontal air pipe work shall be taken from the topside of mains to avoid pockets of moisture.

6.3.4 Diversion Sets

The use of fittings for the diversion sets shall not be permitted and the sets shall be formed from a long length in one piece and cold drawn or hot drawn in a neat manner without bucking or thinning.

6.3.5 Routing to avoid Fire Risk Areas

The routes of the pipework shall avoid fire risk areas including laundries boiler houses, generator rooms, incinerator rooms, storage rooms for combustible materials (unless the pipes are to be cased) , lift shafts and kitchens.

6.3.6 Pipework Supports

Pipework shall be supported at not greater than the intervals shown in the table below:

SPACING OF SUPPORTS FOR COPPER PIPES

Nominal Pipe outside diameter mm BS 2871 Part 1 Table X	Maximum Intervals For Vertical Runs	Maximum Intervals For Horizontal Runs
	Metres	Metres
10	1.2	-
12	1.2	1
15	1.8	1.2
18	2	1.5
22	2.4	1.8
28	2.4	1.8
35	3	2.4
42	3	2.4
54	3	2.7
76.1	3.6	3

Where valves are fitted the pipe shall be supported at both sides of the valve to facilitate valve operation without valve movement.

Fixing brackets or supports shall be of a suitable non-ferrous material or suitability treated to minimize corrosion and prevent electronic action.

The specialist contractor shall drill and plug walls and ceilings as required fastening the supports. Where roof decking is encountered the specialist contractor shall provide fixing devices to fasten the supports.

cavity

6.3.7 Pipework in Floors, Walls ,Ceilings

Pipework in rooms and corridors shall be concealed either behind ceiling panels, or in walls, ducts or trucking. Removable covers or panels shall be provided to allow access to pipework.

Pipework shall not be buried solidly in floors, walls or ceiling except with the approval of the Engineer. Approval will normally be given only for tail pipes in one piece from Terminal unit to service duct or ceiling void and for unjointed pipes from control valve to void. The route of the buried pipe should be clearly and continuously marked by chalk, colored adhesive tape or otherwise, during construction, to discourage the driving of nails into or near the pipe. Where pipes are to be installed in partition walls the tail pipes of terminal unit shall be in one piece (without joint) from the terminal unit to the service duct ceiling void.

Service ducts or voids should have adequate ventilation to prevent gas concentration in the event of a leak.

Where pipes pass through floors, walls or partitions, copper sleeves shall project between 1.5 and 3mm (1/16" and 1/18") beyond finished surfaces and plates shall be fitted. All joints shall be accessible and no joint shall be made so that its inside the pipe sleeve. Where pipework is to be concealed it shall not be covered over until it has satisfactory passed all pressure tests.

Pipework in service ducts, or voids or in rooms or in corridors where the pipework is not required to be concealed shall be surface run.

6.3.8 Special Precautions against Corrosion.

Where pipework is supported by or is liable to come into contact with timber that has been treated with compounds likely to cause corrosion of copper, the pipe shall be protected locally by impermeable materials such as p.v.c. tape or spacers.

6.3.9. Cleanliness during installation

Great care shall be taken during installation to ensure that no extraneous materials are allowed to enter the pipework. Where any section of the pipework is left incomplete during erection the open end of the pipe shall be sealed immediately with plastic cap.

6.3.10 Bonding and Earthing

Wherever possible, pipeline shall be physically separated from the metal sheath and armour of electric cables and from metal conduits, trunking and bare earth continuity conductors associated with any cables which operate at low voltage or above.

Where physical separation is impossible or when pipeline are in metal trunking and bed head units the pipeline shall be bonded to the I.E.E Regulations B. 53 and D.10 The consumer Earth Terminal is located in(specify)..... The largest size is.....mm.

The above work shall be carried out by*(specify whether work to be carried out by specialist contractor or other).....

6.4 Pipework Material and Size

6.4.1 Material

Pipework material for gases, air and vacuum shall be phosphorous de-oxidized non-arsenical copper to B.S 1172

6.4.2 Sizes

Pipework sizes shall be to metric outside diameters in accordance with B.S. 2871, Part 1, Table X.

6.5 Fittings and Joints

6.5.1 Capillary Fittings

All fittings shall be "high Duty" Capillary Type suitable for a "steam" working pressure of 17bar (250p.s.i.) gauge.

The fittings shall have integral rings of silver brazing alloy complying with composition to B.S 1845 (1966) Table 2, Type AG.11 Brazing by the end-feed method shall not be permitted.

The fitting shall be non-ferrous and capable of withstanding corrosion and dezincification.

6.5.2 Flux

Because of the high temperatures required for their effective use borax or borax based fluxes shall NOT be used.

The flux shall be provided by the Fitting Manufacture to suit the work. Fluxes shall be free from grease and agents which promote corrosion or deposits of chlorides. Care shall be taken to avoid any excess of flux which might enter the pipe bore and when the joint is cool excess flux shall be washed and wire brushed off. A visual inspection of each brazed joint shall be made to confirm that the hardened flux has not formed a temporary seal which holds test pressure.

6.5.3 Fittings

Fittings on moisture eliminators and trap sets for vacuum and compressed air shall be brass competition type fittings, or flanged fittings as appropriate.

6.5.4 Valve Joints. Capillary or Screwed

Joining of valves to the pipelines shall preferably be made with a capillary joint similar to 6.5.1. but the end feed method may have to be used in this case. (57). If however, the valve connection is screwed a capillary to screwed adaptor shall be used but in this case the joint shall be made by tinning the male thread with soft solder. Litharge and Glycerin or an approved oxygen lutng or scaling compound are also acceptable. See also 6.7.1.

The screwed joint shall be factory made using silver alloy as specified for capillary fittings and the adaptor screwed up while the "tining" is molten. This shall be done with valves dismantled to avoid damage to internal parts and the same care shall be taken when making the capillary to the damage diaphragms, seating e.t.c.

The parts of the valves shall be maintained in a degreased condition. Screw threads shall be tampered either to B.S. 3643 or BS. 21. Parallel threads shall not be used.

6.6 Degreasing of Pipes and Fittings

6.6.1 Extent. Protection Labeling

All pipework and fittings for medical Gas, air and vacuum shall be degreased at the manufacturer's works, the pipes to be individually fitted with purpose made tightly fitting plastic caps or plugs to protect the bores before dispatch to site. Pipes shall be delivered in bundles in protective wrappings and fittings in sealed polythene bags, no capping required.

The bundles and bags shall be securely and clearly labeled:- "Degreased Materials". For use on Medical Gas Installations. Do not allow to come into contact with oil or grease".

The specialist Contractor shall take great care in storing these materials and any materials contaminated while on site shall be returned to the manufacturer for degreasing, all at the expense of the Specialist Contractor.

6.6.2 Degreasing Processes

The pipes shall be degreased internally by steam, then dried, shot blasted and blown through with medical quality bottled air. After a visual inspection each pipe shall be capped individually at both ends. If steam cleaning is not economical, pipes above 54mm outside diameter may be alternatively cleaned using an approved solvent such as such as methyl chloride, which will leave no poisonous or explosive residues and the fittings shall be dried out, inspected and capped or sealed as specified in 6.6.1.

While the degreasing process is primarily concerned with the bore of pipes care shall be taken to avoid oil or grease on the outside, as being a possible source for bore contamination to occur from. Degreasing of valves is dealt with under 6.7.4.

6.7. Valves on Distribution Pipework

The Specialist Contractor Shall supply and fit valves at the positions shown on the Contract Drawings and any deviations form these positions shall be agreed in writing by the Engineer.

The height of valves is to be stated under “Valve Boxes”, (6.8.3.) but in plant or manifold rooms valves may be arranged differently providing they are easily accessible for emergency or maintenance use.

6.7.1 *(59) Valve Materials and Types

All valves shall be of non-ferrous material and of the non-lubricated type, to the following details. If screwed, threads shall be tapered either to BS.3643 or BS.21 (see 6.5.4.) Parallel threads shall not be allowed.

- a) Medical Gas Valves (specify)
Type
Bores
End Connections
Manufacture
- b) Compressed Air valves (specify)
Type
Bores
End Connections
Manufacture
- c) Vacuum Valves (specify)
Type
Bores
End connections
Manufacture

6.7.2 Direction of Valve Closure

of Wheel screw valves shall close in a clockwise direction. Lever Ball Valves shall have the direction closing indelibly cast or engraved on the wheel by means of an arrow and the word “CLOSE”.

closed. Lever ball valves shall have “ON” / “OFF” cast or engraved on to show when the valve is open or closed.

6.7.3 Maker’s Identification

Each valve shall carry the manufacturer’s serial numbers or identification and valve size.

6.7.4 Pressure Testing and Degreasing

All valves shall be pneumatically tested by the manufacturers to twice the working pressure and afterwards de-greased for medical gas services using a suitable method as given as at 6.6.2 before being individually sealed in polythene bags, capping not required.

The valves shall be securely and clearly labeled:-

“Degreased Valve. For use on Medical Gas installations. Do not allow to come into contact with oil or grease”.

6.7.5 Certificates

A certificate shall be supplied by the manufacturer for each valve or batch stating that pressure tests and degreasing has been carried out and that any solvents have been completely removed.

6.7.6 Valves for System Testing Purposes

- a The Specialist Contractor shall Supply and fit at the position(s) shown on the Contract Drawings (s), three-valve arrangement to facilitate providing and testing of the installation(s).

The Principle of the method is shown on schedule No.6 and the procedure laid down under Testing and Commissioning Requirements. The valves shall be of non-ferrous material, de-greased and comply with relevant requirements, as previously specified and to be to following details:-

Type
Bores
End Connections
Manufacture

The valves shall be suitably labelled as described under 6.10

6.7.7. Extended. Phased. Modified, Installations

New work during installation shall be physically separated from the existing system and final joining up left to the last after completing all tests in section 10.

6.8 Valve Boxes

6.8.1 Location

The Specialist Contractor shall supply and install lockable valve boxes for all the medical gas, air and vacuum valves located outside manifold and plant rooms and not contained in ducts or cupboards e.t.c.

6.8.2 Purpose

The boxes shall render the valves tamper proof and shall have a transparent breakable panel to facilitate emergency operation of the valve.

6.8.3 Mounting Height

The valves shall serve for the both emergency and maintenance purposes and because of the former requirement the box and valve shall be mounted at the centre height of 1.22metres (4 feet) above floor level in a position not obstructed in a anyway by other equipment. Boxes for the different gases grouped together may be fixed one above another in which case the mean height is to be 1.22m.

6.8.4 Mounting Depth

The boxes shall be set into the wall with any projection being kept to a minimum and surface mounted boxes shall be avoided if at all possible. The Specialist Contractor shall ascertain from the Architect or Site the nature of the wall into which the boxes will fit.

6.8.5 Standardised Type Boxes

The design of box offered shall be of a standardized pattern through out the installation and have the following features:

- a) Ease of access for fitting valve and maintenance
- b) Designed so that the pipework can be fitted easily, either by having a split box or other suitable means
- c) Ventilation to obviate a possible build up of gas in case of a leak,
- d) Non-interchangeable keys so that a maintained permit - to - work system can be operated

- e) Keys in duplicate
- f) Keys and locks with numbers engraved on
- g) Breakable transparent panel
- h) Non-interchangeability box covers if this could wrongly identify - covers to be hinged on.
- i) Boxes shall accommodate one valve only, ganging not permitted.

6.8.6. Box Material

The boxes shall not be of wooden construction but of robust plastic or metallic material and capable of withstanding hazards from blows, abrasions and fire.

The finished appearance of the boxes shall be such that they match the décor of the rooms and are not unsightly.

6.9. Valves in Ducts or Cupboards

The valves shown on the Construct Drawings in ducts or cupboards are intended for maintenance purpose only and are not required to be in valve boxes, providing the valves are lockable in the open and closed position. Suitable locking arrangements and duplicate non-interchangeable keys shall be provided so that such valves can be included in any permit to work scheme. (See 6.8.5.d.).

Care shall be taken not to install valves in cupboards or ducts which are poorly ventilated or in cupboards used for other materials which could be affected by leakages. Any pipe runs so situated shall be drawn to the attention of the Engineer before proceeding on site.

6.10 Identification of Valves

An engraved label of white "Traffolyte" or similar material shall be permanently fixed adjacent to each valve box to indicate the service and give the following information:

a)	<u>In Red letter</u>	<u>Engraving Required</u>
1.	Service	e.g. "OXYGEN"
2.	Area Served	e.g. 'WARD 1'
3.	Emergency Instruction	e.g. "IN EMERGENCY BREAK PANEL AND CLOSE VALVE"

b) In Black letters:

- | | | |
|----|--------------|----------------|
| 1. | Valve number | e.g. "VALVE 6" |
|----|--------------|----------------|

This number is for maintenance purpose and is to be agreed later on site.

Valves in ducts or cupboards shall be similarly identified except for emergency instructions.

The titles of areas served shall be finally agreed on site and the labels shall be installed before the systems are tested and commission in order to prove their correctness.

6.11 Terminal Units

6.11.1 Extent of Works

The Specialist Contractor shall supply, install and connect to the distribution pipework all the terminal, install and connect to the distribution pipe work all the terminal units required at the positions shown approximately on the Contract Drawings and as listed on the Schedule of Terminal Units.

6.11.2 Definition

A terminal unit shall be defined as a single outlet point for a specific gas shall be a separate unit for that one gas only.

6.11.3 Fascia Plate

Terminal Units for different gases at one location may be house under a common fascia plate but it shall not be possible to amount the fascia plate incorrectly and reverse or alter the identification of the services. The Units should be mounted on a common back plate to ensure accurate centering of the units and allow precise fitting of the fascia plate so that the probes enter freely.

6.11.4 Mounting Order

The Terminal Unit when viewed facing the units shall be mounted in the following order horizontally from left to right:-

Oxygen. Nit: Oxide. Nit Oxide/Oxy: Mixture Carbon Dioxide. Compressed Air . Vacuum.

6.11.5 Type (select either as required)

The terminal units shall be of the flush mounted type set into the wall. or
the Terminal units shall be of the raised surface mounted type with probe connection made vertically underneath.

6.11.6 Mounting Height

The mounting height of the terminal units above floor level shall be as follows:-

- | | | | |
|----|----------------------------------|--------------------------------------|--------|
| a) | for Flush Mounted Units | 1.3m (4' - 4") to centre of Unit | |
| b) | For Raised Surface Mounted Units | 1.6M (5' - 2") to centre of unit | c) For |
| | "Rail" Systems areas | 1.5.(5'-0") to centre of unit.*(65a) | |

6.11.7 Exact Positioning of Terminal Unit

The exact position of the terminal units relative to the beds, operating tables, etc. shall be finally agreed between the Medical Officers and Architect/Engineer, and the Architect/Engineer shall provide the Specialist contractor with suitable drawings.

Due regard shall be given to ensure that nursing stall can couple up equipment easily, the short for flexible pipes to apparatus can be achieved without obstruction movement to staff or equipment round the patient and the access to the units for maintenance is easy without disruption to patients or other services.

6.11.8 Essential Design Features of Units

Terminal Units shall be designed to incorporate the following features:-

- a. The ability to accept, retain and release the inserted probe by means of a quick release mechanism designed for single handed operation.
- b. A secondary locking mechanism to prevent accidental ejection of the probe which is to be finally removed by hand.
- c. Two Valves:-
 - i. A valve on the inlet to the unit which can be closed to isolate the unit only, without the need to isolate a complete section when maintenance is carried out.
 - ii. A self sealing check valve which is opened by the probe and or withdrawal closes before secondary lock engages.
- d. Non-swivel type terminal socket to probe connection so that secondary equipment such as a flow meter is not tilted during use.
- e. The terminal socket and check valve shall only accept the correct probe for the specified "gas" and not allow interchangeability with or partial operation by probes for any other service.
- f. It shall not be possible to interchange the parts of a unit for one gas with those for a different gas and so enable a probe to be connected to the wrong position.
- g. Fascia plates which is such that interchangeability of fascia plates between the different gas terminal units is impossible.
- h. The front face around the terminal socket to be exposed and to carry "gas" name and colour identification, unless incorporated as at 6.11.8(7).
- i. Identification by shape incorporated on the problem is not an essential feature but if adopted by a manufacturer the following shapes shall be used:-

<u>Service</u>	<u>Shape</u>
Oxygen	Hexagonal
Nitrous Oxide	Round
Nitrous Oxide /Oxygen Mixture	Round with two opposing flats
Carbon Dioxide	Triangular with radiuses corners
Medical Air	Round with one flat
Medical Vacuum	Square

6.11.9 Identification Colours and Wording on Units

The following names and colours shall apply:

<u>Service</u>	<u>Colour</u>	<u>Wording</u>
Oxygen	White	Oxygen
Nitrous Oxide	French Blue	Nitrous Oxide
Nitrous Oxide/Oxygen Mixture	French Blue and white quarters	N_2O+O_2 (50/50)
Carbon dioxide	French Grey	Carbon dioxide
Medical Air	White and Black quarters	Medical Air
Medical Vacuum	Prim Rose	Vacuum

The name and colour shall be permanent and it shall not be possible to transfer either to a different terminal.

Painting on of colour or wording is not permissible.

6.11.10 Pressure Loss Across Terminal Units

The terminal units shall be capable of passing the following flow rates without exceeding the stated pressure losses across the terminal units.

Service	Nominal Gauge Pressure at back of Terminal Unit		Maximum Rate of flow required at this pressure Litre/min.at STP	Maximum permissible loss across terminal unit	
	Bar	p.s.i.		bar	p.s.i.
Medical Gases	3.93	57	40	0.034	0.5
NitrousOxide/ Oxygen Mixture	3.93	57	275	0.55	8
Medical Air	6.9	100	250	0.34	5
Medical Vacuum	Minus 400mm Hg (360 mmHg absolute)		40	100mm Hg	

The figures relate to the performance required of the terminal units.

The actual design flow rates for purposes of sizing the installation and determining pipeline diameters should be taken from Section V of HTM 22.

7. SPECIAL FITTINGS FOR OPERATING THEATRES

7.1. Location and Type

The Specialist Contractors shall supply, install and connect to the distribution pipework in the/each operating Theatre, Room No. (s).....(specify location).....
..... a..... (specify/describe fitting)
fittings. These fittings are in addition to the wall mounted terminal units specified earlier.

7.2 Gases to be dispensed

The fittings(s) shall supply the following “gases” :-

.....
.....
.....

7.3 Design of fittings

7.3.1. Boom Assembly, Open Type A

The boom shall be designed to carry flexible pipes connected into standard type flush fitting terminal units mounted at a height of 1.8M (5'-11”) above floor level.

7.3.2. Boom Assembly, Enclosed Type B

The boom shall be designed to carry concealed pipes of nylon connected to the distribution
Pipework in a suitable wall unit.

The length of the boom shall bem(....ft.) and the height shall fit in the room height as given later.

7.3.3 Ceiling Pendant, Multipoint, Type C.

The pendant shall comprise a heavily chromed or stainless steel removable ceiling rose through which flexible hoses with terminal end connections are suspended.

The connections to the distribution pipework shall be within the ceiling rose space and the design shall be such that all strain is taken off the hose connections

The hose to distribution pipe connections shall not be interchangeable between the different services.

7.3.4 Ceiling Pendant, Single Point, Type D

The Pedant shall comprise a heavily chromed or stainless steel removable ceiling rose through which a flexible hose with terminal end connection is suspended.

The connection to the distribution pipe shall be within the ceiling rose space and the design shall be such that all strain is taken off the hose connection.

7.3.5 Ceiling Columns, Type E, F and G Rigid or Telescopic

The fittings shall comprise a ceiling mounted column,(specify if rigid or telescopic).....
.....pattern, carrying concealed pipes connected to the distributions shall not be interchangeable between the different services.

The column shall be supported on an overhead track running above the operating table.

7.3.6. Terminal Connections

The terminal connection on all fittings shall only accept standard type probes and shall incorporate all the necessary features of the wall mounted terminal units as regards non-interchangeability, self sealing check valves, isolating valves, identification.

7.3.7. Valves

Where the design of the terminal connection on the fitting or hose does not include an isolating valve, this shall be provided elsewhere weather within or near to the fittings on the incoming distribution pipe work, in any easily assessable position for maintenance purposes.

7.3.8 Special Precautions

The design of all special fittings and hoses shall ensure that during use and movement of the fitting the pipework or hose cannot be twisted, kinked, uncoupled at either end, overstrained or otherwise damaged.

7.3.9 Anti-static Precautions

All fittings and hoses shall be of anti-static construction.

7.3.10 Cleanliness

All fittings shall be designed to present minimum lodgement of dirt, dust. etc. and be easy to keep clean . The materials of construction shall have complete freedom from rusting, scaling or deterioration and may be enamelled finish, stainless steel, or heavily chromed finish.

7.3.11 Order of Arrangement of Terminal Connections

On multi-point fittings the order arrangement of the terminal connections shall be as follows:-
Oxygen . Nit:Oxide. Nit:Oxide/ Oxy: Mixture . Carbon Dioxide. Comp.Air. Vacuum

For pendants and columns the above order clockwise nearest to the hinge.

7.3.12 Headroom Clearance

All fittings shall provide a minimum clearance of 1.8m (5'-11") above floor level and on telescopic fittings when in the retracted position.

7.3.13 Dimensions of Fittings

The terminal outlet connections of fittings shall not be more than 1.9m (6'-3") above floor level on booms, pedant hoses and columns.

The depth of fittings and pendant hose length shall suit the height of the room(s) which is/are as follows:-

<u>height</u>	<u>Room No.</u>	<u>Room Name</u>	<u>Floor to ceiling</u>
			
			

These dimensions shall be verified on site by the specialist Contractor.

7.3.14 Structural Requirements for fittings

The specialist contractor shall state in his tender the requirements for structural strength of walls or ceilings to which the special fittings are to be fastened.

7.3.15 Positioning of Special Fittings

The exact positioning of special fittings shall be agreed between the Medical Officers and Architect, and the Architect shall provide layout drawings for the Specialist Contractor.

7.3.16 Electrical Services in Fittings

The(specify type of fitting)shall carry electrical services which shall be in solid drawn rust-proof conduit separate from the medical service pipes.

*The electrical fittings to be provided are as follows:- (List as required)

The electrical fittings shall be arranged in a neat manner to fit in with the medical terminal outlets and shall afford easy access for coupling up equipment.

Any associated switching need not be of spark-proof type. The electric supply to the fitting will be(give detail of electricity supply).....and the fittings shall be wired up by the Specialist Contractor from a suitable distribution point supplied by others.

8. IDENTIFICATION OF PIPELINES

8.1 Permanent Identification

The Specialist Contract shall carry out identification of the installations(s) by colour coding in accordance with Data Sheet EE 10.11/12 and B.S. 1710 (1971).

The identification shall comprise:-

- a) Colour handing applied at valves, junctions; either side of walls, floors and at intervals of about 2m (6 feet) on short runs up to 4m (13 feet) on long straight runs).
- b) The name of the service printed on the colour hand in a contrasting colour.
- c) An arrow at each colour band showing direction of flow.

Letters to be a minimum of 6mm (¼”) high.

Self-adhesive plastic labels or tapes of approved manufacture may be used as an alternative to painting. Where valves are in a valve boxes and identified by “Traffolyte” labels, colour handing is not required.

8.2. Temporary identification

During installation of piping, individual pipes, valves junctions and ends shall be identified as the work progresses. This identification shall be at intervals similar to final identification requirements and may be made with removable labels. These temporary identification labels must be subsequently replaced by the permanent ones at an appropriate stage.

9.0 Warning and Alarm Systems

9.1 Extent of Works

The specialist Contractor shall supply, install and commission the following warning and Alarm systems comprising a combination of (select) flashing/steady lights and audible alarms, for the appropriate services.

9.2 Master and Slave indicating Units

A Master indicating Units shall be installed in *(Give room name/location).....to monitor all the services in one combined unit.

The Master Unit shall relay to slave Units installed in the following rooms:-

Room Name	Room No.	Number of Units in Rooms
.....		
.....		
.....		

9.3 Electrical Power

The systems shall work on low voltage D.C. current stepped down from a 250 volt single phase supply via a double earth screened transformer. The power pack may be incorporated in the Master Unit.

9.4 *(76) Essential Features of Flashing Light Units

The Master Unit and Slave Units shall be of similar construction and embody the following features:-

1. On the Master Unit, solid state flasher unit to operate the lamps through the system.
2. On Master and slave Units, translucent coloured panels for each service engraved with the "fault" conditions.
3. Two under-run low voltage white lamps in parallel behind each panel.
4. A green panel to indicate that the unit is operational.
5. A Standardized size and type of lamp throughout the system.
6. Lamps suitable for rapid on/off flashing operation with long life.
7. Lamp test button on each unit to test all lamps on the unit simultaneously.
8. Audible alarms as indicated in Schedule No. 4
9. On the Master Unit, A Key operated muting switch :-
 - a) Make flashing lights steady on Master Unit and Slave Units
 - b) Mute Audible alarms on Master Unit only.
10. One each Slave Unit, a key operated muting switch to mute audible alarms.
11. The muting switches to deal with only one alarm signal at a time and to re-set automatically.
12. On the Master Unit a System Alarm Circuit run from a dry battery to indicate:-
 - a) Failure of flasher unit.
 - b) Failure to low voltage supply.

These faults to be indicated by a coloured orange engraved panel with steady twin lights and audible alarm with key operated muting switch and automatic re-set.

A test button shall be provided to simulate "a" and "b" to test the above circuit.

9.5 *(76) Essential Features of Steady Light Units

The Master Unit and Slave Units shall be of similar construction and embody the following features:-

1. Translucent coloured panels for each service engraved with the “fault” condition.
2. A translucent green panel to each service to indicate that low voltage supply is on and services are operating normally.
3. Two under-run low voltage while lamps in parallel being each panel.
4. A standardized size and type off lamp thought the system.
5. Lamp suitable for long life.
6. A lamp test bottom on each unit to test all lamps on the unit simultaneously.
7. Audible alarms as indicated in Schedule No.5
8. On the Master Unit, key Operated muting switch to mute audible alarms on the Master Unit only.
9. On each Slave Unit, a Key operated muting switch to mute audible alarms on the Unit.
10. The muting switches to deal with only one alarm signal at a time and to re-set automatically.
11. On the Master Unit, a System Alarm Circuit run from a dry battery to indicate failed of low voltage supply.

This fault to be indicated by a coloured orange engraved panel with steady twin lights and an audible alarm with key operated muting switch and automatic re-set.

A test button shall be provided to simulate low voltage supply failure to test the above circuit.

(Select either 9.4 or 9.5)

9.6 Working of Master and Slave Units - “Flashing” System

The units shall indicate the condition of all the monitored services simultaneously and for each service more than one panel may be indicating at a time as outlined in Schedule No. 4.

The audible alarm on each unit shall be common to all the services and be arranged to re-set automatically after being muted, or if muting is not carried out, after the fault is rectified.

9.7 Working of master and Slave Units - “Steady” System

The units shall indicate the conditions of all the monitored services simultaneously and for each service only one panel will be indicating at a time as outlined in Schedule No.5.

The audible alarm on each unit shall be common to all the services and be arranged to re-set automatically after being muted, or if muting is not carried out, after the fault is rectified.

(Select either 9.6 or 9.7)

9.8 Arrangement of Panels on Units

The order in which the services shall be arranged on the Master and Slave Units shall be that adopted for terminal unit:-

When facing the panels the service shall be in the following order reading left to right:-

OXY.	NIT.OXIDE.	NIT.OXIDE. OXY.MIXTURE	CABRBON DIOXIDE	COMPRESSED AIR	VACUUM
------	------------	---------------------------	-----------------	----------------	--------

9.9 Engraving of Fascia Panels of Units

The fascia panels of the Units shall be engraved with the name of the service, either at the top or bottom of each column of translucent panels.

The function of the various press buttons and switches shall also be engraved on the fascia panels.

All engraving shall be picked out in contrasting indelible colour.

9.10 Monitoring Equipment

The Specialist Contractor shall include for supply and fixing all necessary sensing Devices, Operating switches and Relays on the plant for the initiation of the Warning and Alarms signals. The Sensing devices, etc. on the Liquid Oxygen Plant and Standby manifold shall be supplied and installed by the Specialist Oxygen Supplier.

Absolute reliability and long life of contracts in relay units shall be as essential feature of the equipment.

The relays shall be energized under normal operating conditions and the alarm contracts shall “break” under “fault” conditions.

The alarm terminal block shall be remote from the electrically isolated from all other terminals and energized from a separate source.

The monitored unit alarm contracts shall be rated at 250 volts 3Amp, 50 Hz and the alarm system contacts at 50 volts, 0.5 Amp, D.C.

On a “Flashing” system the alarm circuit conductors to the slave units shall be suitable so that when the green, white and orange panels on every slave unit are illuminated simultaneously the pressure loss does not exceed 5% of the rated operating voltage.

On a “Steady” System the alarm circuit conductors to the slave units shall be suitable so that when any signal is illuminated simultaneously on all slaves the pressure loss does not exceed 5% of the rated operating voltage.

(Delete the system not required)

9.11 Setting of Sensing Devices

The sensing devices shall be set so that the conditions are indicated as soon as the following limits are reached:-

Conditions on Schedule

***(81) Manual manifolds**

1. When duty bank falls to approximately:-
 - (a) 10% of full capacity on oxygen systems
 - (b) 8% of full capacity on N₂ O/O₂ systems
 - (c) 6% of full capacity on N₂O systems

Automatic Manifold

2. When duty bank becomes “exhausted” and change-over to reserve bank made.
3. When with one bank empty, duty bank falls to approximately:-
 - (a) 10% of full capacity on oxygen systems
 - (b) 8% of full capacity on N₂ O/O₂ systems
 - (c) 6% of full capacity on N₂O systems

Liquid Oxygen Installations

4. When change-over to standby manifold made.
5. When one standby bank becomes exhausted and changeover to reserve bank made.

Medical Compressed Air Plant

6. When “standby compressor cuts in to back up “duty” compressor.
7. When change-over to standby air manifold made (denoting fault on compressors or air temperature too high).
8. when dew point of air from dryers is rising above 0° C (32° F) at 7.3 bar (105 p.s.i.) gauge.

Medical Vacuum Plant

9. When “standby” vacuum pump cuts in to back up “duty” vacuum pump.

All PMG &V Plant Installations

10. When either one or both pumps fail to operate
11. When pressure in distribution pipe work falls to:-
 - a. 10% below normal on medical gas lines
 - b. 15% below normal on air and vacuum lines

9.12 Electrical Wiring

The interconnecting wiring shall be carried out by others but the specialist Contractor shall supply all necessary wiring diagrams, induplicate, within.....weeks of being awarded the contract.

BILLS OF QUANTITIES

STATEMENT OF COMPLIANCE

- a) I confirm compliance of all clauses of the General Conditions, General Specifications and Particular Specifications in this tender.
- b) I confirm I have not made and will not make any payment to any person, which can be perceived as an inducement to win this tender.

Signed*for and on behalf of the Tenderer*

Date:

Official Rubber Stamp:

A. 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 part 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.
 44. 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.
 45. 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.
 46. 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.
 47. 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.
 49. 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 (2nd edition) of 2008 prepared by The Architectural Association of Kenya (Quantity Surveyors Chapter)*
2. The Site is situated at *as per Tender Advert*. It is approximately *as per Tender Advert*. Access to the site shall be through *as per Tender Advert*. 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 inclement 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 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 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 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 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 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 15th 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 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 move 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 1st 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 6th 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.

BILL NO. 1.0 - PRELIMINARY ITEMS

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
1	Discrepancies: The Contractor shall include all work either shown on the Contract Drawings or detailed in the specification. No claim or extra cost shall be considered for works which has been shown on the drawings or in the specification alone. Should the drawing and the specification appear to conflict, the Sub-contractor shall query the points at the time of tendering and satisfy himself that he has included for the work intended, as no claim for extra payment on this account shall be considered after the contract is awarded.				
2	Conditions of sub-contract Agreement: The Contractor shall be required to enter into a Sub-contract with the Main Contractor.				
3	Payments: Payment will be made through certificates to the Main Contractor, All payments will be less retention as specified in the Main Contract. No payment will become due until materials are delivered to site.				
4	Site location: The site of the Contract Works is situated in <i>as per Tender Advert</i> . The tenderer is recommended to visit the site and shall be deemed to have satisfied himself with regard to access, possible conditions, the risk of injury or damage to property on/or adjacent to the site, and the conditions under which the sub-contract Works shall have to be carried out and no claims for extras will be considered on account of lack of knowledge in this respect.				
	Sub-total carried forward to page..... 102				

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
5	Scope of Contract Works: The contractor shall supply, deliver, unload, hoist, fix, test, commission and hand-over in satisfactory working order the complete installations specified hereinafter and/or as shown on the Contract Drawings attached hereto, including the provision of labour, transport and plant for unloading material and storage, and handling into position and fixing, also the supply of ladders, scaffolding the other mechanical devices to plant, installation, painting, testing, setting to work, the removal from site from time to time of all superfluous material and rubbish caused by the works. The contractor shall supply all accessories, whether of items or equipment supplied by the Sub-Contractor but to be fixed and commissioned under this contract.				
6	Extent of the Contractor's Duties: At the commencement of the works, the contractor shall investigate and report to the Engineer if all materials and equipment to be used in the work and not specified as supplied by the others are available locally. If these materials and equipment are not available locally, the contractor shall at this stage place orders for the materials in question and copy the orders to the Engineer.				
7	Firm price contract: Unless specifically stated in the documents or the invitation to tender, this is a firm-price Contract and the contractor must allow in his tender for the increase in the cost of labour and/or materials during the duration of the contract.				
8	Variation: No alteration to the Contract Works shall be carried out until receipt by the Contractor of written instructions from the Project Manager.				
9	Prime cost and provisional sum: A specialist Sub-contractor may be nominated by the Project Manager to supply and/or install any equipment covered by the Prime Cost or Provisional Sums contained within the Contract documents (insert profit and attendance which is a percentage of expended PC or provisional sum.)				
	Sub-total carried forward to page .....102				

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
10	Bond: The tenderer must submit with his tender the name of one Surety who must be an established Bank only who will be willing to be bound to the Government for an amount equal to 5 % of the Contract amount				
11	Government Legislation and Regulations: The Contractor's attention is called to the provision of the Factory Act 1972 and subsequent amendments and revisions, and allowance must be made in his tender for compliance therewith, in so far as they are applicable. The Contractor must also make himself acquainted with current legislation and any Government regulations regarding the movement, housing, security and control of labour, labour camps, passes for transport, etc.				
12	Import Duty and Value Added Tax: The Sub-contractor will be required to pay full Import Duty and Value Added Tax on all items of equipment, fittings and plant, whether imported or locally manufactured. The tenderer shall make full allowance in his tender for all such taxes. (Note this clause applies for materials supplied only. VAT will also be paid by the sub-contractor as allowed in the summary page)				
13	Insurance company Fees: Attention is drawn to the tenderers to allow for all necessary fees, where known, that may be payable in respect of any fees imposed by Insurance Companies or statutory authorities for testing or inspection.				
14	Provision of services by the Main contractor: In accordance with Clause 1.08 of this Specification the Contractor shall make the following facilities available to the Sub-contractor: a) Attendance on the Sub-Contractor and the carrying out of all work affecting the structure of the building which may be necessary, including all chasing, cutting away and making good brickwork,				
	Sub-total carried forward to page..... 102				

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	etc., except that all plugging for fixing, fittings, machinery, fan ducting, etc., and all drilling and tapping of steel work shall be the responsibility of the Sub-contractor. Any purpose made fixing brackets shall not constitute Builder's Work and shall be provided and installed by the Sub-contractor unless stated hereinafter otherwise. b) The provision of temporary water, lighting and power: the Contractor pay for all these services utilized. c) Fixing of anchorage and pipe supports in the shuttering, shall be supplied by the Contractor who shall also supply the Project Manager with fully dimensioned drawings detailing the exact locations. d) i) Provision of scaffolding, cranes, etc. It shall be the Contractor's responsibility to liaise with the Project Manager to ensure that there is maximum co-operation with other nominated Sub-contractors in the use of scaffolding, cranes, etc. ii) Any specialist scaffolding, cranes, etc. by the Contractor for his own exclusive use shall be paid for by the Sub-contractor. 15 Samples and Materials Generally: The Contractor shall, when required, provide for approval at no extra cost, samples of all materials to be incorporated in the works. Such samples, when approved, shall be retained by the Engineer and shall form the standard for all such materials incorporated. 16 Supplies: The Contractor shall submit names of any supplier for the materials to be incorporated, to the Engineer for approval. The information regarding the names of the suppliers may be submitted at different times, as may be convenient, but no sources of supply will be changed without prior approval. Each supplier must be willing to admit the Engineer or his representative to his premises during working hours for the purpose of examining or obtaining samples of the materials in question.				
	Sub-total carried forward to page .....102				

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
17	Bills of Quantities: The Bills of Quantities have been prepared in accordance with the standard method of measurement of Building Works for East Africa, first Edition, Metric, 1970. All the Quantities are based on the Contract Drawings and are provisional and they shall not be held to gauge or to limit the amount or description of the work to be executed by the Contractor but the value thereof shall be deducted from the Contract Sum and the value of the work ordered by the Engineer and executed thereunder shall be measured and valued by the Engineer in accordance with the conditions of the Contract.				
18	Contractor's Office in Kenya: The Contractor shall maintain (after first establishing if necessary) in Kenya an office staffed with competent Engineer Manager and such supporting technical and clerical staff as necessary to control and coordinate the execution and completion of the Contract Works.				
19	Builder's Work: All chasing, cutting away and making good will be done by the Contractor. The Contractor shall mark out in advance and shall be responsible for accuracy of the size and position of all holes and chases required. The Contractor shall drill and plug holes in floors, walls, ceiling and roof for securing services and equipment requiring screw or bolt fixings. Any purpose made fixing brackets shall be provided				
20	and installed by the Contractor. Setting to work and Regulating system: The Contractor shall carry out such tests of the Contract Works as required by British Standard Specifications, or equal and approved codes as specified hereinafter and as customary.				
Sub-total carried forward to page .....102					

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	No testing or commissioning shall be undertaken except in the presence of and to the satisfaction of the Engineer unless otherwise stated by him (Contractor's own preliminary and proving tests excepted). It will be deemed that the Contractor has included in the Contract Sum for the costs of all fuel, power, water and the like, for testing and commissioning as required as part of the Contract Works. He shall submit for approval to the Engineer a suitable programme for testing and commissioning. The Engineer and Employer shall be given ample warning in writing, as to the date on which testing and commissioning will take place. 21 Identification of plant components: The Contractor shall supply and fix identification labels to all plant, starters, switches and items of control equipment including valves, with white traffolyte or equal labels engraved in red lettering denoting its name, function and section controlled. The labels shall be mounted on equipment and in the most convenient positions. Care shall be taken to ensure the labels can be read without difficulty. This requirement shall apply also to major components of items of control equipment. Details of the lettering of the labels and the method of mounting or supporting shall be forwarded to the Engineer for approval prior to manufacture. 22 Working Drawings: The Contractor shall prepare such Working Drawings as may be necessary. The Working Drawings shall be complete in such detail not only that the Contract Works can be executed on site but also that the Engineer can approve the Contractor's proposals, detailed designs and intentions in the execution of the Contract Works.				
	Sub-total carried forward to page .....102				

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	If the Contractor requires any further instructions, details, Contract Drawings or information drawings to enable him to prepare his Working Drawings or proposals, the Contractor shall accept at his own cost, the risk that any work, commenced or which he intends to commence at site may be rejected.				
23	Record Drawings (As Installed) and Instructions: During the execution of the Contract Works the Contractor shall, in a manner approved by the Engineer 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 Engineer as he may require for inspection and checking. Record Drawings, may, subject to the approval of the Engineer, include approved Working Drawings adjusted as necessary and certified by the Contractor as a correct record of the installation of the Contract Works.				
24	Maintenance Manual: Upon Practical Completion of the Contract Works, the Contractor shall furnish the Engineer four copies of a Maintenance Manual relating to the installation forming part of all of the Contract Works. The manual shall be loose-leaf type, International A4 size with stiff covers and cloth bound. It may be in several volumes and shall be sub-divided into sections, each section covering one Engineering service system. It shall have a ready means of reference and a detailed index. There shall be a separate volume dealing with Air Conditioning and Mechanical Ventilation installation where such installations are included in the Contract Works.				
	Sub-total carried forward to page .....102				

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
25	The manual is to be specially prepared for the Contract Works and manufacturer's standard descriptive literature and plant operating instruction cards will not be accepted for inclusion unless exceptionally approved by the Engineer. The Contractor shall, however, affix such cards, if suitable, adjacent to plant and apparatus. One spare set of all such cards shall be furnished to the Engineer.				
26	Hand over: The Contract Works shall be considered complete and the Maintenance and Defects Liability Period shall commence only when the Contract Works and supporting services have been tested, commissioned and operated to the satisfaction of the Engineer and officially approved and accepted by the Employer.				
27	Painting: It will be deemed that the Contractor allowed for all protective and finish painting in the Contract Sum for the Contract Works, including colour coding of service pipework to the approval of the Engineer. Any special requirements are described in the text of the Specifications				
28	Testing and Inspection – manufactured plant: The Engineer reserves the right to inspect and test or witness of all manufactured plant equipment and materials. The right of the Engineer relating to the inspection, examination and testing of plant during manufacture shall be applicable to Insurance companies and inspection authorities so nominated by the Engineer. The Contractor shall give two weeks' notice to the Engineer of his intention to carry out any inspection or tests and the Engineer or his representative shall be entitled to witness such tests and inspections.				
29	Testing and Inspection – Installation: Allow for testing each section of the Contract Works installation as described hereinafter to the satisfaction of the Engineer.				
	Sub-total carried forward to page.....			102	

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
30	Storage of Materials: The Contractor shall provide storerooms and workshop where required. He shall also provide space for storage to nominated sub-contractors who shall be responsible for these lock-up shades or stores provided. Nominated Sub-contractors are to be made liable for the cost of any storage accommodation provided specially for their use. No materials shall be stored or stacked on suspended slabs without the prior approval of the Project manager				
31	Initial Maintenance: The Contractor shall make routine maintenance once a month during the liability for the Defects Period and shall carry out all necessary adjustments and repairs, cleaning and oiling of moving parts. A monthly report of the inspection and any works done upon the installation shall be supplied to the Engineer.				
32	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 inspection.				
33	Attendance Upon Tradesmen, 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 the use of ordinary scaffolding. The contractor however, shall not be required to erect any special scaffolding for them.				
34	Temporary Works Where temporal works shall be deemed necessary, such as Temporary lighting, the contractor shall take precaution to prevent damage to such works. The contractor shall include for the cost of and make necessary arrangements with the Project Manager for such temporary works. For temporary lighting, electricity shall be metered and paid for by the contract				
35					
	Sub-total carried forward to page .....102				

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	his programme and schedule of work. He shall ensure equipment. optimum presence and utilization of labour, plant and equipment. He should not pay and maintain unnecessary labour force or maintain and service idle plant and				
36	Extended Preliminaries: Where it shall be necessary to extend the contract period by the Project manager the contractor shall still ensure availability on site, optimum labour, materials, plant and equipment. The contractor shall make provision for extended preliminaries, should the contract period be extended and this shall be in a form of a percentage of the total Contractor works.				
37	Supervision by Engineer and Site: A competent Project Engineer appointed by the Engineer as his representative shall supervise the Contract works. The Project Engineer shall be responsible for issuing all the site instructions in any variations to the works and these shall be delivered through the Contractor with the authority of the Project Manager. Any instructions given verbal shall be confirmed in writing. The project engineer and (or) the Engineer shall attend management meetings arranged by the Project Manager and for which the Contractor or his representative shall also attend. For the purpose of supervising the project, provisional sums are provided to cover for transport and allowances. The Contractor shall in his tender allow for the provision of management meetings and site inspections, as instructed by the Engineer, and also profit and attendance on these funds. The funds shall be expended according to Project Manager's instructions to the contractor				
38	Allow for profit and Attendance for the above				
39	Amendment to Scope of Sub-contract Works No amendment to scope of sub-contract works is expected and in case of amendment or modification to scope of work, these shall be communicated to all tenderers in				
	Sub-total carried forward to page.....			102	

ITEM No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	sufficient time before the deadline of the tender submission. However, during the contract period and as the works progress the Project Manager may vary the works as per conditions of contract by issuing site instructions				
40	Contractor Obligation and Employers Obligation: The sub-contractor will finance all activities as part of his obligation to this contract. The employer shall pay interim payment for materials and work completed on site as his obligation in this contract, as the works progresses. The contractor shall, where called upon, insert his price to compensate for any of the occurrence stated here (premature termination, reduction or increase of works), as a percentage of the contract sum.				
41	Any other preliminaries;				
	Sub-total above				
	Sub-total brought forward from page .....92				
	Sub-total brought forward from page .....93				
	Sub-total brought forward from page .....94				
	Sub-total brought forward from page .....95				
	Sub-total brought forward from page.....96				
	Sub-total brought forward from page .....97				
	Sub-total brought forward from page .....98				
	Sub-total brought forward from page .....99				
	Sub-total brought forward from page .....100				
	Sub-total brought forward from page .....101				
	TOTAL FOR BILL NO. 1- PRELIMINARIES CARRIED FORWARD TO PRICE MAIN SUMMARY PAGE127				

BILL OF QUANTITIES FOR MECHANICAL WORKS

Item	Description	Qty	Unit	Rate	Amount
A	Water Closet Duravit D-CODE Close Coupled WC suite in Vitreous china and approved colour comprising of WC bowl,'P' or 'S' trap connector, heavy duty matching seat and cover with metal top fixed chrome plated hinges and chrome plated push button with all the other necessary accessories.	9	No		
B	Corner wash handbasin Wall hung corner wash hand basin, size 300 x 300mm in approved colour comprising the following:- One tap hole, Classique Monoblock chrome plated pillar tap with 1 1/4 chrome plated pop up waste, heavy duty plastic bottle trap and other fixing accessories.	8	No		
C	Paper Dispenser as Medi clinics wall mounted complete with a fixing screw	13	No		
D	Medical Wash Hand Basin Counter top Twyford's "SOLA L.B.G/L" wash hand basin with no tap holes and chain stay hole cat. No. WB 1520WH, wall brackets cat no. SR 1315 xx complete with "lever action mixer fitting, 1/2 with swivel nozzle and divided flow" wall mounted mixer cat. no. SF 1099 CP, chrome grid waste 1 1/4" cat no. WF 4341 CP and white plastic bottle trap 1 1/4" P-trap cat. no. WF 8482 xx or approved equivalent.	13	No		
E	Toilet roll holder Toilet roll holder in vitreous china to BS 3402 in white colour of size 165x165mm and recessed into wall. Toilet roll holder to be as Twyford's "SEMI RECESSED & ORNAMENTAL" accessories Ref. No. VC 9808 WH	9	No		
F	Soap Dispenser Soap Dispenser, capacity 1.136 litres complete with plastic rawl plugs, fixing screws, lock and key complete with initial fill of soap gel. The soap dispenser to be as ZALPON'S MARK 7 model, size 125 x 100 x 290mm high or approved equivalent	19	No		
G	Mirrors 6mm thick polished plate glass, silver backed mirror with beveled edges, size 610x497mm plugged and screwed to wall with 4No. Chrome plated chrome capped screws and 5mm thick foam back nest.	22	No		
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
A	Laboratory Sinks "Vulcathene" black injection moulded polypropylene sink with self-draining base and an outlet to accept the waste described below as Cat No.602 complete with:- - "Vultex Labline" bench mounted 1-way outlet fitting with inlet for supply and side valve having swivel nozzle and spout. - "Vulcathene" 1½" waste, plug, back, nut, butyl rubber gasket, grating and chain as Cat No.504. - "Vulcathene" anti-siphon bottle trap as Cat No. W561. - Vulcathene 4.5litres dilution trap Taps	2	No		
B	"Vultex Labline" bench mounted 1-way outlet fitting with inlet for supply and side valve having swivel nozzle and spout.	2	No		
C	Robe hook Robe hook in vitreous china and in white colour mounted unto a concealed screw to wall wedges, to be as Twyford's OC 6858 1998 or approved equivalent.	9	No		
D	Hand Driers Automatic Hand Drier in white colour, operating on an infra-red automatic sensing system with safety cut-out complete with plastic rawl plugs and fixing screws. The hand drier to have a heating capacity of 1.8 kw and to be of size 270 x 64 x 143mm deep as HEATRAE SADIA "Handi Dri" or approved equivalent. Shower fitting Concealed 4-way single lever hot and cold water shower mixer consisting of 15mm riser pipe chased in wall connected to a swivel/adjustable shower rose. All to be as Tapis or equal and approved	4	No		
E	Soap Dish wall mounted soap dish, frosted glass in approved color of size 140mmx119mm. To be as Duravit toilet accessories #0099171000	7	No		
F	Towel Rail Chrome plated 20mm diameter x 800mm long approved towel rail and brackets as one piece, plugged and screwed into the wall. The fitting shall be as Duravit or equal and approved.	7	No		
G					
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
A	Kitchen sink Single bowl, single drainer stainless steel kitchen sink size 1000 x 500mm as manufactured as ASL, bowl size 430 x 420 x 200mm deep complete with chrome plated 40mm waste fittings, plugs, chain stays, overflow, 1No. Chrome wall type, elbow action. With 1/4 turn ceramic disc head parts, bent inlet connections with wall flanges. Swan neck aerated swivel outlet. 1/2" BSP male iron connection ends and 40mm diameter chrome plated bottle trap with 75mm deep seal and chain waste fittings.	3	No		
B	Kitchen Sink Stainless steel Double Bowl Double Drainer (DBDD) kitchen sink, size 1500x573mm complete with: -1No. 15mm diameter chrome plated swing type mixer pillar tap, 40mm diameter heavy duty sink waste, 86mm diameter flange, 93mm long shank, slotted with plug and backnut, 40mm diameter plastic bottle trap with 75mm deep seal, chain waste and plug.	1	No		
C	Combined slop hopper sink and drainer Slop hopper, sink and drainer with disposal unit assembly comprising Dee right hand slop hopper with sink in stainless steel, P trap, concealed high level duct cistern and cover, 9 litre capacity with Freeflow plastics syphon fittings, 1/2 inch microvalve high pressure ballvalve, side supply, 3/4 inch side overflow, lever extended through wall with chain plastics flushpipe. To be as armitage shanks DHSS HTM64 or equal and approved	2	Set		
D	Flexible Tubing 15mm Diameter x300mm long flexible connections complete with integral chrome plated angle valve for connecting the sanitaryplated angle valve for connecting the sanitary fittings to waste supply,to be as cobra or equivalent	40	No		
E	Wash hand basin size 510 x 420mm with one tap holes and chain stay hole, 32mm diameter chrome plated pop up chain waste, concealed wall brackets, chrome plated single tap hole basin mixer as Cobra and chrome plated bottle trap (32mm 'P' trap) with 75mm seal. The wash hand basin to be as Twyfords 'Sola 510' or equal and approved.	1	No		
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
	<u>Internal Plumbing Works</u> Supply, deliver and install pipes, tubing and fittings as described and shown on drawings. The pipes should conform to the current European standards for PPR installations and to the Engineers approval, pipe jointing shall be by polyfusion or use of electric coupling. rates must allow for all metal/plastic threaded adaptors where required for the connection of sanitary fixtures, valves sockets, sliding and fixed joints etc. as required in the running lengths of pipe work and also where necessary, for pipe fixing clips, holder bats plugged and screwed for 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 pressure.				
	PPR Pipes				
A	25mm diameter pipework	82	Lm		
B	32mm diameter pipework	46	Lm		
C	40mm -ditto-	48	Lm		
	Bends				
D	40mm diameter bends	14	No		
E	32mm diameter bends	24	No		
F	25mm -ditto-	32	No		
	Tees				
G	40mm equal tee	9	No		
H	32mm equal tee	16	No		
I	25mm equal Tees	16	No		
	Reducers				
J	32 x 25mm diameter	13	No		
K	40 x 32mm diameter	20	No		
L	40x25mm diameter	15	No		
	Threaded Fittings				
M	25mm x 1/2" dia. female threaded 90° bend	60	No		
N	32mm x 1" dia. male threaded sockets	18	No		
O	40mm x 1 1/2" dia. male threaded socket	10	No		
P	25mm x 3/4" dia. male threaded sockets	16	No		
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
	<u>Renal Internal Plumbing Works</u> To supply and install Chlorinated Polyvinyl Chloride(CPVC) tubing and fittings which meet requirements of ASTM F442 as described.Tenderers must allow for jointings,clippings,couplings etc,necessary for the proper and satisfactory functioning of the installation when pricing.All joints shall assembled using solvent cements that meet or exceeds the requirement of ASTM F493 and to the Engineer's Approval.				
	CPVC Pipes				
A	25mm diameter pipework	60	Lm		
B	32mm diameter pipework	60	Lm		
	Bends				
C	25mm diameter bends	28	No		
D	32mm diameter bends	28	No		
	Tees				
E	25mm equal Tees	9	No		
F	32mm equal Tees	9	No		
	Reducers				
G	32 x 25mm diameter	3	No		
	Sockets				
H	25mm diameter plain sockets	14	No		
I	32mm diameter ditto	11	No		
	Caps				
J	25mm diameter CPVC caps	12	No		
K	32mm diameter CPVC caps	12	No		
	Threaded Fittings				
L	25mm male threaded sockets	4	No		
M	32mm male threaded sockets	4	No		
	Valves				
N	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.	2	No		
O	32mm ditto	2	No		
P	25mm non-return valve	1	No		
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
	Renal Plant Water storage				
A	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.	120	Lm		
	PPR Pipes PN 16				
B	40mm diameter pipework	124	Lm		
	Bends				
C	40mm diameter bends	10	No		
	Tees				
D	40mm equal Tees	3	No		
	Unions				
E	40mm diameter pipe unions	3	No		
	Valves				
F	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.	3	No		
G	40mm non-return valve	1	No		
H	Supply, deliver and install vertical close end plastic moulded tank of capacity 10000 litres (2200 gallons) and diameter 2.43m x 2.26m high. The tank to be assembled complete with cover and having screwed connections for inlet, outlet, overflow, high pressure ball valve, drain pipes, water level indicator and any other necessary item for its proper functioning. The tank shall be mounted on a platform and shall be as ROTO Model or approved equivalent.	1	No		
I	Steel tower 9 metres high complete with 3metres X 3metres galvanised platform to carry the above 10,000 litre tank constructed to structural Engineer approval	1	Item		
J	High level Tank bases Allow for the construction of ground bases for mounting the above steel tower to the approval of the structural engineer. Include all costs including excavation in red soil, reinforced concrete curing etc.	1	Item		
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
	INTERNAL FOUL WATER DRAINAGE Supply, deliver and install the following UPVC, MUPVC, soil and waste systems respectively to B.S 5255 with fittings fixed to Manufactures Printed instructions and manufactured by reputable manufacturers. Tenderers must allow in their pipework prices for all the couplings, clippings, connectors, joints etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system.				
	MuPVC and uPVC Waste and Soil pipework				
A	100mm diameter heavy gauge grey mUPVC pipe	84	Lm		
B	50mm diameter waste pipe	78	Lm		
C	40mm diameter waste pipe	48	Lm		
D	32mm diameter waste pipe	60	Lm		
	Bends				
E	100mm diameter bend	15	No		
F	50mm diameter bend	24	No		
G	40mm diameter bend	12	No		
H	32mm diameter bend	18	No		
	Tees				
I	50mm diameter equal tee	26	No		
J	40mm diameter equal tee	10	No		
K	32mm diameter sweep tee	34	No		
	Access Caps				
L	100mm diameter access cap	5	No		
M	50mm diameter access cap	13	No		
N	40mm diameter access cap	6	No		
O	32mm diameter access cap	34	No		
	Reducers				
P	100×50mm reducer	34	No		
Q	100×40mm ditto	5	No		
R	50×40mm ditto	6	No		
S	40×32mm -ditto-	10	No		
T	100mm diameter single branch	15	No		
U	100mm double branch	5	No		
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
A	WC Connectors 100mm diameter WC connector	9	No		
B	Traps 100 x 50mm diameter four way floor trap and grating	42	No		
C	Vulcathene pipework 38mm diameter pipe work	12	Lm		
D	38mm bend	5	No		
E	38mm diameter access cap	3	No		
F	38mm sweep tee	5	No		
G	4.5 litres anti-siphonic dilution recovery trap complete with other necessary fittings as CAT No.W612	1	No		
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<u>Fire Protection</u> Supply, deliver and install the following fire fighting equipment in positions indicated on the contract drawings or as shall be instructed by the Engineer. Supply and install the following fire fighting installation and equipment as described and shown on the drawings. Tenderers should allow for all fittings, jointings couplings including unions and clamps where necessary for the proper functioning of the installation when pricing.				
	Hosereel Installation Hosereel				
A	20mm diameter 30m long swinging type hose reel complete with delivery valve, mild steel feed pipe, isolation valve, guide and all other accessories as "Angus Fire Armour" or equal and approved.	4	No.		
	GMS Pipework, Class B				
B	20mm diameter pipework	6	Lm		
C	25mm diameter pipework	6	Lm		
	Extra Over Pipework Bends				
D	20mm diameter bends	12	No.		
E	25mm diameter bends	12	No.		
	Valves				
F	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.	4	No.		
	Reducers				
G	25 x 20 mm diameter reducer	4	No.		
	Unions				
H	20mm diameter pipe unions	4	No.		
I	25mm diameter pipe unions	4	No.		
	Painting				
J	Allow for painting of the hosereel installation with 2 coats of super gloss paint on a primer coat to the approval of the Project Engineer.	1	Item		
Total Carried to Collection Page 113					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<u>Portable Fire Extinguishers</u> Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.				
A	Water/Carbon Dioxide Gas Fire Extinguisher 9 litres water/carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	4	No		
B	Carbon Dioxide Gas Fire Extinguisher 5kg carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	4	No		
C	Dry Chemical Powder Fire Extinguisher 9kg dry chemical powder portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	4	No		
D	Manual Alarm Bell 9" (225mm) manual operated alarm bell (Gong)	4	No		
E	Fire Blanket Fire blanket made of cloth woven with pre-asbestos yarn or any other fire proof material and to measure 1800 x 1210 mm. It shall be fitted with special tapes folded so as to offer instantaneous single action to release blanket from storing jacket to BS 1721.	2	No		
F	Fire Notices Allow for fire signage for the hose reel system, fire exits and fire instructions as as described in the particular specifications and to the Project Engineer's approval.	6	No		
Total Carried to Collection Page 113					

**COLLECTION PAGE FOR SANITARY FITTINGS, PLUMBING, DRAINAGE WORKS AND FIRE
PROTECTION WORKS**

Item	Description		Amount (Kshs)
1	Total carried forward from page 103	.....	
2	Total carried forward from page 104	.....	
3	Total carried forward from page 105	.....	
4	Total carried forward from page 106	.....	
5	Total carried forward from page 107	.....	
6	Total carried forward from page 108	.....	
7	Total carried forward from page 109	.....	
8	Total carried forward from page 110	.....	
9	Total carried forward from page 111	.....	
10	Total carried forward from page 112	.....	
Total for Sanitary fittings, Plumbing Drainage and Fire Protection Works carried forward to Summary Page 127			

SOLAR HOT WATER HEATING					
Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	<u>300Litres Solar Water Heater-Pressurised Evacuated tubes</u> 300litre solar pressurised split water heating system comprising of evacuated heating glass tubes,insulated storage cylinder. The system should have the following features: -Evacuted borosilicate glass tubes with absober coating -Copper heat pipes with heater fluid -Light frame anodised aluminium support structure -Insulated 300l hot water storage cylinder complete with sacrificial anode,thermostat and cabling -Safety relief and isolating valves -Electric booster heating element for backup -Electronic intelligent controller with LCD panel and inclusive of all cabling. -Automatic voltage stabiliser.	3	Item		
B	Non- Return Valves 25mm diameter screwed -in cap, lift type disc bronze non-return valve to BS 5154 PN 32 for series 'B' ratings.	6	No		
C	25mm pressure regulating valve	3	No		
D	Automatic Air Eliminator/ Vacuum breaker Air relief valve as manufactured by "Spirax Sarco" model No. AES 50 Air Eliminators for use on hot water services.	6	No		
E	Temperature/pressure safety valve set to release when the water in the tanks exceed 85°C as manufactured by Spirax Sarco Model No. SV11 Pop Type or equal and approved.	3	No		
F	Circulation Pumps Circulation pump with a duty of 1.0m ³ /hr. against 4m head as Dayliff DQ15F hot water circulation pumps or approved equivalent. In addition,the pump shall be supplied complete with electric contactors fitted with overloadsThe pumpset shall include all non-returns valves, timer, isolating valves and pipe connections.	3	No		
G	Insulation Allow for insulation for pipework, bends, tees and other fittings with 25mm thick industrial grade flexible "Armaflex" insulation (85°C) as manufactured by Armstrong Cork International or equal and approved. The insulation to be for pipes less than 50mm diameter.	20	Lm		
Total carried forward to collection page 116					

Item	Description	Qty	Unit	Rate	Amount
A	<u>Electrical Connections</u> Allow electrical works for the above solar water heating systems electric booster element works comprising cabling from the isolator provided by others, to controller, recirculation pumps and any other items necessary for optimum functioning of the system. <u>PLUMBING</u> Supply and install the following plumbing installation as described and shown on the drawing. All pipework and fittings in this installation to be Polypropylene (PPR) to PN.20 suitable for hot water and jointed by manufacturer approved fusion welding. Tender must allow for jointings, couplings, plugging, clamping, reducers, mortices, hangers, clippings, etc necessary for the proper functioning of the installation when pricing. PPR Pipework-PN 20 Hot Water pipe	3	Item		
B	25mm diameter pipework	24	Lm		
C	32mm-ditto-	18	Lm		
	Extra-over PPR pipework for the following:				
	<u>Bends</u>				
D	25mm diameter bend	12	No		
E	32mm -ditto-	8	No		
	<u>Tees</u>				
F	25mm equal tee	6	No		
G	32mm -ditto-	5	No		
	<u>Reducers</u>				
H	32*25mm diameter reducer	5	No		
	<u>Valves</u>				
I	25mm diameter high pressure screw down, full way non-rising stem wedge gate valve to BS 5154 standards	6	No		
J	32mm -ditto-	3	No		
K	<u>Testing and commissioning</u> Allow for testing and commissioning of the internal plumbing installation	1	Item		
	Total carried forward to collection page 116				

COLLECTION PAGE FOR SOLAR WATER HEATING

Item	Description	Amount (Kshs)
1	Total carried forward from page 114	
2	Total carried forward from page 115	
Total for solar water heating Carried to Summary Page 127		

MEDICAL GAS PIPING SYSTEM & EQUIPMENT

Item	Description	Qty	Unit	Rate (Kshs)	Amount
A	<u>CENTRAL MEDICAL VACUUM SYSTEM</u> <u>Primary/Secondary Supplies</u> Medical Vacuum System conforming to EN ISO 7396-1 and HTM 02-01 capable of 1250 l/min and suitable for 415V, 50 Hz, 3 Phase power supply ,motor 4.0kw,. The total receiver volume shall be 1200 litres.	1	No		
	<u>NITROUS OXIDE SYSTEMS</u> Fully automatic manifold control system conforming to HTM 02-01 complete with control panel and modular header manifolds to provide connection points for flexible cupronickel tailpipes. The manifold shall incorporate electric heating element. Manifold header size – 2x 2 = 4 cylinders. (2 Bank manifold ,each bank is 2 cylinders))	1	No		
	<u>CEILING PENDANT</u> Retractable pendant in octagonal body section capable of accommodating up to 9 gases and a minimum of 4 duplex power sockets. The pendant shall comply with the requirements of HTM 02-01, B.S. 5682, and EN737 and 739.	1	No		
	<u>MONITORING EQUIPMENT</u> Medical Gas Area Alarm Each medical gas area alarm shall be capable of monitoring 6 medical gas services by means of pressure sensors which detect deviations from normal operating limits of either pressure or medical vacuum. The medical gas area alarm shall fully comply with the requirements of HTM2022, HTM 02-01, BE EN 60601-1 AND BS EN ISO 7396-01. The cover back box and bezel shall be polyester powder coated in RAL9010 30% gloss finish. Single the area alarm shall be as Beacon Medaes Medipoint 26 Medical Gas Area Alarms or approved equivalent.	2	No		
Total carried forward to collection page 123					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
A	Area Valve Service Unit The AVSU conforming to BS EN 739:1998, HTM 02-01 and BS EN ISO 7396-1:2007. Includes shut off valve and check valve with NIST connection, easy to operate and maintain, Diaphragm-sensed regulator provides a consistent outlet flow; Pressure gauge included to provide accurate reading of pressure; HTM 02-01 compliant; Gas service: Oxygen, Nitrogen, Air, Vacuum and other medical gas; Maximum operating pressure: Pressure: 200psi; Vacuum :-8.7 psi Design Pressure: Pressure line: 232psi; Vacuum line :-14.5psi Configuration (3 valve) Both inlet pipe and outlet pipe face upward (vertical)	2	No		
B	Oxygen terminal units	25	No		
C	Medical vacuum terminal units	17	No		
D	Medical nitrous terminal units	2	No		
	<u>Medical Gas Accessories</u>				
E	Medical oxygen flow meter (0-15 lpm) with BS MK 1V PROBES & Humidifier.	25	No		
F	Ward Medical Vacuum Unit (0-760mmHg) With BS MK1V Direct PROBES, complete with 2.0 Litre suction (complete with wall bracket)	5	No		
G	Oxygen remote probes (BS MK 1V)	5	No		
H	Medical nitrous oxide remote probes (BS MK 1V)	3	No		
I	Allow for leasing/hiring of medical gas cylinders from BOC, Noble Gases etc to be used by the hospital to connect to the gas manifolds.	4	No		
Total carried forward to collection page 123					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
	<u>DISTRIBUTION SYSTEM</u>				
	<u>Copper Pipes</u>				
A	35 mm diameter grease free copper pipes suitable for medical gases installations	64	LM		
B	28 mm diameter grease free copper pipes suitable for medical gases installations	140	LM		
C	22 mm diameter grease free copper pipes suitable for medical gases installations	220	LM		
D	15 mm diameter grease free copper pipes suitable for medical gases installations	88	LM		
E	12 mm diameter grease free copper pipes suitable for medical gases installations	36	LM		
F	12 Mm Hospital brackets/sandles	45	No		
G	15 Mm Hospital brackets/sandles	70	No		
H	22mm hospital brackets/sanddles	95	No		
I	28mm hospital brackets/sanddles	160	No		
J	35mm hospital brackets/sanddles	12	No		
	<u>Adaptors/Connectors</u>				
K	15 x 12mm adaptors/connectors	28	No		
L	- 22 x 15mm adaptors/connectors	84	No		
M	28 x 15mm adaptors/connectors	15	No		
N	35 x 28mm adaptors/connectors	6	No		
O	35 x 22mm adaptors/connectors	9	No		
P	28 x 22mm adaptors/connectors	5	No		
Total carried forward to collection page 123					

Item	Description	Qty	Unit	Rate (Kshs)	Amount
	<u>Coupling / sockets</u>				
A	12mm degreased socket/coupling	50	No		
	-				
B	15mm degreased socket/coupling	64	No		
C	22mm –degrease sockets/coupling	48	No		
D	28mm –degrease sockets/coupling	32	No		
E	35mm –degrease sockets/coupling	18	No		
	<u>Equal Tees</u>				
F	35mm diameter tee	17	No		
G	28mm diameter tee	26	No		
H	22mm diameter tee	66	No		
I	15mm diameter tee	220	No		
	<u>Bends/Elbows</u>				
J	12 mm diameter bend/elbow	36	No		
	-				
K	15 mm diameter bend/elbow	66	No		
L	22 mm diameter bend/elbow	96	No		
M	28 mm diameter bend/elbow	64	No		
N	35 mm diameter bend/elbow	11	No		
Total carried forward to collection page 123					

Item	Description	Qty	Unit	Rate (Kshs)	Total
	<u>VALVES</u>				
A	32mm diameter line ball valves fitted with copper stub pipes such as Madaes or approved equivalent. The valve to be complete with valve box, flow meter and identification marks.	6	No		
B	28mm ditto	8	No		
C	22mm ditto	5	No		
D	15mm ditto	7	No		
E	BEDHEAD TRUNKING AND HEADWALL SYSTEMS Horizontal Bed Head Unit with the following features: Approximate length 1500mm; upto 5 gas outlets (oxygen-1No, vacuum-1No, and medical air-1No.); 2x54W Fluorescent tubes for indirect ward lighting, 1x39W direct lighting for reading and procedures, 1x39W night lighting. Nurse call for various centralised monitoring systems; attachment for infusion bags and pumps. Railing for suspending equipment, inner ultra violet air sterilization, 2No. twin RJ45 Telephone and data outlets-1, Electricity pins -3 Twin 13 Amps Socket Outlet, equipotential pins-2, Audio-video outlets-2. To be as MULTI-PORT BED HEAD UNIT MODEL M-PN0515 or equal and approved	7	No		
F	Ditto but 1200mm upto 3 gas outlets (oxygen -1, vacuum -1 No and medical air -1No)	8	No		
G	<u>Training of Maintenance Staff and Operators</u> Allow for training of Five (5 No.) personnel, Two (2 No.) from Directorate of Public works and Three (3 No.) from Department of Health, on MGPS in accordance with HTM 02-01.	1	Item		
Total carried forward to collection page 123					

Item	Description	Qty	Unit	Rate (Kshs)	Total
A	<u>Copper Sleeves</u> Allow for copper sleeves for all pipes passing in floors, walls and partitions.	1	Item		
B	<u>Identification of Pipelines</u> Allow for permanent and temporary identification of pipelines, valves and ends in accordance to particular specifications described.	1	Item		
C	<u>Painting and Marking</u> Allow for painting and marking of all pipes and fittings in accordance to particular specifications described.	1	Item		
D	<u>Purging</u> Allow for flushing the whole system with the medical gases in accordance with HTM 02-01 and to the satisfaction of the Engineer.	1	Item		
E	<u>Testing and Commissioning</u> Allow for testing and commissioning of the entire medical gas pipeline system for the previously installed and the new installations in accordance with the Particular Specifications (Form E-1 to E-17) and to the satisfaction of the Project Engineer.	1	Item		
F	<u>As- Installed Drawings</u> Printed catalogues, technical data sheet, manuals and as-built drawings both in hard copy and soft copy. The soft copy to be delivered in compact disc and 4GB flash disk.	1	Item		
Total carried forward to collection page 123					

COLLECTION PAGE FOR MEDICAL GAS

Item	Description	Amount
1	Total carried forward from page 117	
2	Total carried forward from page 118	
3	Total carried forward from page 119	
4	Total carried forward from page 120	
5	Total carried forward from page 121	
6	Total carried forward from page 122	
	Total for medical gas piping system Carried to Summary page 127	

Item	Description	Qty	Unit	Rate (Kshs)	Cost (Kshs)
A	<u>ISOLATION ROOMS EXTRACT SYSTEM</u> <u>FLEXIBLE DUCTWORK</u> 250mm flexible duct made of glass fibre fabric on a PVC coated close pitch steel wire helix. 54 minute fire integrity from within as measured to BS 476: Part 20 – (1987). The duct should be able to be interlocked and sealed with duct tape to form an airtight seal and attached to spigots using worm drive clips to be as Xflex FD or equal and approved	64	Lm		
B	<u>Extract Air Register</u> 2-way square outlet wall register size 200 x 200mm. Capable of extracting 0.3m³/s (300l/s) of air while producing direct noise level of less than NR 25 at 3m distance from the terminal.	6	No		
C	<u>Extract Fan</u> Inlineduct aerofoil axial extract fan capable of extracting 0.24m³/s of air against a static pressure of 200N/m². The fan to come complete with mounting brackets, anti vibration mountings and flexible connector as 'XPELAIR' Model XID250 or equal and approved.	4	No		
D	<u>Fan Control Panel</u> 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. It shall include volt free contacts for on-off and audible signal connection to a central indicator panel and to BMS.	4	No		
F	<u>External Weather Louvres</u> 1150mm 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.	4	No		
Total carried to Collection Page 126 for Isolation Room Ventilation					

Item	Description	Qty	Unit	Rate (Kshs)	Cost (Kshs)
A	<u>Electrical works</u> Allow for electrical works including wiring and fitting from the local power point provided by others within 1metres.	1	Item		
B	<u>Testing and Commissioning</u> Allow for setting to works testing and commissioning to the approval of the project manager.	1	Item		
C	<u>Associated builders works</u> Core drill 100mm diameter hole through150mm thick slab in class 25 concrete	8	No		
D	Core drill 100mm diameter hole through200mm thick beam in class 25 concrete	5	No		
E	Ditto but 200mm diameter hole	2	No		
Total carried to Collection Page 126 for Isolation Room Ventilation					

COLLECTION PAGE FOR ISOLATION ROOM VENTILATION

Item	Description	Total Cost (Kshs)
1	Total brought forward from page 124	
2	Total brought forward from page 125	
	Total Cost for isolation room mechanical ventilation Works Carried to Summary Page 127	

MAIN SUMMARY PAGE

Item	Description	Amount
1	Preliminaries Brought forward from page 102	
2	Total for Sanitary fittings, Plumbing, Drainage and Fire Protection Brought forward from page 113	
3	Total for solar water heating brought forward from page 116	
4	Total for medical gases installation brought forward from page 123	
5	Total for Isolation Rooms ventilation brought forward from Page 126	
6	Contingency	800,000.00
	Total cost for Mechanical works in the ICU and Renal Unit at the Accident and Emergency Centre in Karatina Hospital	

Amount in Words:

.....

Tenderer's Name and Stamp:

Sub contract period..... Weeks

Signature Date:

PIN NO. VAT CERTIFICATE No.

(Provide copy)

(Provide copy)

Witness Address:

Signature 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

ITEM	DESCRIPTION	UNIT	RATE (Kshs)
A	WC Flush Valve	No	
B	Stainless steel steralisation sink	No	
C	Split solar heater capacity 200 litres	Item	
D	Disabled WC set	Item	

TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED

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**.

S/NO	DESCRIPTION	MANUFACTURER	COUNTRY OF ORIGIN	REMARKS (Catalogue No. etc.)
A	Flexible duct work			
B	Wash hand basin			
C	Water Closet			
D	WC Flush Valve			
E	Bed head units			
F	Solar Water Heater			
G	Medical Gas vacuum system.			
H	Oxygen system			
I	Nitrous oxide system			
J	Ceiling Pendant			
K	Medical Gas alarm system			
L	Terminal units			

Catalogue must be attached for all the items in the schedule of material above

SECTION F:
STANDARD FORMS

NOTE:

ALL FORMS IN THIS SECTION MUST BE FILLED AS THEY SHALL BE PART OF THE
EVALUATION CRITERIA

STANDARD FORMS

CONTENTS

<u>FORM</u>	<u>PAGE</u>
1. KEY PERSONNEL.....	132
2. CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS.....	133
3. SCHEDULE OF MAJOR ITEMS OF CONTRACTOR'S EQUIPMENT PROPOSED FOR CARRYING OUT THE WORKS.....	134

1 KEY PERSONNEL

Qualifications and experience of key personnel proposed for administration and execution of the Contract.

POSITION	NAME	YEARS OF EXPERIENCE (GENERAL)	YEARS OF EXPERIENCE IN PROPOSED POSITION
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

I certify that the above information is correct.

.....

Title

.....

Signature

.....

Date

2 CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

Work performed on works of a similar nature and volume over the last five years.

PROJECT NAME	NAME OF CLIENT	TYPE OF WORK AND YEAR OF COMPLETION	VALUE OF CONTRACT (Kshs.)

I certify that the above works were successfully carried out and completed by ourselves.

.....
Title

.....
Signature

.....
Date

3 SCHEDULE OF MAJOR ITEMS OF CONTRACTOR'S EQUIPMENT PROPOSED FORCARRYING OUT THE WORKS

ITEM OF EQUIPMENT	DESCRIPTION, MAKE AND AGE (Years)	CONDITION (New, good, poor) and number available	OWNED, LEASED (From whom?), or to be purchased (From whom?)

BILL NO.5: PROVISIONAL SUMS

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>PROVISIONAL SUMS</u>				
	<u>Contingencies</u>				
A	Provide a provisional sum of Kenyan Shillings Four Million (KShs 4,000,000/-) for Contingencies				
	<u>Project Management Expenses</u>				
B	Provide a provisional sum of Kenyan Shillings Seven Hundred Thousand (Kshs 700,000/-) for Project Management expenses				
	<u>Steel Casement Windows Modificaiton</u>				
C	Provide a provisional sum of Kenyan Shillings Three Hundred Thousand (Kshs 300,000/-) for modification of existing steel casement windows for critical rooms; to detail and approval				
	TOTAL FOR PROVISIONAL SUMS CARRIED TO GRAND SUMMARY				
PS/1					

GRAND SUMMARY			
	DESCRIPTION	TENDER'S AMOUNT	OFFICIAL USE ONLY
1	PRELIMINARIES		
2	BUILDER'S WORKS		
3	ELECTRICAL WORKS		
4	MECHANICAL WORKS		
5	PROVISIONAL SUMS		
	GRAND TOTAL CARRIED TO FORM OF TENDER (VAT INCLUSIVE)		-