REPUBLIC OF KENYA

MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION

STATE DEPARTMENT FOR INTERNAL SECURITY AND NATIONAL ADMINISTRATION

TENDER NO. MINA/MUK/T/1/2023-2024

PROPOSED CONSTRUCTION OF THE ASSISTANT COUNTY COMMISSIONER'S OFFICE-MUKURWE-INI WEST DIVISION, MUKURWE- SUB-COUNTY

TENDER DOCUMENT

CLOSING DATE: - FRIDAY, 31ST MAY, 2024 AT 10.00 A.M.

TABLE OF CONTENTS

Table of Contents

INVITATION TO TENDER

TENDER NO. MINA/MUK/T/1/2023-2024 FOR PROPOSED CONSTRUCTION OF THE ASSISTANT COUNTY COMMISSIONER"S OFFICE-MUKURWE-INI WEST SUB-COUNTY, GAKINDU DIVISION

The Deputy County Commissioner Mukurwe-ini invites sealed tenders for the **TENDER NO. MINA/MUK/T/1/2023-2024 FOR PROPOSED CONSTRUCTION OF THE ASSISTANT COUNTY COMMISSIONER"S OFFICE-MUKURWE-INI WEST SUB-COUNTY, GAKINDU DIVISION**

1. Tendering will be conducted under national competitive bidding using a standardized tender document. Tendering is open to all qualified and interested Tenderers.

2. Tenderers may obtain further information at the Deputy County Commissioner Mukurwe-ini West Offices during official working hours.

3. Tenderers may view and download a complete set of tender documents electronically from **or Public Procurement Portal**

4. Tenderers who download the tender document must deliver their particulars immediately to the Deputy County Commissioner Mukurwe-ini West to facilitate any further clarification or addendum.

5. Tenders shall be quoted be in Kenya Shillings and shall include all taxes. Tenders shall remain valid for **150 days** from the date of opening of tenders.

6. All Tenders must be accompanied by a tender security or bid bond **Kenya Shillings Four Hundred Thousand (KShs. 400,000.00).**

7. The Tenderer shall chronologically **serialize all pages** of the tender documents submitted e.g., 1,2,3….

8. Completed tender documents are to be enclosed in plain sealed envelopes **(original and copy)** marked with tender name and reference number and deposited in the Tender Box at **Deputy County Commissioner Mukurwe-ini Offices** or be sent to the Deputy County Commissioner Mukurwe-ini the P.O. Box 112-10103 Mukurwe-ini **so as to be received on or before 31st May 2024 at 10.00 am**

9. Tenders will be publicly opened immediately after the deadline date and time specified above in the presence of the Tenderers' designated representatives who choose to attend.

10. Late tenders will be rejected.

Deputy County Commissioner
Mukurwe-ini

PART I: TENDERING PROCEDURES

SECTION I - INSTRUCTIONS TO TENDERERS

A. GENERAL PROVISIONS

1.0 Scope of tender

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

1.2 Throughout this tendering document:

a) The term "in writing" means communicated in written form (e.g. by mail, e-mail, fax, including if specified in the TDS, distributed or received through the electronic-procurement system used by the Procuring Entity) with proof of receipt;

b) if the context so requires, "singular" means "plural" and vice versa;

c) "Day" means calendar day, unless otherwise specified as "Business Day". A Business Day is any day that is an official working day of the Procuring Entity. It excludes official public holidays.

2.0 Fraud and corruption

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

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

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

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

Directly or indirectly controls, is controlled by or is under common control with an other tenderer;

a) Receives or has received any director indirect subsidy from another tenderer;

b) Has the same legal representative as an other tenderer;

c) Has a relationship with an other tenderer, directly or through common third parties, that puts it in a position to influence the tender of an other tenderer, or influence the decisions of the Procuring Entity regarding this tendering process;

d) 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;

e) Any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as a consultant for Contract implementation;

f) 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;

g) Has a close business or personal relationship with senior management or professional staff of the Procuring Entity who has the ability to influence the bidding process and:

i) Are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract; or

ii) May be involved in the implementation or supervision of such Contract unless the conflicts stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.

3.4 A tenderer shall not be involved in corrupt, coercive, obstructive or fraudulent practice. A tenderer that is proven to have been involved in any of these practices shall be automatically disqualified

3.5 A Tenderer (either individually or as a JV member) shall not participate in more than one Tender, except for permitted alternative tenders. This includes participation as a subcontractor in other Tenders. Such participation shall result in the disqualification of all Tenders in which the firm is involved. Members of a joint venture may not also make an individual tender, be a sub-contractor in a separate tender or be part of another joint venture for the purposes of the same Tender. A firm that is not a tenderer or a JV member may participate as a subcontractor in more than one tender.

3.6 A Tenderer may have the nationality of any country, subject to the restrictions pursuant to ITT3.9. A Tenderer shall be deemed to have the nationality of a country if the Tenderer is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.

3.7 A Tenderer that has been debarred from participating in public procurement shall be ineligible to tender or be awarded a contract. The list of debarred firms and individuals is available from the website of PPRA www.ppra.go.ke.

3.8 A Tenderer that is a state-owned enterprise or a public institution in Kenya may be eligible to tender and be awarded Contract(s) only if it is determined by the Procuring Entity to meet the following conditions, i.e. if it is:

i) A legal public entity of Government and/or public administration,

ii) financially autonomous and not receiving any significant subsidies or budget support from any public entity or Government, and;

(iii) Operating under commercial law and vested with legal rights and liabilities similar to any

commercial enterprise to enable it compete with firms in the private sector on an equal basis.

3.9 Firms and individuals shall be ineligible if their countries of origin are:

(a) As a matter of law or official regulations, Kenya prohibits commercial relations with that country;

(b) By an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.

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

3.10 Foreign tenderers are required to source at least forty (40%) percent of their contract inputs (in supplies, local sub-contracts and labor) from citizen suppliers and contractors. To this end, a foreign tenderer shall provide in its tender documentary evidence that this requirement is met. Foreign tenderers not meeting this criterion will be automatically disqualified. Information required to enable the Procuring Entity determine if this condition is met shall be provided for this purpose in *"SECTION III - EVALUATION AND QUALIFICATION CRITERIA, Item 9".*

3.11 Pursuant to the eligibility requirements of ITT 3.10, a tender is considered a foreign tenderer, if it is registered in Kenya and has less than 51 percent ownership by nationals of Kenya and if it does not subcontract to foreign firms or individuals more than 10 percent of the contract price, excluding provisional sums. JVs are considered as foreign tenderers if the individual member firms registered in Kenya have less 51 percent ownership by nationals of Kenya. The JV shall not subcontract to foreign firms more than 10 percent of the contract price, excluding provisional sums.

3.12 The National Construction Authority Act of Kenya requires that all local and foreign contractors be registered with the National Construction Authority and be issued with a Registration Certificate before they can undertake any construction works in Kenya. Registration shall not be a condition for tender, but it shall be a condition of contract award and signature. A selected tenderer shall be given opportunity to register before such award and signature of contract. Application for registration with National Construction Authority may be accessed from the website www.nca.go.ke.

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.

3.14 A Kenyan tenderer shall be eligible to tender if it provides evidence of having fulfilled his/her tax obligations by producing valid tax compliance certificate or tax exemption certificate issued by the Kenya Revenue Authority.

4.0 Eligible goods, equipment, and services

4.1 Goods, equipment and services to be supplied under the Contract may have their origin in any country that is not ineligible under ITT 3.9. At the Procuring Entity's request, Tenderers may be required to provide evidence of the origin of Goods, equipment and services.

4.2 Any goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.

5.0 Tenderer's responsibilities

5.1 The tenderer shall bear all costs associated with the preparation and submission of his/her tender, and the Procuring Entity will in no case be responsible or liable for those costs.

5.2 The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the Site of the Works and its surroundings and obtain all information that may be necessary for

preparing the tender and entering into a contract for construction of the Works. The costs of visiting the Site shall beat 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 again stall 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.

The tenderer shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including charts, as necessary or required.

B. CONTENTS OF TENDER DOCUMENTS

6.0 Sections of Tender Document

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

PART 1: Tendering Procedures
Section I – Instructions to Tenderers
Section II – Tender Data Sheet (TDS)
Section III- Evaluation and Qualification Criteria Section IV – Tendering Forms

PART 2: Works' Requirements Section V - Bills of Quantities

Section VI - Specifications

Section VII - Drawings

PART 3: Conditions of Contract and Contract Forms

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

6.2 The Invitation to Tender Notice issued by the Procuring Entity is not part of the Contract documents. Unless obtained directly from the Procuring Entity, the Procuring Entity is not responsible for the completeness of the Tender document, responses to requests for clarification, the minutes of a pre-arranged site visit and those of the pre-Tender meeting (if any), or Addenda to the Tender document in accordance with ITT 10. In case of any contradiction, documents obtained directly from the Procuring Entity shall prevail.

6.3 The Tenderer is expected to examine all instructions, forms, terms, and specifications in the Tender Document and to furnish with its Tender all information and documentation as is required by the Tender document.

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

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

7.2 The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the site(s) of the required contracts and obtain all information that may be necessary for preparing a tender. The costs of visiting the Site shall be at the Tenderer's own expense. The Procuring Entity shall specify in the **TDS** if a pre-arranged Site visit and or a pre-tender meeting will be held, when and where. The Tenderer's designated representative is invited to attend a pre-arranged site visit and a pre-tender meeting, as the case may be. The purpose of the site visit and the pre-tender meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

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

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

7.5 The Procuring Entity shall al 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.

8.0 Amendment of Tender Documents

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

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

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

C. PREPARATION OF TENDERS

9.0 Cost of Tendering

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

10.0 Language of Tender

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

11.0 Documents Comprising the Tender

11.1 The Tender shall comprise the following:

a) Form of Tender prepared in accordance with ITT 12;

b) Schedules including priced Bill of Quantities, completed in accordance with ITT 12 and

ITT 14;

c) Tender Security or Tender-Securing Declaration, in accordance with ITT 19.1;

d) Alternative Tender, if permissible, in accordance with ITT 13;

e) ***Authorization****:* written confirmation authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT 20.3;

f) *Qualifications:* documentary evidence in accordance with ITT 17 establishing the Tenderer's qualifications to perform the Contract if its Tender is accepted;

g) *Conformity:* a technical proposal in accordance with ITT 16;

h) Any other document required in the **TDS.**

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

12.0 Form of Tender and Schedules

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

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

13.0 Alternative Tenders

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

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

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

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

14.0 Tender Prices and Discounts

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

14.2 The Tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Tenderer shall be

deemed covered by the rates for other items in the Bill of Quantities and will not be paid for separately by the Procuring Entity. An item not listed in the priced Bill of Quantities shall be assumed to be not included in the Tender, and provided that the Tender is determined substantially responsive notwithstanding this omission, the average price of the item quoted by substantially responsive Tenderers will be added to the Tender price and the equivalent total cost of the Tender so determined will be used for price comparison.

14.3 The price to be quoted in the Form of Tender, in accordance with ITT 12.1, shall be the total price of the Tender, including any discounts offered.

14.4 The Tenderer shall quote any discounts and the methodology for their application in the Form of Tender, in accordance with ITT 12.1.

14.5 It will be specified in the **TDS** if the rates and prices quoted by the Tenderer are or are not subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, except in cases where the contract is subject to fluctuations and adjustments, not fixed price. In such a case, the Tenderer shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data and the Procuring Entity may require the Tenderer to justify its proposed indices and weightings.

14.6 Where tenders are being invited for individual lots (contracts)or for any combination of lots (packages), tenderers wishing to offer discounts for the award of more than one Contract shall specify in their Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITT 14.4, provided the Tenders for all lots (contracts) are opened at the same time.

All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 30 days prior to the deadline for submission of Tenders, shall be included in the rates and prices and the total Tender Price submitted by the Tenderer.

15.0 Currencies of Tender and Payment

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

15.2 Tenderers shall quote entirely in Kenya Shillings. The unit rates and the prices shall be quoted by the Tenderer in the Bill of Quantities, entirely in Kenya shillings.

15.2.1 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.

15.2.2 The rates of exchange to be used by the Tenderer in arriving at the local currency equivalent and the percentage(s) mentioned in (a) above shall be specified by the Tenderer in the Appendix to Tender and shall be based on the exchange rate provided by the Central Bank of Kenya on the date 30 days prior to the actual date of tender opening. Such exchange rate shall apply for all foreign payments under the Contract.

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

16.0 Documents Comprising the Technical Proposal

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

17.0 Documents Establishing the Eligibility and Qualifications of the Tenderer

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

17.2 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract the Tenderer shall provide the information requested in the corresponding information sheets included in Section IV, Tender Forms.

17.3 If a margin of preference applies as specified in accordance with ITT 33.1, national tenderers, individually or in joint ventures, applying for eligibility for national preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITT 33.1.

17.4 Tenderers shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contractor or group of contractors qualifies for a margin of preference. Further the information will enable the Procuring Entity identify any actual or potential conflict of interest in relation to the procurement and/or contract management processes, or a possibility of collusion between tenderers, and thereby help to prevent any corrupt influence in relation to the procurement process or contract management.

17.5 The purpose of the information described **in ITT 17.4** above overrides any claims to confidentiality which a tenderer may have. There can be no circumstances in which it would be justified for a tenderer to keep information relating to its ownership and control confidential where it is tendering to undertake public sector work and receive public sector funds. Thus, confidentiality will not be accepted by the Procuring Entity as a justification for a Tenderer's failure to disclose, or failure to provide required information on its ownership and control.

17.6 The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to owner ship and control which in formation on any changes to the information which was provided by the tenderer under ITT 6.4. The obligations to require this information shall continue for the duration of the procurement process and contract performance and after completion of the contract, if any change to the information previously provided may reveal a conflict of interest in relation to the award or management of the contract.

17.7 All information provided by the tenderer pursuant to these requirements must be complete, current and accurate as at the date of provision to the Procuring Entity. In submitting the information required pursuant to these requirements, the Tenderer shall warrant that the information submitted is complete, current and accurate as at the date of submission to the Procuring Entity.

17.8 If a tenderer fails to submit the information required by these requirements, its tender will be rejected. Similarly, if the Procuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.

17.9 If information submitted by a tenderer pursuant to these requirements, or obtained by the Procuring Entity (whether through its own enquiries, through notification by the public or otherwise), shows any conflict of interest which could materially and improperly benefit the tenderer in relation to the procurement or contract management process, then:

17.9.1 If the procurement process is still ongoing, the tenderer will be dis qualified from the procurement process,

17.9.2 if the contract has been awarded to that tenderer, the contract award will be set as if depending theoutcome of (iii),

17.9.3 the tenderer will be referred to the relevant law enforcement authorities for investigation of whether the tenderer or any other person shave committed any criminal offence.

17.10 If a tenderer submits information pursuant to these requirements that is incomplete, inaccurate or out-of-date, or attempts to obstruct the verification process, then the consequences ITT 17.8 will ensue unless the tenderer can show to the reasonable satisfaction of the Procuring Entity that any such act was not material, or was due to genuine error which was not attributable to the intentional act, negligence or recklessness of

the tender.

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). At ender 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.

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.

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

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

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

a) if a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender, or any extension there to provided by the Tenderer; or
b) if the successful Tenderer fails to: -
i) sign the Contract in accordance with ITT47; or

ii) furnish a Performance Security and if required in the TDS, and any other documents required in the TDS.

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

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

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

20.0 Format and Signing of Tender

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

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

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

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

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

D. SUBMISSION AND OPENING OF TENDERS

21.0 Sealing and Marking of Tenders

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

21.1.1 in an envelope or package or container marked "ORIGINAL", all documents comprising the Tender, as described in ITT 11; and

21.1.2 in a envelope or package or container marked "COPIES", all required copies of the Tender; and

21.1.3 if alternative Tenders are permitted in accordance with ITT 13, and if relevant:

21.1.3.1 in an envelope or package or container marked "ORIGINAL –ALTERNATIVE TENDER", the alternative Tender; and

21.1.3.2 in the envelope or package or container marked "COPIES- ALTERNATIVE TENDER", all required copies of the alternative Tender.

The inner envelopes or packages or containers shall:

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

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

22.0 Deadline for Submission of Tenders

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

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

23.0 Late Tenders

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

24.0 Withdrawal, Substitution, and Modification of Tenders

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

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

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

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

25.0 Tender Opening

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

25.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelopes with the corresponding Tender shall not be opened but returned to the Tenderer. No Tender withdrawal shall be

permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Tender opening.

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

25.4 Next, envelopes marked "MODIFICATION" shall be opened and read out with the corresponding Tender. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorizationtorequestthemodificationandisreadoutatTenderopening.

25.5 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Tenderer and whether there is a modification; the total Tender Price, per lot (contract) if applicable, including any discounts and alternative Tenders; the presence or absence of a Tender Security or Tender-Securing Declaration, if required; and any other details as the Procuring Entity may consider appropriate.

25.6 Only Tenders, alternative Tenders and discounts that are opened and read out at Tender opening shall be considered further for evaluation. The Form of Tender and pages of the Bill of Quantities (to be decided on by the tender opening committee) are to be initialed by the members of the tender opening committee attending the opening.

25.7 At the Tender Opening, the Procuring Entity"s hall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 23.1).

25.8 The Procuring Entity shall prepare minutes of the Tender Opening that shall include, as a minimum: -

a) the name of the Tenderer and whether there is a withdrawal, substitution, or modification;
b) the Tender Price, per lot (contract) if applicable, including any discounts;
c) any alternative Tenders;
d) the presence or absence of a Tender Security, if new as required;
e) number of pages of each tender document submitted.

25.9 The Tenderers' representatives who are present shall be requested to sign the minutes. The omission of a Tenderer's signature on the minutes shall not invalidate the contents and effect of the minutes. A copy of the tender opening register shall be distributed to all Tenderers.

E. EVALUATION AND COMPARISON OF TENDERS

26.0 Confidentiality

26.1 Information relating to the evaluation of Tenders and recommendation of contract award shall not be disclosed to Tenderers or any other persons not officially concerned with the Tender process until information on Intention to Award the Contract is transmitted to all Tenderers in accordance with ITT 43.

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

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

27.0 Clarification of Tenders

27.1 To assist in the examination, evaluation, and comparison of the tenders, and qualification of the tenderers,

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

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

28.0 Deviations, Reservations, and Omissions

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

28.1.1 *"Deviation"* is a departure from the requirements specified in the tender document;

28.1.2 *"Reservation"* is the setting of limiting conditions or withholding from

28.1.3 complete acceptance of the requirements specified in the tender document; and

28.1.4 *"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:

29.2.1 Affect in any substantial way the scope, quality, or performance of the Works specified in the Contract;

29.2.2 limit in any substantial way, inconsistent with the tender document, the Procuring Entity's rights or the tenderer's obligations under the proposed contract;

29.2.3 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

31.0 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.

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

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

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

32.0 Conversion to Single Currency

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

33.0 Margin of Preference and Reservations

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

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

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

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

34.0 Nominated Subcontractors

34.1 Unless otherwise stated in the **TDS,** the Procuring Entity does not intend to execute any specific elements of the Works by subcontractors selected/nominated by the Procuring Entity. 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.

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

34.3 Domestic subcontractor's qualifications shall not be used by the Tenderer to qualify for the Works unless their specialized parts of the Works were previously designated so by the Procuring Entity in

the **TDS** as can be met by subcontractors referred to hereafter as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractors proposed by the Tenderer may be added to the qualifications of the Tenderer.

35.0 Evaluation of Tenders

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

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

a) Price adjustment in accordance with ITT 31.1 (iii); excluding provisional sums and contingencies, if any, but including Day work 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 non-conformities in accordance with ITT 30.3; and

e) any additional evaluation factors specified in the **TDS** and Section III, Evaluation and Qualification Criteria.

35.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be considered in Tender evaluation.

35.4 Where the tender involves multiple lots or contracts, the tenderer will be allowed to tender for one or more lots (contracts). Each lot or contract will be evaluated in accordance with ITT 35.2. The methodology to determine the lowest evaluated tenderer or tenderers base done lot (contract) or based on a combination of lots (contracts), will be specified in Section III, Evaluation and Qualification Criteria. In the case of multiple lots or contracts, tenderer will be required to prepare the Eligibility and Qualification Criteria Form for each Lot.

36.0 Comparison of tenders

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

37.0 Abnormally low tenders and abnormally high tenders

Abnormally Low Tenders

37.1 An Abnormally Low Tender is one where the Tender price, in combination with other elements of the Tender, appears so low that it raises material concerns as to the capability of the Tenderer in regard to the Tenderer's ability to perform the Contract for the offered Tender Price or that genuine competition between Tenderers is compromised.

37.2 In the event of identification of a potentially Abnormally Low Tender, the Procuring Entity shall seek written clarifications from the Tenderer, including detailed price analyses of its Tender price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Tender document.

37.3 After evaluation of the price analyses, if the Procuring Entity determines that the Tenderer has failed to demonstrate its capability to perform the Contract for the offered Tender Price, the Procuring Entity shall reject the Tender.

Abnormally high tenders

37.4 Abnormally high tender price is one where the tender price, in combination with other constituent

elements of the Tender, appears unreasonably too high to the extent that the Procuring Entity is concerned that it (the Procuring Entity) may not be getting value for money or it may be paying too high a price for the contract compared with market prices or that genuine competition between Tenderers is compromised.

37.5 In case of a nab normally high price, the Procuring Entity shall make a survey of the market prices, check if the estimated cost of the contract is correct and review the Tender Documents to check if the specifications, scope of work and conditions of contract are contributory to the abnormally high tenders. The Procuring Entity may also seek written clarification from the tenderer on the reason for the high tender price. The Procuring Entity shall proceed as follows:

37.5.1 If the tender price is abnormally high based on wrong estimated cost of the contract, the Procuring Entity may accept or not a accept the tender depending on the Procuring Entity's budget considerations.

37.5.2 If specifications, scope of work and/or conditions of contract are contributory to the abnormally high tender prices, the Procuring Entity shall reject all tenders and may retender for the contract based on revised estimates, specifications, scope of work and conditions of contract, as the case may be.

37.6 If the Procuring Entity determines that the Tender Price is abnormally too high because genuine competition between tenderers is compromised (*often due to collusion, corruption, or other manipulations*), the Procuring Entity shall reject all Tenders and shall institute or cause competent Government Agencies to institute an investigation on the cause of the compromise, before retendering.

38.0 Unbalanced and/ or front-loaded tenders.

38.1 If in the Procuring Entity's opinion, the Tender that is evaluated as the lowest evaluated price is seriously unbalanced and/or frontloaded, the Procuring Entity may require the Tenderer to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the tender prices with the scope of works, proposed methodology, schedule and any other requirements of the Tender document.

38.2 After the evaluation of the information and detailed price analyses presented by the Tenderer, the Procuring Entity may as appropriate:

38.2.1 accept the Tender;

38.2.2 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;

38.2.3 agree on a payment mode that eliminates the inherent risk of the Procuring Entity paying too much for undelivered works;

38.2.4 reject the Tender,

39.0 Qualifications of the tenderer

39.1 The Procuring Entity shall determine to its satisfaction whether the eligible Tenderer that is selected as having submitted the lowest evaluated cost and substantially responsive Tender, meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.

39.2 The determination shall be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to ITT 17. The determination shall not take into consideration the qualifications of other firms such as the Tenderer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Sub-contractors if permitted in the Tender document), or any other firm(s) different from the Tenderer.

39.3 An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in disqualification of the Tender, in which event the Procuring Entity shall proceed to the Tenderer who offers a substantially responsive Tender with the next lowest evaluated price to make a similar determination of that Tenderer's qualifications to perform satisfactorily.

40.0 Lowest evaluated tender

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

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

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

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

F. AWARD OF CONTRACT

42.0 Award criteria

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

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

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

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

44.0 Stand still Period

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

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

45.0 Debriefing by The Procuring Entity

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

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

46.0 Letter of Award

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

47.0 Signing of Contract

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

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

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

48.0 Performance Security

48.1 Within twenty-one (21) days of the receipt of the Letter of Award from the Procuring Entity, the successful Tenderer shall furnish the Performance Security and, any other documents required in the **TDS**, in accordance with the General Conditions of Contract, subject to ITT 38.2 (b), using the Performance Security and other Forms included in Section X, Contract Forms, or another form acceptable to the Procuring Entity. A foreign institution providing a bank guarantee shall have a correspondent financial institution located in Kenya, unless the Procuring Entity has agreed in writing that a correspondent bank is not required.

48.2 Failure of the successful Tenderer to submit the above-mentioned Performance Security and other documents required in the **TDS** or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security. In that event the Procuring Entity may award the Contract to the Tenderer offering the next Best Evaluated Tender.

48.3 Performance security shall not be required for contracts estimated to cost less than the amount specified in the Regulations.

49.0 Publication of Procurement Contract

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

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

50.0 Procurement related Complaint

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

SECTION II - TENDER DATA SHEET (TDS)

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

A. GENERAL	
ITT 1.1	The name of the Contract is : **MINA/MUK/T/1/2023-2024 FOR PROPOSED ASSISTANT COUNTY COMMISSIONER"S OFFICE- MUKURWE-INI SUBCOUNTY, GAKINDU DIVISION** The reference number of the contract is**:** ---------- The number and identification of Lots (contracts) comprising this tender are: ***Not applicable***
ITT 2.3	The information made available on competing firms is as follows: _____
ITT 2.4	The firms that provided consultancy services for the contract being tendered for are: **DEPARTMENT FOR PUBLIC WORKS, NYERI**
ITT 3.1	Joint ventures (JVs) tendering is **not applicable** for this tender
B. Contents of Tender Document	
ITT 7.1	***(i)*** The Tenderer will submit any request for clarifications in writing at the Address: ***As indicated in the tender advertisement*** To reach the Procuring Entity not later than ***as indicated in the tender advertisement*** (ii) The Procuring Entity shall publish its response at the website ***as indicated in the tender advertisement***
ITT 7.2	(A) A pre-arranged pretender site visit *[insert "shall" or "shall not"]* take place at the following date, time and place: ***As indicated in the tender advertisement*** Date: _____ Time: _____ Place: _____ (B) Pre-Tender meeting *[insert "shall" or "shall not"]* take place at the following date, time and place: ***As indicated in the tender advertisement*** Date: Time: _____
	Place:

ITT 7.3	The Tenderer will submit any questions in writing, to reach the Procuring Entity not later than ***as indicated in the tender advertisement*** before the meeting.
ITT 7.5	The Procuring Entity's website where Minutes of the pre-Tender meeting and the pre-arranged pretender will be published is: ***as indicated in the tender advertisement***
ITT 9.1	For Clarification of Tender purposes, for obtaining further information and for purchasing tender documents, the Procuring Entity's address is: Name of Procuring Entity: **Mukurwe-ini Subcounty P.O Box 112-10103 Mukurwe-ini** (1) Physical address for hand Courier Delivery to an office or Tender Box (City, Street, Building, Floor Number and Room) ***As indicated in the tender advertisement*** (2) Postal Address **P.O Box 112-10103 Mukurwe-ini** (3) Insert name, telephone number and e-mail address of the officer to be contacted: ***As indicated in the tender advertisement***
C. Preparation of Tenders	
ITT 11.1 (h)	The Tenderer shall submit ***the required documents*** its Tender: ***(Required documents and evidence of qualification as detailed in the Evaluation criteria in Section III)***
ITT 13.1	Alternative Tenders **shall not** be considered.
ITT 13.2	Alternative times for completion ***shall not be*** 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 ***not allowed.***
ITT 18.1	The Tender validity period shall be ***150***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 ***Not applicable*** *% the local currency portion of the Contract price adjusted to reflect local inflation during the period of extension, and* *(ii) By* ***Not applicable*** *% 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. The type of Tender security shall be *Bank guarantee or insurance bond* in the amount of **Kenya shillings Four Hundred Thousand (KShs.400,000.00)**
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 Tender submission purposes only, the Procuring Entity's address is: (1) Name of Procuring Entity: **Deputy County Commissioner Mukurwe-ini** (2) Postal Address **P.O Box 112-10103 Mukurwe-ini** ***(3)*** Physical address for hand Courier Delivery to an office or Tender Box (City, Street, Building, Floor Number and Room) ***As indicated in tender advertisement*** (4) Date and time for submission of Tenders: ***As indicated in tender advertisement*** (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: ***As indicated in the tender advertisement*** (1) Name of Procuring Entity (2) Physical address for the location (City, Street, Building, Floor Number and Room) (3) State date and time of tender opening.
ITT 25.1	If Tenderers are allowed to submit Tenders electronically, they shall follow the electronic tender submission procedures specified below:
ITT 25.5	The number of representatives of the Procuring Entity to sign is: ***As directed by procuring entity***
E. Evaluation, and Comparison of Tenders	
ITT 30.3	The adjustment shall be based on the ***"average"*** price of the item or component as quoted in other substantially responsive Tenders. If the price of the item or component cannot be derived from the price of other substantially responsive Tenders, the Procuring Entity shall use its best estimate.
ITT 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	Contractor's may propose subcontracting: Maximum percentage of subcontracting permitted is: **10 %** ***of the total contract amount***.
ITT 35.2 (d)	Additional requirements apply. These are detailed in the evaluation criteria in Section III, Evaluation and Qualification Criteria.
ITT 49.1	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: ***As indicated in the tender advertisement*** For the attention: *[insert full name of person receiving complaints}* Title/position: *[insert title/position}* Procuring Entity: *[insert name of Procuring Entity]* Email address: *[insert email address}* 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

General Provisions

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

1. Preliminary Evaluation for Determination of Responsiveness

Tender evaluation will start by examining all tenders to ensure they meet in all respects the eligibility criteria and other requirements in the ITT. Tenders shall be considered responsive in the Preliminary Evaluation by providing the following mandatory documents.

a) Company Incorporation/Registration Certificate

b) Valid CR12 issued within the last **Six (6) Months.**

c) Valid Tax Compliance Certificate

d) Valid National Construction Authority (NCA) Registration Certificate - Buildings Category (NCA 6 and above)

e) Current National Construction Authority (NCA) Annual License- Buildings for 2023/2024

f) Current business permit/license

g) Tender security of Kenya **Shillings Four Hundred Thousand Only (Kshs. 400,000.00)** from a reputable bank or insurance company in the format provided which shallbe valid for **180 days** from the tender closing date.

h) Power of Attorney authorizing the legal representative to sign the tender.

i) Duly filled, signed, and stamped Form of Tender

j) Duly filled, signed, and stamped Confidential Business Questionnaire

k) Duly filled, signed, and stamped Self- Declaration Form SD1 (Public Procurement and Disposal Act Non-Debarment Form

l) Duly filled, signed and stamped Self- Declaration Form SD2 (Anti-corruption pledge)

m) Pre-tender site visit certificate duly signed by the client's representative.

n) Audited accounts for the years 2021, 2022 and 2023 signed by an ICPAK Licensed Auditor on every page *(Must attach copy of a valid practicing license for the auditor*)

o) Bank statements for the last one year certified by the respective bank(s)

p) Two copies of tender document (original and copy)

Tenders that do not pass the Preliminary Examination will be considered as non-responsive and will not be evaluated further.

2. TECHNICAL EVALUATION

To be considered responsive and qualify for financial evaluation, tenders must score a minimum of 70% on the following technical criteria.

ITEM	EVALUATION CRITERION		WEIGHTED %	SCORE (%)
1	**No of Years in Business** a) 1-5 Years b) 6-10 Years c) Over 10 Years		**5** 3 4 5	
2	**Specific Construction Experience** Provide Completion Certificates of Building Projects **(over KShs. 15 million).** The certificate(s) must bear signature of a technical Project Manager a) 1-3 Projects b) 4-6 Projects c) Over 6 Projects		**35** 10 20 30	
3	**Financial Capacity**	**Average Annual Construction Turnover (Main Contractor only)** a) Turnover less than 2 times the total value of the contract sum b) Turnover more than 2 times but less than 3 times the value of the contract sum **c)** Turnover more than 3 times the value of the contract sum.	**12** 4 8 12	
		Adequate Cashflow (Lines of Credit or Liquid Assets a) Up-to KShs.5 million b) More than 5 but less than 10million c) More than KShs. 10 million	**10** 3 5 10	
4	**Key Personnel** (*Provide CVs, Academic Certificates and Testimonials)*	**Director/Owner of Company/Business** **(***Minimum Experience of 5 years)* a) Certificate Training in Construction b) Diploma Training in Construction c) Degree Training in Construction	**5** 2 3 5	

		Site Agent/Manager *(Minimum qualification of Certificate Training in Building and Civil Engineering* 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	**5** 2 3 5	
		Electrical Works Artisan *(Minimum qualification of Electrical Trade-Test Certificate Training)* a) With 1-5 years‟ experience b) With 6-10 years‟ experience c) With over 10 years‟ experience	**3** 1 2 3	
		Mechanical Works Artisan *(Minimum qualification of Mechanical Trade-Test Certificate Training)* a) With 1-5 years‟ experience b) With 6-10 years‟ experience c) With over 10 years‟ experience	**3** 1 2 3	
5	**Plant and Equipment** *(Provide proof of Ownership for the following indicating Model and Capacity or a Lease Agreement with ownership documents from the Lessor)* a) Earthworks Equipment- Excavating and Roller b) Concreting Equipment- Mixer and Vibrator c) Transport Minimum 1 No Lorry or I No Pickup d) Assorted Equipment – Scaff fold ,welding Equipment, Tile cutter Grinder, Compactor		**12** 3 3 3 3	
6	**Program of Works** Provide a Proposed Program of Works		**5**	
7	**Serialization** Bidders to chronologically serialize the tender document		**5**	
	Total		**100**	

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

3. FINANCIAL EVALUATION

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

4. 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 QUALIFICATION FORMS

1. FOREIGN TENDERERS 40%RULE

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

ITEM	Description of work item	Description of location of source	COST IN Kenya Shillings	Comments, If any
A	LOCAL LABOR			
1				
2				
3				
4				
5				
B	SUBCONTRACTS FROM LOCAL SOURCES			
1				
2				
3				
4				
5				
C	LOCAL MATERIALS			
1				
2				
3				
4				
5				
D	USE OF LOCAL PLANT AND EQUIPMENT			
1				
2				
3				
4				
5				
E	ADD ANY OTHER ITEM			
1				
2				
3				
4				
5				
6				
	TOTAL COST OF LOCAL CONTENT			
	PERCENTAGE OF CONTRACT PRICE			

2. FORM EQU: EQUIPMENT

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

	ıent	
Equipment information	Name of manufacturer	Model and power rating
		Year of manufacture
Current	Current location	
	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 Re presentative 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.	ntractor's Representative	
		insert the whole period (start and end dates) for which this position will be engaged]
		[*insert the number of days/week/months/ that has been scheduled for this position*]
		[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
2.	]	
		[*insert the whole period (start and end dates) for which this position will be engaged*]
		[*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.	]	
		[*insert the whole period (start and end dates) for which this position will be engaged*]
		[*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.	]	
	:	
		[*insert the whole period (start and end dates) for which this position will be engaged*]
		[*insert the number of days/week/months/ that has been scheduled for this position*]
		[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
5.	*n sert title]*	
		[*insert the whole period (start and end dates) for which this position will be engaged*]
		[*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]:[*title of position from Form PER-1*]		
Personnel information	Name:	Date of birth:
	Address:	E-mail:
	ıs:	
	Language proficiency: *[language and levels of speaking, reading and writing skills]*	
Details		
Address of Procuring Entity:		
	Telephone:	Contact (manager / personnel officer):
	Fax:	
	Jobtitle:	Years with present Procuring Entity:

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

			Relevant experience
[main project details]	*[role and responsibilities on the project]*	*[time in role]*	*[describe the experience relevant to this position]*

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:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]*
Time commitment:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]*

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

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

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

Signature:

Date: (day month year):

Counter signature of authorized representative of the Tenderer:

Signature:

Date: (day month year):

5. TENDERERS QUALIFICATION WITHOUT PREQUALIFICATION

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

1.1 FORM ELI -

1.1 Tenderer

Information Form

Date:_____ ITT No. and title:_____

Tenderer's name
In case of Joint Venture (JV), name of each member:
Tenderer's actual or intended country of registration: *[indicate country of Constitution]*
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 • Establishing that the Tenderer is not under the supervision of the Procuring Entity 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

1.2 FORM ELI -1.2

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

Date:_____ITT No. and title:_____

Tenderer's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mailaddress: _____
1. Attached are copies of original documents of ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or regi 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 a operation in accordance with commercial law, and that they are not under the supervision of t Procuring Entity, in accordance with ITT 3.5. 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership

1.3 FORM CON –2

Historical Contract Non-Performance, Pending Litigation and Litigation History

Tenderer's Name:_____Date: _____

JV Member's Name_____ITT No. and title: _____

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
☐ Contract non-performance did not occur since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1. ☐ Contract(s) not performed since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1 ☐ Contract(s) withdrawn since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1			
Year	**Non- performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and Kenya Shilling equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Procuring Entity: *[insert full name]* Address of Procuring Entity: *[insert street/city/country]* Reason(s) for nonperformance: *[indicate main reason(s)]*	*[insert amount]*
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
☐ No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3. ☐ Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.			

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

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

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

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

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

5.4 FORM FIN – 3.1:

Financial Situation and Performance

Tenderer's Name:_____Date:_____JV Member's Name_____ITT No. and title:_____

5.4.1. Financial Data

Type of Financial information in_____ (currency)	**Historic information for previous _____*years*, _____ (amount in currency, currency, exchange rate*, USD equivalent)**				
	Year1	Year2	Year 3	Year4	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 affiliatedentity (such as parent company or group member).

b) Be independently audited or certified in accordance with local legislation.

c) Be complete, including all notes to the financial statements.

d) Correspond to accounting periods already completed and audited.

☐ Attached are copies of financial statements[1] 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.*

5.5 FORM FIN – 3.2:

Average Annual Construction Turnover

Tenderer's Name:_____ Date:_____ JV Member's Name_____ ITT No. and title:

Year	Amount Currency	Exchange rate	Kenya Shilling equivalent
[indicate year]	*[insert amount and indicate currency]*		
Average Annual Construction Turnover *			

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

5.6 FORMFIN–3.3:

Financial Resources

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

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

5.7 FORMFIN–3.4:

Current Contract Commitments / Works in Progress

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

No.	Name of Contract	Procuring Entity's Contact Address, Tel,	Valueof 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					

5.5 FORM FIN – 3.2:

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: _____	

5.8 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:				
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				

5.9 FORM EXP - 4.2 (b)

Construction Experience in Key Activities

Tenderer's Name:_____
Date:_____
Tenderer's JV Member Name:_____
Sub-contractor's Name[2] (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			
entification				
	Prime Contractor ☐	☐	☐	☐

Quantity (Volume, number or rate of production, as applicable) performed unde the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)	Actual Quantity Performed (i) x (ii)
Year1			
Year 2			
Year 3			
Year 4			
Procuring Entity's Name:			
Address: Telephone/fax number E-mail:			
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:			

[2] *If applicable*

OTHER FORMS

1. FORM OF TENDER

INSTRUCTIONS TO TENDERERS

i) The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address.

ii) All italicized text is to help Tenderer in preparing this form.

iii) Tenderer must complete and sign CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION OF THE TENDERER attached to this Form of Tender.

iv) The Form of Tender shall include the following Forms duly completed and signed by the Tenderer.

- *Tenderer's Eligibility- Confidential Business Questionnaire*
- *Certificate of Independent Tender Determination*
- *Self-Declaration of the Tenderer*

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 there in for the sum[3] of Kenya Shillings [[*Amount in figures*]_____Kenya Shillings *[amount in words*]_____

   The above amount includes foreign currency[4] amount(s) of [*state figure or a percentage and currency*] [figures]
   _____[words]
   _____The percentage or amount quoted above does not include provisional sums, and only allows not more than two foreign currencies.

2. We under-take, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Architect notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Special Conditions of Contract.

3. We agree to adhere by this tender until_____*[Insert date]*, and it shall remain binding upon us and may be accepted at any time before that date.

4. We understand that you are not bound to accept the lowest or any tender you may receive.

5. We, the under signed, further declare that:

   i) No reservations: We have examined and have no reservations to the tender document, including Addenda issued in accordance with ITT 28;

   ii) Eligibility: We meet the eligibility requirements and have no conflict of interest in accordance with

ITT 3 and 4;

iii) Tender - Securing Declaration: We have not been suspended nor declared ineligible by the Procuring Entity based on execution of a Tender-Securing or Proposal-Securing Declaration in the Procuring Entity's Country in accordance with ITT 19.8;

iv) Conformity: We offer to execute in conformity with the tendering documents and in accordance with the implementation and completion specified in the construction schedule, the following Works: *[insert a brief description of the Works];*

v) Tender Price: The total price of our Tender, excluding any discounts offered in item 1 above is: *[Insert one of the options below as appropriate]*

vi Option 1, in case of one lot: Total price is: *[insert the total price of the Tender in words and figures,indicating the various amounts and the respective currencies*]; or

Option2, in case of multiple lots:

(a) Total price of each lot [*insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies*]; and

(b) Total price of all lots (sum of all lots) [*insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies*];

vii) Discounts: The discounts offered and the methodology for their application are:

viii) The discounts offered are: [*Specify in detail each discount offered.*]

ix) The exact method of calculations to determine the net price after application of discounts is shown below: [*Specify in detail the method that shall be used to apply the discounts*];

x) Tender Validity Period: Our Tender shall be valid for the period specified in TDS 18.1 (as amended, if applicable) from the date fixed for the Tender submission deadline specified in TDS 22.1 (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

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

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

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

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

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

the amount and currency of each such commission or gratuity].

Name of Recipient	Address	Reason	Amount

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

[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.*

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

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

xviii) Fraud and Corruption: We 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) We, the Tenderer, have completed fully and signed the following Forms as part of our Tender:

a) Tenderer's Eligibility; Confidential Business Questionnaire - to establish we are no tin any conflict to interest.

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

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

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

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

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

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

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

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

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

Date signed_____day of_____,_____

Notes
** In the case of the Tender submitted by joint venture specify the name of the Joint Venture as Tenderer.*
***Person signing the Tender shall have the power of attorney given by the Tenderer to be attached with the Tender.*

2. TENDERER'S ELIGIBILITY-CONFIDENTIAL BUSINESS QUESTIONNAIRE

Instruction to Tenderer

Tender is in structed 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 (*postal and physical addresses, email, and telephone number*) 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 (*postal and physical addresses, email, and telephone number*) 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			

(ii) Conflict of interest disclosure

	Type of Conflict	Disclosure YES ORNO	If YES provide details of the relationship with Tenderer
1	Tenderer is directly or indirectly controls, is controlled by or is under common control with another tenderer.		
2	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 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)*

3. 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 come first, unless otherwise required by l aw or as specifically disclosed pursuant to paragraph (5)(b) above.

Name

_____

Title

_____

Date

_____

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

4. 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

5. **FORM SD2**

SELF DECLARATION THAT THE PERSON/TENDERER WILL NOT ENGAGE IN ANYCORRUPT OR FRAUDULENT PRACTICE.

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

1. THAT I am the Chief Executive/Managing Director/Principal Officer/Director of ……..... (insert name of the Company) who is a Bidder in respect of **Tender No.....**for …… *(insert tender title/description)* for …… *(insert name of the Procuring entity)* and duly authorized and competent to make this statement.

2. THAT therefore said Bidder, its servants and/or agents/subcontractors will not engage in any corrupt or fraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ……. *(insert name of the Procuring entity)* which is the procuring entity.

3. THAT the aforesaid Bidder, its servants and/or agents /subcontractors have not offered any inducement to any member of the Board, Management, Staff and/or employees and/or agents of …..... *(name of the procuring entity).*

4. THAT the aforesaid Bidder will not engage /has not engaged in any corrosive practice with other bidders participating in the subject tender

5. THAT what is deponed to here in above is true to the best of my knowledge information and belief.

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

Bidder's Official Stamp

6. 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…….....

5. 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 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 in to, take part in any decision relating to the procurement or contract; and

   c) shall not be a subcontract 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 is representation, 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 forfraudulent and collusive practices as follows:

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

c) Rejects a proposal for award[1] of a contract if PPRA determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

d) Pursuant to the Kenya's above stated Acts and Regulations, may recommend to appropriate authority(ies) for sanctioning and debarment of a firm or individual, as applicable under the Acts and Regulations;

e) Requires that a clause be included in Tender documents and Request for Proposal documents requiring(i) Tenderers (applicants/proposers), Consultants, Contractors, and Suppliers, and their Sub-contractors, Sub-consultants, Service providers, Suppliers, Agents personnel, permit the PPRA or any other appropriate authority appointed by Government of Kenya to inspect[2] all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the PPRA or any other appropriate authority appointed by Government of Kenya; and

f) Pursuant to Section 62 of the above Act, requires Applicants/Tenderers to submit along with their Applications/Tenders/Proposals a "Self-Declaration Form" as included in the procurement document declaring that they and all parties involved in the procurement process and contract execution have not engaged/will not engage in any corrupt or fraudulent practices.

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[1] *For the avoidance of doubt, a party's in eligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and tendering, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer orsupplier, or nominatedservice provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.*

[2] *Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Investigating Authority or persons appointed by the Procuring Entity to address specific matters related to investigations/audits, such has 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 there of as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.*

6. FORM OF TENDER SECURITY-DEMAND BANK GUARANTEE

Beneficiary:_____ **Request for TendersNo:**_____ **Date:**_____

TENDER GUARANTEE No.:_____

Guarantor: _____

1. We have been informed that_____(here in after called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here in after called" the Tender") for the execution of_____under Request for Tenders No. (“the ITT”).

2. Furthermore, we understand that, according to the Beneficiary's conditions, Tenders must be supported by a Tender guarantee.

3. At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of__(_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Tender during the period of Tender validity set forth in the Applicant's Letter of Tender (“the Tender Validity Period”), or any extension thereto provided by the Applicant; or

b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Periodor any extension there to be 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)]

7. FORM OF TENDER SECURITY (TENDER BOND)

[The Surety shall fill in this Tender Bond Form in accordance with the

instructions indicated.] BOND NO._____

1. BY THIS BOND *[name of tenderer]* as Principal (hereinafter called "the Principal"), and *[name, legal title and address of surety],***authorized to transact business in** *[name of country of Purchaser],* as Surety (hereinafter called "the Surety"), are held and firmly bound unto *[name of Purchaser]* as Oblige (hereinafter called "the Purchaser") in the sum of *[amount of Bond][amount in words],*for the payment of which sum well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and as signs, jointly and severally, firmly by these presents.

2. WHERE AS the Principal has submitted or will submit a written Tender to the Purchaser dated theday of
_____, 20, for the supply of *[name of Contract]* (herein after called the "Tender").

3. NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:

   a) Has withdrawn its Tender during the period of Tender validity set forth in the Principal's Letter of Tender ("the Tender Validity Period"), or any extension there to provide by the Principal; or

   b) Having been notified of the acceptance of its Tender by the Purchaser during the Tender Validity Period or any extension there to provide by the principal;(i) failed to execute the Contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to tenderers ("ITT") of the Purchaser's Tendering document.

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

4. The Surety here by agrees that its obligation will remain in full force and effect up to and including the date 30 days after the date of expiration of the Tender Validity Period set forth in the Principal's Letter of Tender or any extension thereto provided by the principal.

5. IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this day of_____20.

Principal: Surety:_____

_____
Corporate Seal *(where appropriate)*

_____ _____
(Signature) *(Signature)*
(Printed name and title) *(Printed name and title)*

8. 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

9. Appendix to Tender

Schedule of Currency requirements

Summary of currencies of the Tender for_____*[insert name of Section of the Works]*

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

PART II - THE CONDITIONS OF CONTRACT AND CONTRACT

SECTION V - GENERAL CONDITIONS OF CONTRACT (GCC)

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 thereafter 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 labor 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 Clause19 [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

1.3.1 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:
a) In writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Special Conditions of Contract; and
b) delivered, sent, or transmitted to the address of or the recipient's communications as stated in the Special Conditions of Contract. However:

i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and
ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

1.3.2 Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Engineer, a copy shall be sent to the Architect or the other Party, as the case may be.

1.4 Law and Language

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

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

1.5 Priority of Documents

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

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

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

1.6 Contract Agreement

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

1.7 Assignment

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

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

1.8 Care and Supply of Documents

1.8.1 The Specifications and Drawings shall be in the custody and care of the Procuring Entity. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawings and Bills of Quantities shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.

1.8.2 Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Procuring Entity. Unless otherwise stated in the Contract, the Contractor shall supply to the Architect two copies of each of the Contractor's Documents.

1.8.3 The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification,

the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Procuring Entity's Personnel shall have the right of access to all these documents at all reasonable times.

1.8.4 If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.

1.9 Timely provision of Drawings or Instructions

1.9.1 The Contractor shall give notice to the Architect whenever the Works are likely to be delayed or disrupted if any necessary drawing or instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary drawing or instruction, details of why and by when it should be issued, and the nature and amount of the delay or disruption likely to be suffered if it is late.

1.9.2 If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Architect to issue the notified drawing or instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any other associated costs accrued, which shall be included in the Contract Price.

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

1.9.4 However, if and to the extent that the Architect failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, or costs accrued.

1.10 Procuring Entity's Use of Contractor's Documents

1.10.1 As agreed between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.

1.10.2 The Contractor shall be deemed (by signing the Contract) to give to the Procuring Entity a non-terminable transferable non-exclusive royalty-free license to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This license shall:

a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,
b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and
c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.

1.10.3 The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Procuring Entity for purposes other than those permitted under Sub-Clause 1.10.2.

1.11 Contractor's Use of Procuring Entity's Documents

As agreed between the Parties, the Procuring Entity shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Procuring Entity. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Procuring Entity's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

1.12 Confidential Details

1.12.1 The Contractor's and the Procuring Entity's Personnel shall ensure confidentiality at all times. The confidentiality shall survive termination or completion of the contract. They shall disclose all such confidential and other information as may be reasonably required in order to verify compliance with the Contract and allow its proper implementation.

1.12.2 The Contractor's and the Procuring Entity's Personnel shall also treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.

1.13 Compliance with Laws

The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Special Conditions of Contract:

a) The Procuring Entity shall have obtained (or shall obtain) the planning, zoning, building permit or similar permission for the Permanent Works, and any other permissions described in the Specificationsas 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 ofthe Procuring Entity's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of in eligibility pursuant to the Procuring Entity's prevailing sanctions procedures).

2. THE PROCURING ENTITY

2.1 Right of Access to the Site

21.1 The Procuring Entity shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the **Special Conditions of Contract.** The right and possession may not be exclusive to the Contractor. If, under the Contract, the Procuring Entity is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Procuring Entity shall do so in the time and manner stated in the Specification. However, the Procuring Entity may withhold any such right or possession until the Performance Security has been received.

21.2 If no such time is stated in the Special Conditions of Contract, the Procuring Entity shall give the Contractor right of access to, and possession of, the Site within such times as required to enable the Contractor to proceed without disruption in accordance with the program submitted under Sub-Clause 8.3 [Program].

21.3 If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Procuring Entity to give any such right or possession within such time, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

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

21.5 However, if and to the extent that the Procuring Entity's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

1.2 Permits, Licenses or Approvals

1.2.1 The Procuring Entity shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain properly:

a) Copies of the Laws of Kenya which are relevant to the Contract but are not readily available, and

b) any permits, licenses or approvals required by the Laws of Kenya:

i) which the Contractor is required to obtain under Sub-Clause 1.13 [Compliance with Laws],

ii) for the delivery of Goods, including clearance through customs, and

iii) for the export of Contractor's Equipment when it is removed from the Site.

1.3 Procuring Entity's Personnel

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

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

b) take actions similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of Sub-Clause 4.8 [Safety Procedures] and under Sub-Clause 4.18 [Protection of the Environment].

1.4 Procuring Entity's Financial Arrangements

The Procuring Entity shall make and maintain all necessary financial arrangements which will enable the Procuring Entity to pay the Contract Price punctually (as estimated at that time) in accordance with Clause14 [Contract Price and Payment].

3. THE ENGINEER

3.1 Architect Duties and Authority

1.4.1 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.**

1.4.2 The Architect shall have no authority to amend the Contract.

1.4.3 The Architect May exercise the authority attributable to the Architect as specified in or necessarily to be implied from the Contract. If the Architects required to obtain the approval of the Procuring Entity before exercising a specified authority, the requirements shall be as stated in the S**pecial Conditions of Contract**. The Procuring Entity shall promptly inform the Contractor of any change to the authority attributed to the Engineer.

1.4.4 However, whenever the Architect exercises a specified authority for which the Procuring Entity's approvals required, then (for the purposes of the Contract) the contractor shall require the Architect to provide evidence of such approval before complying with the instruction.

1.4.5 Except as otherwise stated in these Conditions:

a) Whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Architect shall be deemed to act for the Procuring Entity.

b) the Architect has no authority to relieve either Party of any duties, obligations, or responsibilities under the Contract.

c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Architect (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies, and non-compliances; and

d) any act by the Architect in response to a Contractor's request shall be notified in writing to the Contractor within 14 days of receipt.

1.4.6 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-Clause13.4: Specifying the amount payable in each of the applicable three currencies.

1.4.7 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.

1.5 Delegation by the Engineer

1.5.1 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].

1.5.2 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.

1.6 Instructions of the Engineer

1.6.1 The Architect may issue to the Contractor (at any time) 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.

1.6.2 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 tor 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).

1.7 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.

1.8 Determinations

1.8.1 Whenever these Conditions provide that the Architect shall proceed in accordance with this Sub-Clause3.5 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 agree mentor 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

1.8.2 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, ands hall remedy any defects in the Works.

1.8.3 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.

1.8.4 All equipment, material, and services to be incorporated in or required for the Works shall have their origin in any eligible source country.

1.8.5 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.

1.8.6 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.

1.8.7 If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Special Conditions:

a) The Contractor shall submit to the Architect the Contractor's Documents for this part in accordance with the procedures specified in the Contract.

b) these Contractor's Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in Sub-Clause 1.4 [Law and Language], and shall include additional information required by the Architect to add to the Drawings for co-ordination of each Party's designs.

c) the Contractor shall be responsible for this part and it shall, when the Works are completed, befit for such purposes for which the part is intended as are specified in the Contract; and

d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the Architect the “as-built” documents and, if applicable, operation and maintenance manuals in accordance with the

Specification and in sufficient detail for the Procuring Entity to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.

1.9 Performance Security

1.9.1 The Contractor shall obtain (at his cost) a Performance Security for proper performance, in the amount stated in the **Special Conditions of Contract** and denominated in the currency (ies) of the Contract or in a freely convertible currency acceptable to the Procuring Entity. If an amount is not stated in the Special Conditions of Contract, this Sub-Clause shall not apply.

1.9.2 The Contractor shall deliver the Performance Security to the Procuring Entity within 30 days after receiving the Notification of Award and shall send a copy to the Engineer. The Performance Security shall be issued by a reputable bank selected by the Contractor and shall be in the form annexed to the Special Conditions, as stipulated by the Procuring Entity in the Special Conditions of Contract, or in another form approved by the Procuring Entity.

1.9.3 The Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 30 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security until the Works have been completed and any defects have been remedied.

1.9.4 The Procuring Entity shall not make a claim under the Performance Security, except for amounts to which the Procuring Entity is entitled under the Contract.

1.9.5 The Procuring Entity shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Procuring Entity was not entitled to make the claim.

1.9.6 The Procuring Entity shall return the Performance Security to the Contractor within 14 days after receiving a copy of the Taking-Over Certificate.

1.9.7 Without limitation to the provisions of the rest of this Sub-Clause, whenever the Architect determines an addition or a reduction to the Contract Price as a result of a change in cost and/ or legislation, or as a result of a Variation, amounting to more than 25 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Architect request promptly increase, or may decrease, as the case may be, the value of the Performance Security in that currency by an equal percentage.

1.10 Contractor's Representative

1.10.1 The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract. The Contractor's Representative's Name and Address shall be provided in the **Special Conditions of Contract.**

1.10.2 Unless the Contractor's Representative **is named in the Contract**, the Contractor shall, prior to the Commencement Date, submit to the Architect for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked in terms of Sub-Clause 6.9 [Contractor's Personnel], or if the appointed person fails to act as Contractor's Representative, the Contractor shall similarly submit the name and particulars of another suitable person for such appointment.

1.10.3 The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's Representative or appoint are placement.

1.10.4 The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Architect prior consent, and the Architect shall be notified accordingly.

1.10.5 The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer].

1.10.6 The Contractor's Representative may delegate any powers, functions and authority to any competent

person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Architect has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

1.10.7 The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreter available during all working hours in a number deemed sufficient by the Engineer.

1.11 Sub-contractors

1.11.1 The Contractor shall not subcontract the whole of the Works. The contractor may however subcontract the works as provided in Clause 34.2.

1.11.2 The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were, he acts or defaults of the Contractor. Unless otherwise stated in the Special Conditions:

a) The Contractor shall not be required to obtain consent to suppliers solely of Materials, or to a subcontract for which the Subcontractor is named in the Contract;
b) The prior consent of the Procuring Entity shall be obtained to other proposed Subcontractors.
c) the Contractor shall give the Procuring Entity not less than 14 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site; and
d) each subcontract shall include provisions which would entitle the Procuring Entity to require the subcontract to be assigned to the Procuring Entity under Sub-Clause 4.5 [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 15.2 [Termination by Procuring Entity].

1.11.3 The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 1.12 [Confidential Details] apply equally to each Subcontractor.

1.11.4 Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from Kenya to be appointed as Subcontractors.

1.12 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.

1.13 Co-operation

1.13.1 The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to:

a) The Procuring Entity's Personnel,
b) Any other contractors employed by the Procuring Entity, and
c) The personnel of any legally constituted public authorities, who may be employed in the execution on or near the Site of any work not included in the Contract.

1.13.2 Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to suffer delays and/or to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor.

1.13.3 If, under the Contract, the Procuring Entity is required to give to the Contractor possession of any

foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Architect in the time and manner stated in the Specification.

1.14 Setting Out of the Works

1.14.1 The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contractor notified by the Engineer. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works.

1.14.2 The Procuring Entity shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.

4.73 If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/ or Cost, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
b) payment of any such costs accrued, which shall be included in the Contract Price.

4.7.4 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this.

4.8 Safety Procedures

The Contractor shall:
a) Comply with all applicable safety regulations,
b) Take care for the safety of all persons entitled to be on the Site,
c) Use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,
d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Procuring Entity's Taking Over], and
e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.

4.9 Quality Assurance

4.9.1 The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Architect shall be entitled to audit any aspect of the system.

4.9.2 Details of all procedures and compliance documents shall be submitted to the Architect for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Engineer, evidence of the prior approval by the Contractor itself shall be apparent on the document itself.

Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

4.10 Site Data

4.10.1 The Procuring Entity shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Procuring Entity's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Procuring Entity shall similarly make available to the Contractor all such data which come into the Procuring Entity's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

4.10.2 To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined

the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

a) The form and nature of the Site, including sub-surface conditions,
b) the hydrological and climatic conditions,
c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,
d) the Laws, procedures and labour practices of Kenya, and
e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

4.11 Sufficiency of the Accepted Contract Amount

4.11.1 The contractor shall be deemed to:

a) Have satisfied itself as to the correctness and sufficiency of the Accepted Contract Amount, and
b) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 [Site Data].

4.11.2 Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any defects.

4.12 Unforeseeable Physical Conditions

4.12.1 In this Sub-Clause, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including 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.

4.14 Avoidance of Interference

4.14.1 The Contractor shall not interfere unnecessarily or improperly with:

a) The convenience of the public, or

b) The access to and use and occupation of all roads and foot paths, irrespective of whether they are public or in the possession of the Procuring Entity or of others.

4.14.2 The Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

4.15 Access Route

4.15.1 The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper use of appropriate vehicles and routes.

4.15.2 Except as otherwise stated in these Conditions:

a) The Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;

b) the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions;

c) the Procuring Entity shall not be responsible for any claims which may arise from the use or otherwise of any access route;

d) the Procuring Entity does not guarantee the suitability or availability of particular access routes; and

e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.

4.16 Transport of Goods

Unless otherwise stated in the Special Conditions:

a) the Contractor shall give the Architect not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;

b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and

c) the Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods and shall negotiate and pay all claims arising from their transport.

4.17 Contractor's Equipment

The Contractor shall be responsible for all Contractor's Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Engineer. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.

4.18 Protection of the Environment

4.18.1 The contractor shall comply with the applicable environmental laws, regulations and policies.

4.18.2 The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

4.18.3 The Contractors hall ensure that emissions, surfaced is charges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

4.19 Electricity, Water and Gas

4.19.1 The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require for his construction activities and to the extent defined in the Specifications, for the tests.

4.19.2 The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas, and other services as may be available on the Site and of which details and prices are given in the Specifications. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed.

4.19.3 The quantities consumed and the amounts due (at these prices) for such services shall be agreed or

determined by the Architect in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Procuring Entity.

4.20 Procuring Entity's Equipment and Free-Issue Materials

4.20.1 The Procuring Entity shall make the Procuring Entity's Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Specification. Unless otherwise stated in the Specification:

a) The Procuring Entity shall be responsible for the Procuring Entity's Equipment, except that

b) the Contractor shall be responsible for each item of Procuring Entity's Equipment whilst any of the Contractor's Personnel is operating it, driving it, directing it or in possession or control of it.

4.20.1 The appropriate quantities and the amounts due (at such stated prices) for the use of Procuring Entity's Equipment shall be agreed or determined by the Architect in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause3.5 [Determinations]. The Contractor shall pay these amounts to the Procuring Entity.

4.20.2 The Procuring Entity shall supply, free of charge, the "free-issue materials" (if any) in accordance with the details stated in the Specification. The Procuring Entity shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them and shall promptly give notice to the Architect of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Procuring Entity shall immediately rectify the notified shortage, defector default.

4.20.3 After this visual inspection, the free-issue materials shall come under the care, custody and control of the Contractor. The Contractor's obligations of inspection, care, custody and control shall not relieve the Procuring Entity of liability for any shortage, defect or default not apparent from a visual inspection.

4.21 Progress Reports

4.21.1 Unless otherwise stated in the Special Conditions, monthly progress reports shall be prepared by the Contractor and submitted to the Architect in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates.

4.21.2 Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works. Each report shall include:

a) charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),

b) photographs showing the status of manufacture and of progress on the Site;

c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:

i) commencement of manufacture,

ii) Contractor's inspections,

iii) tests, and

iv) shipment and arrival at the Site;

d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];

e) copies of quality assurance documents, test results and certificates of Materials;

f) list of notices given under Sub-Clause 2.5 [Procuring Entity's Claims] and notices given under Sub-Clause 20.1 [Contractor's Claims];

g) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and

h) comparison so factual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

4.22 Security of the Site

Unless otherwise stated in the Special Conditions:

a) The Contractor shall be responsible for keeping unauthorized persons off the Site, and

b) authorized persons shall be limited to the Contractor's Personnel and the Procuring Entity's Personnel; and to any other personnel notified to the Contractor, by the Procuring Entity or the Engineer, as authorized personnel of the Procuring Entity's other contractors on the Site.

4.23 Contractor's Operations on Site

4.23.1 The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Architect as additional working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent l and.

4.23.2 During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.

4.23.3 Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfil obligations under the Contract.

4.24 Fossils

4.24.1 All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Procuring Entity. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.

4.24.2 The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub- Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any such Cost, which shall be included in the Contract Price.

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

5. NOMINATED SUBCONTRACTORS

1.15 Definition of "nominated Sub contractor."

In this Contract, "nominated Subcontractor" means a Subcontractor:

a) Who is nominated by the Procuring Entity, or

b) Contractor has nominated as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].

1.16 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].

1.17 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].

1.18 Evidence of Payments

1.18.1 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 refuseto 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

1.19 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.

1.20 Rates of Wages and Conditions of Labor

1.20.1 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.

1.20.2 The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in Kenya in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of Kenya for the time being in force, and the Contractor shall perform such duties in regard to such deductions there of as may be imposed on him by such Laws.

1.21 Persons in the Service of Procuring Entity

The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Procuring Entity's Personnel.

1.22 Labor Laws

The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, employment of children, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights. The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

1.23 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the **Special Conditions of Contract**, unless:

a) Otherwise stated in the Contract,
b) The Architect gives consent, or
c) The work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer, provided that work done outside the normal working hours shall be considered and paid for as overtime.

1.24 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.

1.25 Health and Safety

1.25.1 The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Procuring Entity's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

1.25.2 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 theexecution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

1.25.3 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.

1.25.4 The Contractor shall conduct an awareness program 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.

1.26 Contractor's Superintendence

1.26.1 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 intendance to plan, arrange, direct, manage, inspect and test the work.

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

1.27 Contractor's Personnel

1.27.1 The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Contractors 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.

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

1.28 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.

1.29 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.

1.30 Foreign Personnel

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

1.30.2 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.

1.31 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.

1.32 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.

1.33 Alcoholic Liquor or Drugs

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

1.34 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.

1.35 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.

1.36 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].

1.37 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.

1.38 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 employ mentor retirement, and discipline.

7. PLANT, MATERIALS AND WORKMANSHIP

1.39 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.

1.40 Samples

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

a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and

b) additional samples instructed by the Architect as a Variation.

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

1.41 Inspection

1.41.1 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.

1.41.2 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.

1.41.3 The Contractor shall give notice to the Architect whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Architect shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Architect does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer, uncover the work and there after reinstate and make good, all at the Contractor's cost.

1.42 Testing

1.42.1 This Sub-Clause shall apply to all tests specified in the Contract.

1.42.2 Except as otherwise specified in the Contract, the Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labor, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Engineer, the time and place for the specified testing of any Plant, Materials and other parts of the Works.

1.42.3 The Architect may, under Clause 13 [Variations and Adjustments], vary the location or details of

specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.

1.42.4 The Architect shall give the Contractor not less than 24 hours' notice of the Architect intention to attend the tests. If the Architect does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Engineer, and the tests shall then be deemed to have been made in the Architect presence.

1.42.5 If the Contractor suffers delay and/ or incurs Cost from complying with these instructions or as a result of a delay for which the Procuring Entity is responsible, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

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

1.42.7 The Contractor shall promptly forward to the Architect duly certified reports of the tests. When the specified tests have been passed, the Architect shall endorse the Contractor's test certificate, or issuea 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.

1.43 Rejection

1.43.1 If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Architect may reject the Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract.

1.43.2 If the Architect requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Procuring Entity to incur additional costs, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay these costs to the Procuring Entity.

1.44 Remedial Work

1.44.1 Not with-standing any previous test or certification, the Architect may instruct the Contractor to:

a) Remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,

b) remove and re-execute any other work which is not in accordance with the Contract, and

c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseen able event or otherwise.

1.44.2 The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph (c).

1.44.3 If the Contractor fails to comply with the instruction, the Procuring Entity shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity all costs arising from this failure.

1.44.4 If the contractor repeatedly delivers defective work, the Procuring Entity may consider termination in

accordance with Clause 15.

1.45 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 in corporate 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].

1.46 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

1.47 Commencement of Works

1.47.1 Except as otherwise specified in the Special Conditions of Contract, the Commencement Date shall be the date at which the following precedent condition shave all been fulfilled and the Architect notification recording the agreement of both Parties on such fulfilment and instructing to commence the Work is received by the Contractor:

a) Signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant authorities of Kenya;

b) except if otherwise specified in the Special Conditions of Contract, effective access to and possession of the Site given to the Contractor together with such permission(s) under (a) of Sub-Clause 1.13 [Compliance with Laws] as required for the commencement of the Works.

c) Receipt by the Contractor of the Advance Payment under Sub-Clause 14.2 [Advance Payment] provided that the corresponding bank guarantee has been delivered by the Contractor.

1.47.2 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-Clause1 6.2 [termination by Contractor].

1.47.3 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.

1.48 Time for Completion

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

a) Achieving the passing of the Tests on Completion, and

b) completing all work which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections].

1.49 Program

1.49.1 The Contractor shall submit a detailed time programme to the Architect within1 4 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include:

a) The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing,

b) each of these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),

c) the sequence and timing of inspections and tests specified in the Contract, and

d) a supporting report which includes:

i. a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and

ii. details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

8.3.2 Unless the Engineer, within 14 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Procuring Entity's Personnel shall be entitled to rely upon the programme when planning their activities.

8.3.3 The Contractor shall promptly give notice to the Architect of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works.

8.3.4 If, at any time, the Architect gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contractor to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Architect in accordance with this Sub-Clause.

8.4 Extension of Time for Completion

8.4.1 The Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking Over of the Works and Sections] is or will be delayed by any of the following causes:

a) a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,

b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,

c) exceptionally adverse climatic conditions,

d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or

e) any delay, impediment or prevention caused by or attributable to the Procuring Entity, the Procuring Entity's Personnel, or the Procuring Entity's other contractors.

8.4.2 If the Contractor considers itself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Architect in accordance with Sub-Clause 20.1 [Contractor's Claims]. When determining each extension of time under Sub-Clause 20.1, the Architect shall review previous determinations and may increase, but shall not decrease, the total extension of time.

8.5 Delays Caused by Authorities

If the following conditions apply, namely:

a) The Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in Kenya,

b) These authorities delay or disrupt the Contractor's work, and

c) the delay or disruption was Unforeseeable, then this delay or disruption will be considered as a cause of delay under sub-paragraph (b) of Sub-Clause 8.4 [Extension of Time for Completion].

8.6 Rate of Progress

8.6.1 If, at any time:

a) Actual progress is too slow to complete within the Time for Completion, and/or

b) Progress has fallen (or will fall) behind the current programme under Sub-Clause 8.3 [Programme], other than as a result of a cause listed in Sub-Clause 8.4 [Extension of Time for Completion], then the Architect may instruct the Contractor to submit, under Sub-Clause 8.3 [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.

8.6.2 Unless the Architect notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Procuring Entity to incur additional costs, the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims]pay these costs to the Procuring Entity, in addition to delay damages (if any) under Sub-Clause 8.7 below.

8.6.3 Additional costs of revised methods including acceleration measures, instructed by the Architect to reduce delays resulting from causes listed under Sub-Clause 8.4 [Extension of Time for Completion] shall be paid by the Procuring Entity, without generating, however, any other additional payment benefit to the Contractor.

8.7 Delay Damages

8.7.1 If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion], the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay delay damages to the Procuring Entity for this default. These delay damages shall be the sum stated in the **Special Conditions of Contract**, which shall be paid for everyday which shall elapse between the relevant Time for Completion and the date stated in the

Taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of delay damages (if any) stated in the Special Conditions of Contract.

8.7.2 These delay damages shall be the only damages due from the Contractor for such default, other than in the event of termination under Sub-Clause 15.2 [Termination by Procuring Entity] prior to completion of the Works. These damages shall not relieve the Contractor from his obligation to complete the Works, or from any other duties, obligations or responsibilities which he may have under the Contract.

8.8 Suspension of Work

8.8.1 The Architect may at any time instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.

8.8.2 The Architect may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following Sub-Clauses 8.9, 8.10 and 8.11 shall not apply.

8.9 Consequences of Suspension

8.9.1 If the Contractor suffers delay and/or incurs Cost from complying with the Architect instructions under Sub- Clause 8.8 [Suspension of Work] and/or from resuming the work, the Contractor shall give notice

to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) Payment of any such Cost, which shall be included in the Contract Price.

8.9.2 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause3.5 [Determinations] to agree or determine these matters.

8.9.3 The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with Sub-Clause 8.8 [Suspension of Work].

8.10 Payment for Plant and Materials in Event of Suspension

The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/ or Materials which have not been delivered to Site, if:

a) The work on Plant or delivery of Plant and/ or Materials has been suspended for more than 30 days, and

b) the Contractor has marked the Plant and/or Materials as the Procuring Entity's property in accordance with the Architect instructions.

8.11 Prolonged Suspension

If the suspension under Sub-Clause 8.8 [Suspension of Work] has continued for more than 84 days, the Contractor may request the Architect permission to proceed. If the Architect does not give permission within 30 days after being requested to do so, the Contractor may, by giving notice to the Engineer, treat the suspension as an omission under Clause 13 [Variations and Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause 16.2 [Termination by Contractor].

8.12 Resumption of Work

After the permission or instruction to proceed is given, the Contractor and the Architect shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the suspension after receiving from the Architect an instruction to this effect under Clause 13 [Variations and Adjustments].

9. TESTS ON COMPLETION

9.1 Contractor's Obligations

1.4.9.2 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].

1.4.9.3 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.

1.4.9.4 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.

1.50 Delayed Tests

1.50.1 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.

1.50.2 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.

1.50.3 If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Procuring Entity's Personnel may proceed with the Test sat 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.

1.51 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.

1.52 Failure to Pass Tests on Completion

1.52.1 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-Clause1 1.4 [Failure to Remedy Defects].

10. PROCURING ENTITY'S TAKING OVER

1.53 Taking Over of the Works and Sections

1.53.1 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.

1.53.2 The Contractor may apply by notice to the Architect for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contract or may similarly apply for a Taking-Over Certificate for each Section.

1.53.3 The Architect shall, within 30 days after receiving the Contractor's application:

a) Issue the Taking-Over Certificate to the Contract or, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or

b) reject the application, giving reasons and specifying the work required to be done by the Contractor

to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this Sub-Clause.

1.53.4 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 thel ast day of that period.

1.54 Taking Over of Parts of the Works

1.54.1 The Architect may, at the sole discretion of the Procuring Entity, issue a Taking-Over Certificate for any part of the Permanent Works.

1.54.2 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.

1.54.3 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.

1.54.4 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 Contractor 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.

1.54.5 If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages thereafter 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.

1.55 Interference with Tests on Completion

1.55.1 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.

1.55.2 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.

1.55.3 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.

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

1.56 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

1.57 Completion of Outstanding Work and Remedying Defects

1.57.1 In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable thereafter, 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).

1.57.2 If a defect appears or damage occurs, the Contractor shall be notified accordingly by the Engineer.

1.58 Cost of Remedying Defects

1.58.1 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.

1.58.2 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.

1.59 Extension of Defects Notification Period

1.59.1 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.

1.59.2 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.

1.60 Failure to Remedy Defects

1.60.1 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.

1.60.2 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 Contractor 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.

1.61 Removal of Defective Work

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

1.62 Further Tests

1.62.1 If the work of remedying of any defector damage may affect the performance of the Works, the Architect may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 14 days after the defect or damage is remedied.

1.62.2 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.

1.63 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.

1.64 Contractor to Search

The Contractor shall, if required by the Engineer, search for the cause of any defect on parts of the works that have already accepted, under the direction of the Engineer. Unless the defect is to be remedied at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Cost of the search plus profit shall be agreed or determined by the Architect in accordance with Sub-Clause 3.5 [Determinations] and shall be included in the Contract Price.

1.65 Completion Certificate

1.65.1 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.

1.65.2 The Architect shall issue the Completion Certificate within 30days 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.

1.65.3 Only the Completion Certificate shall be deemed to constitute acceptance of the Works.

1.66 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.

1.67 Clearance of Site

1.67.1 Upon receiving the Completion Certificate, the Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.

1.67.2 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.

1.67.3 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 AN DEVALUATION

1.68 Works to be Measured

1.68.1 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.

1.68.2 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.

1.68.3 If the Contractor fails to attend or send a representative, the measurement made by the Architect shall be accepted as accurate.

1.68.4 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 agreed he records with the Engineer, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate.

1.68.5 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.

1.69 Method of Measurement

Except as otherwise stated in the Contract:

a) Measurement shall be made of the net actual quantity of each item of the Permanent Works, and
b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

1.70 Evaluation

1.70.1 Except as otherwise stated in the Contract, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of work done by evaluating each item of work, applying the measurement agreed or determined in accordance with the above Sub-Clauses 12.1 and 12.2 and the appropriate rate or price for the item.

1.70.2 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.

1.70.3 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.

1.70.4 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 Clause13 [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.

1.70.5 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.

1.70.6 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.

1.70.7 Where the contract price is different from the corrected tender price, in order to ensure the contractor is not paid less or more relative to the contract price (*which would be the tender price*), payment valuation certificates and variation orders on omissions and additions valued based on rates in the Bill of Quantities or schedule of rates in the Tender, will be adjusted by a plus or minus percentage. The percentage already worked out during tender evaluation is worked out as follows: *(corrected tender price– tender price)/ tender price X 100*.

1.71 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

131. Right to Vary

1.71.1 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 in validate the Contract.

1.71.2 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.

1.71.3 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.

1.71.4 The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Architect instructs after obtaining approval of the Procuring Entity.

132. Variation Order Procedure

1321 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.

1322 Disagreement on Adjustment of the Contract Price

If the Contractor and the Architecture unable to agree on the adjustment of the Contract Price, the adjustment shall be determined in accordance with the rates specified in the Bills of Quantities or Schedule of Daywork Prices. If the rates contained in the Bills of Quantities or Dayworks Prices are not directly applicable to the specific work in question, suitable rates shall be established by the Architect reflecting the level of pricing in the Dayworks Prices. Where rates are not contained in the said Prices, the amount shall be such as is in all the circumstances reasonable, reflecting a market price. Due account shall be taken of any over-or under-recovery of overheads by the Contractor in consequence of the variation. The Contractor shall also be entitled to be paid:

a) The cost of any partial execution of the Works rendered useless by any such variation,

b) The cost of making necessary alterations to Plant already manufactured or in the course of manufacture or of any work done that has to be altered in consequence of such a variation,
c) any additional costs incurred by the Contractor by the disruption of the progress of the Works as detailed in the Programme, and
d) the net effect of the Contractor's finance costs, including interest, caused by the variation.

The Architect shall on this basis determine the rates or prices to enable on-account payment to be included in certificates of payment.

13.2.3 Contractor to Proceed

On receipt of a Variation Order, the Contractor shall forth with proceed to carry out the variation and be bound to these Conditions in so doing as if such variation was stated in the Contract. The work shall not be delayed pending the granting of an extension of the Time for Completion or an adjustment to the Contract Price under Sub-Clause31.3.

13.3 Value Engineering

13.3.1 The Contractor may, at any time, submit to the Architect written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Procuring Entity of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Procuring Entity of the completed Works, or
(iv) otherwise be of benefit to the Procuring Entity.

13.3.2 The proposal shall be prepared at the cost of the Contractor and shall include the items listed in Sub-Clause 13.3 [Variation Procedure].

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

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

13.4 Variation Procedure for Value Engineering proposal

13.4.1 If the Architect requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:
a) A description of the proposed work to be performed and a programme for its execution,
b) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 8.3 [Programme] and to the Time for Completion, and
c) the Contractor's proposal for evaluation of the Variation.

13.4.2 The Architect shall, as soon as practicable after receiving such proposal (under Sub-Clause 13.2 [Value Project Engineering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst awaiting a response.

13.4.3 Each instruction to execute a Variation, with any requirements for the recording of Costs, shall be issued by the Architect to the Contractor, who shall acknowledge receipt.

13.4.4 Each Variation shall be evaluated in accordance with Clause 12 [Measurement and Evaluation], unless the Architect instructs or approves otherwise in accordance with this Clause.

13.5 Payment in Applicable Currencies

If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.

13.6 Provisional Sums

13.6.1 Each Provisional Sum shall only be used, in whole or in part, in accordance with the Architect instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Architect shall have instructed. For each Provisional Sum, the Architect May instruct:

a) Work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause 13.3 [Variation Procedure]; and/or

b) Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]) or otherwise; and for which there shall be included in the Contract Price:

i) The actual amounts paid (or due to be paid) by the Contractor, and

ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in **the Special Conditions of Contract** shall be applied.

13.6.2 The Contractor shall, when required by the Engineer, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

13.7 Dayworks

13.7.1 For work of a minor or incidental nature, the Architect may instruct that a Variation shall be executed on a daywork basis. The work shall then be valued in accordance with the Daywork Schedule included in the Contract, and the following procedure shall apply. If a Daywork Schedule is not included in the Contract, this 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 Im/Io

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 **Io**c is the index prevailing 30 days before Bid opening for inputs payable.

NOTE: The sum of the two coefficients A and B should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A, for the non-adjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other nonadjustable components. The sum of the adjustments for each currency are added to the Contract Price.

13.9.4 The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Engineer. Forth is purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table) for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.

13.9.5 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.

13.9.6 Until such time as each current cost index is available, the Architect shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.

13.9.7 If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices there after shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price, whichever is more favorable to the Procuring Entity.

13.9.8 The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or in applicable, as a result of Variations.

14. CONTRACT PRICE AND PAYMENT

1.72 The Contract Price

1.72.1 Unless otherwise stated in the Special Conditions:

a) The value of the payment certificate shall be agreed or determined under Sub-Clause 12.3 [Evaluation] and be subject to adjustments in accordance with the Contract;

b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in Sub-Clause 13.7 [Adjustments for Changes in Legislation];

c) any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities:

i) of the Works which the Contractor is required to execute, or

ii) for the purposes of Clause12 [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.

1.7.2.2 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.

1.7.3 Advance Payment

1.7.3.1 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.**

1.7.3.2 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.

1.7.3.3 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.

1.7.3.4 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.

1.7.3.5 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.

1.7.3.6 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.

1.74 Application for Interim Payment Certificates

1.74.1 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 the report on the progress during this month in accordance with Sub-Clause4.21 [Progress Reports].

1.74.2 The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);

b) any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost];

c) any amount to be deducted for retention, calculated by applying the percentage of retention stated in **the Special Conditions of Contract** to the total of the above amounts, until the amount so retained by the Procuring Entity reaches the limit of Retention Money (if any) stated **in the Special Conditions of Contract**;

d) any amounts to be added for the advance payment and (if more than one instalment) and to be deducted for its repayments in accordance with Sub-Clause 14.2 [Advance Payment];

e) any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause 14.5 [Plant and Materials intended for the Works];

f) any other additions or deductions which may have become due under the Contractor otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]; and

g) the deduction of amounts certified in all previous Payment Certificates.

1.75 Schedule of Payments

1.75.1 If the Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, then unless otherwise stated in this schedule:

a) The instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates];

b) Sub-Clause 14.5 [Plant and Materials intended for the Works] shall not apply; and

c) If these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less or more than that on which this schedule of payments was based, then the Architect may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine revised instalments, which shall take account of the extent to which progress is less or more than that on which the instalments were previously based.

1.75.2 If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.

1.76 Plant and Materials intended for the Works

1.76.1 If this Sub-Clause applies, Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3, (i) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and (ii) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates].

1.76.2 If the lists referred to in sub-paragraphs (b)(i) or (c)(i) below are not included in the Schedules, this Sub-Clause shall not apply.

1.76.3 The Architect shall determine and certify each addition if the following conditions are satisfied:

a) The Contractor has:
   i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and
   (ii) submitted statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;

   and either:

b) the relevant Plant and Materials:
   i) are those listed in the Schedules for payment when shipped,
   ii) have been shipped to Kenya, en-route 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-Clause14.2 [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.

1.76.4 The additional amount to be certified shall be the equivalent of eighty percent (80%) of the Architect determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials.

1.76.5 The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials.

1.77 Issue of Interim Payment Certificates

1.77.1 No amount will be certified or paid until the Procuring Entity has received and approved the Performance Security. Thereafter, the Architect shall, within 30 days after receiving a Statement and supporting documents, deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate which shall state the amount which the Architect fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Architect on the Statement if any.

1.77.2 However, prior to issuing the Taking-Over Certificate for the Works, the Architect shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions)

be less than the minimum amount of Interim Payment Certificates (if any) stated **in the Special Conditions of Contract**. In this event, the Architect shall give notice to the Contractor accordingly.

1.7.7.3 An Interim Payment Certificate shall not be withheld for any other reason, although:

a) if anything supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or

b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Engineer, the value of this work or obligation may be withheld until the work or obligation has been performed.

4.6.4 The Architect may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Architect acceptance, approval, consent or satisfaction.

14.7 Payment

14.7.1 The Procuring Entity shall pay to the Contractor:

a) The advance payment shall be paid within 60 days after signing of the contract by both parties or within 60 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub- Clause 14.2 [Advance Payment], whichever is later;

b) The amount certified in each Interim Payment Certificate within 60 days after the Architect Issues Interim Payment Certificate; and

c) the amount certified in the Final Payment Certificate within 60 days after the Procuring Entity Issues Interim Payment Certificate; or after determination of any disputed amount shown in the Final Statement in accordance with Sub-Clause 16.2 [Termination by Contractor].

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

14.8 Delayed Payment

14.8.1 If the Contractor does not receive payment in accordance with Sub-Clause 14.7 [Payment], the Contractor shall be entitled to receive financing charges (simple interest) monthly on the amount unpaid during the period of delay. This period shall be deemed to commence on the date for payment specified in Sub-Clause 14.7 [Payment], irrespective (in the case of its sub-paragraph (b) of the date on which any Interim Payment Certificate is issued.

14.8.2 These financing charges shall be calculated at the annual rate of three percentage points above the mean rate of the Central Bank in Kenya of the currency of payment, or if not available, the inter-bank offered rate, and shall be paid in such currency.

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

14.9 Payment of Retention Money

14.9.1 When the Taking-Over Certificate has been issued for the Works, the first half of the Retention Money shall be certified by the Architect for payment to the Contractor. If a Taking-Over Certificate is issued for a Section or part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall behalf (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.

14.9.2 Promptly after the latest of the expiry dates of the Defects Liability Periods, the outstanding balance of the Retention Money shall be certified by the Architect for payment to the Contractor. If a Taking-Over Certificate was issued for a Section, a proportion of the second half of the Retention Money shall be certified and paid promptly after the expiry date of the Defects Notification Period for the Section. This proportion shall behalf (50%) of the proportion calculated by dividing the estimated contract value of the Section by the estimated final Contract Price.

14.9.3 However, if any work remains to be executed under Clause 11 [Defects Liability], the Architect shall be entitled to withhold certification of the estimated cost of this work until it has been executed.

14.9.4 When calculating these proportions, no account shall be taken of any adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause13.8 [Adjustments for Changes in Cost].

14.9.5 Unless otherwise stated in the Special Conditions, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be entitled to substitute a Retention Money Security guarantee, in the form annexed to the Special Conditions or in another form approved by the Procuring Entity and issued by a reputable bank or financial institution selected by the Contractor, for the second half of the Retention Money.

14.9.6 The Procuring Entity shall return the Retention Money Security guarantee to the Contractor within 14 days after receiving a copy of the Completion Certificate.

14.10 Statement at Completion

14.10.1 Within 84 days after receiving the Taking-Over Certificate for the Works, the Contractor shall submit to the Architect three copies of a Statement at completion with supporting documents, in accordance with Sub- Clause 14.3 [Application for Interim Payment Certificates], showing:

a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the Works,
b) any further sums which the Contractor considers to be due, and
c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.

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

14.11 Application for Final Payment Certificate

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

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

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

14.11.3 However, if, following discussions between the Architect and the Contractor and any changes to the

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

14.12 Discharge

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

14.13 Issue of Final Payment Certificate

14.13.1 Within 30days 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

1.78 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.

1.79 Termination by Procuring Entity

1.79.1 The Procuring Entity shall be entitled to terminate the Contract if the Contractor breaches the contract based on following circumstances which shall include but not limited to:

a) fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],

b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,

c) without reasonable excuse fails:

i) to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or

ii) to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 30 days after receiving it,

d) subcontracts the major part or whole of the Works or assigns the Contract without the consent of the Procuring Entity,

e) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or

f) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an induce mentor reward:

i) for doing or for bearing to do any action in relation to the Contract, or

ii) for showing or for bearing to show favor or disfavor to any person in relation to the Contract, or

iii) if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such induce mentor reward as is described in this sub-paragraph (f). However, lawful inducements and rewards to Contractor's Personnel shall not entitle

termination, or

g) If the contract or repeatedly fails to remedy delivers defective work,

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

1.79.2 In any of these events or circumstances, the Procuring Entity may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in the case of sub-paragraph (e) or (f) or (g) or (h), the Procuring Entity may by notice terminate the Contract immediately.

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

1.79.4 The Contractor shall then leave the Site and deliver any required Goods, all Contractor's Documents, and other design documents made by or for him, to the Engineer. However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the notice (i) for the assignment of any subcontract, and (ii) for the protection of life or property or for the safety of the Works.

1.79.5 After termination, the Procuring Entity may complete the Works and/ or arrange for any other entities to do so. The Procuring Entity and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor.

1.79.6 The Procuring Entity shall then give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall promptly arrange their removal, at the risk and cost of the Contractor. However, if by this time the Contractor has failed to make a payment due to the Procuring Entity, these items may be sold by the Procuring Entity in order to recover this payment. Any balance of the proceeds shall then be paid to the Contractor.

1.80 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.

1.81 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.

1.82 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].

1.83 Fraud and Corruption

The Contractor shall ensure compliance with the Kenya Government's Anti-Corruption Laws and its prevailing sanctions.

1.84 Corrupt gifts and payments of commission

1.84.1 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.

1.84.2 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

1.85 Contractor's Entitlement to Suspend Work

1.85.1 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.

1.85.2 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].

1.85.3 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.

1.85.4 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.

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

1.87 Termination by Contractor

1.87.1 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-Clause1 4.7 [Payment] within which payment is to be made (except for deductions in accordance with Sub-Clause 2.5 [Procuring Entity's Claims]),

c) the Procuring Entity substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the economic balance of the Contract and/or the ability of the Contractor to perform the Contract,

d) a prolonged suspension affects the whole of the Works as described in Sub-Clause 8.11 [Prolonged Suspension], or

e) the Procuring Entity becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.

f) the Contractor does not receive the Architect instruction recording the agreement of both Parties on the fulfilment of the conditions for the Commencement of Works under Sub-Clause 8.1 [Commencement of Works].

1.87.2 In any of these events or circumstances, the Contractor may, upon giving 14 days' notice to the Procuring Entity, terminate the Contract. However, in the case of sub-paragraph (f) or (g), the Contractor may by notice terminate the Contract immediately.

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

1.88 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.

1.89 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

1.90 Indemnities

1.90.1 The Contractor shall indemnify and hold harmless the Procuring Entity, the Procuring Entity's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

a) Bodily injury, sickness, disease or death, of any person what so ever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, willful actor breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their respective agents, and

b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

1.90.2 The Procuring Entity shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in sub-paragraphs (d)(i), (ii) and (iii) of Sub-Clause 18.3 [Insurance Against Injury to Persons and Damage to Property], unless and to the extent that any such damage or loss is attributable to any negligence, willful actor breach of the Contract by the contractor, the contractor's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

1.91 Contractor's Care of the Works

1.91.1 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.

1.91.2 After responsibility has accordingly passed to the Procuring Entity, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.

1.91.3 If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 17.3 [Procuring Entity's Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.

1.91.4 The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.

1.92 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 radiation 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.

1.93 Consequences of Procuring Entity's Risks

1.93.1 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.

1.93.2 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.

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

1.94 Intellectual and Industrial Property Rights

1.94.1 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.

1.94.2 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.

1.94.3 The Procuring Entity shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:

a) An unavoidable result of the Contractor's compliance with the Contract, or

b) A result of any Works be infused 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.

1.94.4 The Contractor shall indemnify and hold the Procuring Entity harmless again stand from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.

1.94.5 If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct

of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

1.94.6 For operation and maintenance of any plan to reequipment installed, the contractor shall grant a non-exclusive and non-transferable license to the Procuring Entity under the patent, utility models ,or other intellectual rights owned by the contractor or a third party from whom the contract or has received the rights to grant sub-licenses and shall also grant to the Procuring Entity a non-exclusive and non-transferable rights (without the rights to sub-license) to use the know-how and other technical information disclosed to the contract or under the contract. Nothing contained here-in shall be construed as transferring ownership of any patent, utility model, trademark, design, copy right, know-how or other intellectual rights from the contractor or any other third party to the Procuring Entity.

1.95 Limitation of Liability

1.95.1 Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contractor for any in director consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than as specifically provided in Sub-Clause 8.7 [Delay Damages]; Sub-Clause 11.2 [Cost of Remedying Defects]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4(b) [Consequences of Procuring Entity's Risks] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights].

1.95.2 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.

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

1.96 Use of Procuring Entity's Accommodation/Facilities

1.96.1 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).

1.96.2 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

1.97 General Requirements for Insurances

1.97.1 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.

1.97.2 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.

1.97.3 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.

1.97.4 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.

1.97.5 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.

1.97.6 The relevant insuring Party shall, within the respective periods stated in **the Special Conditions of Contract** (calculated from the Commencement Date), submit to the other Party:

a) Evidence that the insurances described in this Clause have been affected, and
b) copies of the policies for the insurances described in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 18.3 [Insurance against Injury to Persons and Damage to Property].

1.97.7 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.

1.97.8 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.

1.97.9 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 at tempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.

1.97.10 If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contractor fails to provide satisfactory evidence and copies of policies in accordance with this Sub- Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.

1.97.11 Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Procuring Entity, under the other terms of the Contractor otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Procuring Entity.

1.97.12 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.

1.97.13 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.

1.97.14 The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to Clause 18) with insurers from any eligible source country.

1.98 Insurance for Works and Contractor's Equipment

1.98.1 The insuring Party shall insure the Works, Plant, Material sand 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.

1.98.2 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]).

1.98.3 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.

1.98.4 Unless otherwise stated in the Special Conditions, insurances under this Sub-Clause:

a) Shal lbe effected and maintained by the Contractor as insuring Party,

b) shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated to the Party actually bearing the costs of rectifying the loss or damage,

c) shall cover all loss and damage from any cause not listed in Sub-Clause 17.3 [Procuring Entity's Risks],

d) shall also cover, to the extent specifically required in the tendering documents of the Contract, loss or damage to a part of the Works which is attributable to the use or occupation by the Procuring Entity of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h)of Sub-Clause 17.3 [Procuring Entity's Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, with deductibles per occurrence of not more than the amount stated **in the Special Conditions** of Contract (if an amount is not so stated, this sub-paragraph (d) shall not apply), and

e) may however exclude loss of, damage to, and reinstatement of:

   i) a part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in sub-paragraph (ii) below),

   ii) apart of the Works which is lost or damaged in-order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship,

   iii) apart of the Works which has been taken over by the Procuring Entity, except to the extent that the Contractor is liable for the loss or damage, and

   iv) Goods while they are not in Kenya, subject to Sub-Clause 14.5 [Plant and Materials intended for the Works].

1.98.5 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].

1.99 Insurance against Injury to Persons and Damage to Property

1.99.1 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.

1.99.2 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.

1.99.3 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.

1.100 Insurance for Contractor's Personnel

1.100.1 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.

1.100.2 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 of the rof the Contractor's Personnel, except that thisinsurance 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.

1.100.3 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

1.101 Definition of Force Majeure

1.101.1 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.

1.101.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, as 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 lockout 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.

1.102 Notice of Force Majeure

1.102.1 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.

1.102.2 The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

1.102.3 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.

1.103 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.

1.104 Consequences of Force Majeure

1.104.1 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- Clause18.2 [Insurance for Works and Contractor's Equipment].

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

1.105 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.

1.106 Optional Termination, Payment and Release

1.106.1 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].

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

a) theamountspayableforanyworkcarriedoutforwhichapriceisstatedintheContract;

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.

1.107 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

1.107.1 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.

1.107.2 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.

1.107.3 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.

1.107.4 The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another 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.

1.107.5 Within 42days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Architect fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/ or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

a) This fully detailed claim shall be considered as interim;

b) The Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/ or amount claimed, and such further particulars as the Architect may reasonably require; and

c) The Contractor shall send a final claim within 30 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.

1.107.6 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.

1.107.7 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.

1.107.8 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.

1.107.9 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.

1.107.10 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.

1.108 Procuring Entity's Claims

1.108.1 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.

1.108.2 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.

1.108.3 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].

1.108.4 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.

1.109 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.

1.110 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 ofthe Works or termination or alleged termination of the Contract, unless the Procuring Entity and the Contractor agree otherwise in writing.

1.111 Arbitration

1.111.1 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.

1.111.2 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.

1.111.3 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.

1.111.4 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 a ward any sums which ought to have been the subject of or included in any certificate.

1.111.5 The Arbitrator shall, without prejudice to the generality of his powers, have powers to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision require mentor notice had been given.

1.111.6 The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Architect from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.

1.111.7 Neither Party shall be limited in the proceedings before the arbitrators to the evidence, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction.

20.5.7 Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, and the Architect shall not be altered by reason of any arbitration being conducted during the progress of the Works.

20.5.8 The terms of the renumeration of each or all the members of Arbitration shall be mutually agreed upon by the Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.

20.6 Arbitration with National Contractors

20.6.1 If the Contract is with national contractors, arbitration proceedings will be conducted in accordance with the Arbitration Laws of Kenya. In case of any claim or dispute, such claim or dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within thirty days of the notice. The dispute shall be referred to the arbitration and final decision of a person to be agreed between the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointed, on the request of the applying party, by the Chairman or Vice Chairman of any of the following professional institutions;

i) Architectural Association of Kenya
ii) Institute of Quantity Surveyors of Kenya
iii) Association of Consulting Engineers of Kenya
iv) Chartered Institute of Arbitrators (Kenya Branch)
v) Institution of Engineers of Kenya

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

20.7 Arbitration with Foreign Contractors

20.7.1 Arbitration with foreign contractors shall be conducted in accordance with the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL); or with proceedings administered by the International Chamber of Commerce (ICC) and conducted under the ICC Rules of Arbitration; by one or more arbitrators appointed in accordance with said arbitration rules.

20.7.2 The place of arbitration shall be a location specified in the **SCC;** and the arbitration shall be conducted in the language for communications defined in Sub-Clause1.4 [Law and Language].

20.8 Alternative Arbitration Proceedings

Alternatively, the Parties may refer the matter to the Nairobi Centre for International Arbitration (NCIA) which offers a neutral venue for the conduct of national and international arbitration with commitment to providing institutional support to the arbitral process.

20.9 Failure to Comply with Arbitrator's Decision

20.9.1 The award of such Arbitrator shall be final and binding up on the parties.

20.9.2 In the even 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.

Part A - Contract Data

Conditions	Sub Clause	Data
Procuring Entity's name and address	Heading	**Deputy County Commissioner, Mukurwe-ini P.O. Box 112-10103 Mukurwe-ini**
Name and Reference No. of the Contract	Heading and 3.1.1	**Proposed Assistant County Commissioner‟s Office at Mukurwe-Ini West** **REF.NO. (As indicated in the tender advert)**
Project Manager‟s Name and Address	Heading and 3.1.1	**County Architect, Public Works Nyeri County**
Contractor‟s Representative Name	4.3.1	To be agreed with the ***Project Manager***
Key Personnel names	16.9.1	To be agreed with the Project Manager
Time for completion	1.1	**40 weeks**
Defects Notification Period	1.1	**24 weeks**
Time for parties to enter into a contract agreement	1.6	Within 30 Days
Commencement date	8.1.1	To be agreed with ***Client/Project Manager***
Time for access to the site	2.1	To be agreed ***Client/Project Manager***
Performance Security	4.2.1	The performance security will be in the form of a **Bank Guarantee** in the amount of **5%** of the accepted Amount in Kenya Shillings
Normal Working Hours	6.5	To be agreed with the **Project Manager**
Delay damages for the Works	8.7 & 14.15 (b)	0.05 % of the Contract price per day
Maximum amount for Delay Damages	8.7	5% of the final contract price

Conditions	Sub Clause	Data

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)	**10%**
Limit of Retention Money	14.3.2 (c)	**10 % of the Contract Amount**
Plant and Materials	14.5(b)(i) 14.5(C)(i)	**Not applicable** **Not applicable**
Minimum Amount of Interim Payment Certificates	14.6	**Not applicable**
Publishing source of commercial interest rates for financial charges in case of delayed payment	14.8	Annual rate of three percentage points (3%) above the mean lending rate of the Central Bank in Kenya of the currency of payment
Maximum total liability of the Contractor to the Procuring Entity	17.6	**As per applicable laws**
Periods for submission of insurance: a. Evidence of insurance. b. Relevant policies	18.1	 14 days 14 days
Maximum number of deductibles for insurance of the Procuring Entity's risks	18.2.4 (d)	***As per applicable laws***
Minimum amount of third-party insurance	18.3	***As per applicable laws***
The place of arbitration	20.7.2	***Agreed between parties***

SECTION VII - CONTRACT FORMS

FORM No. 1 - NOTIFICATION OF INTENTION TO AWARD

FORM No. 2 - NOTIFICATION OF AWARD - LETTER OF ACCEPTANCE FORM No. 3 - CONTRACT AGREEMENT

FORM No. 4 - PERFORMANCE SECURITY [Option 1 - Unconditional Demand Bank Guarantee]

FORM No. 5- PERFORMANCE SECURITY [Option 2– Performance Bond] FORM No. 6 - ADVANCE PAYMENT SECURITY

FORM No. 7 - RETENTION MONEY SECURITY

FORM No 1: NOTIFICATION OF INTENTION TO AWARD OF CONTRACT

This Notification of Award shall be sent to each Tenderer that submitted a Tender and was not successful. Send this Notification to the Tenderer's Authorized Representative named in the Tender Information Form on the format below.

FORMAT

1. For the attention of Tenderer's Authorized Representative

i) Name: *[insert Authorized Representative's name]*

ii) Address: *[insert Authorized Representative's Address]*

iii) Telephone: *[insert Authorized Representative's telephone/fax numbers]*

iv) Email Address: *[insert Authorized Representative's email address]*

[IMPORTANT: insert the date that this Notification is transmitted to Tenderers. The Notification must be sent to all Tenderers simultaneously. This means on the same date and as close to the same time as possible.]

2. Date of transmission: [*email*] on [*date*] (local time)

This Notification is sent by (*Name and designation*) _____

3. Notification of Award

i) Procuring Entity: *[insert the name of the Procuring Entity]*

ii) Project: *[insert name of project]*

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

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

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

4. Request a debriefing in relation to the evaluation of your tender by submitting a Procurement-related Complaint in relation to the decision to award the contracts.

a) The successful tenderers

i) Name of successful Tender _____

ii) Address of the successful Tender _____

_____

iii) Contract price of the successful Tender Kenya Shillings _____(in words)

b) The reasons for your tender being unsuccessful are as follows:

c) Other Tenderers

Names of all Tenderers that submitted a Tender. If the Tender's price was evaluated include the evaluated price as well as the Tender price as read out.

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

(Note a) State NE if not evaluated

5. How to request a debriefing

a) DEADLINE: The dead line to request a debriefing expires at midnight on [*insert date*] (*local time*).

b) You may request a debriefing in relation to the results of the evaluation of your Tender. If you decide to request a debriefing your written request must be made within three (5) Business Days of receipt of this Notification of Intention to Award.

c) Provide the contract name, reference number, name of the Tenderer, contact details; and address the request for debriefing as follows:

i) Attention: [*insert full name of person, if applicable*]

ii) Title/position: [*insert title/position*]

iii) Agency: [*insert name of Procuring Entity*]

iv) Email address: [*insert email address*]

d) If your request for a debriefing is received within the 3 Days deadline, we will provide the debriefing within five (3) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (3) Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.

e) The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.

f) If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Days from the date of publication of the Contract Award Notice.

6. How to make a complaint?

a) Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [*insert date*] (local time).

b) Provide the contract name, reference number, name of the Tenderer, contact details; and address the Procurement-related Complaint as follows:

i) Attention: [*insert full name of person, if applicable*]

ii) Title/position: [*insert title/ position*]

iii) Agency: [*insert name of Procuring Entity*]

iv) Email address: [*insert email address*]

c) At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.

d) Further information: For more information refer to the Public Procurement and Disposals Act 2015 and its Regulations available from the Website www.ppra.go.ke.

You should read these documents before preparing and submitting your complaint.

e) There are four essential requirements:

i) You must be an 'interested party'. In this case, that means a Tenderer who submitted a Tender in this tendering process and is the recipient of a Notification of Intention to Award.

ii) The complaint can only challenge the decision to award the contract.

iii) You must submit the complaint within the period stated above.

iv) You must include, in your complaint, all of the information required to support your complaint.

7. Standstill Period

i) DEADLINE: The Standstill Period is due to end at midnight on [*insert date*] (local time).

ii) The Standstill Period lasts ten (14) Days after the date of transmission of this Notification of Intention to Award.

iii) The Standstill Period may be extended as stated in paragraph Section 5(d) above.

If you have any questions regarding this Notification please do not hesitate to contact us. On behalf of the Procuring Entity:

Signature: _____

Name: _____

Title/position: _____

_____

Telephone: _____

FORM NO 2: LETTER OF AWARD

[letterhead paper of the Procuring Entity]

[date]

To: *[name and address of the Contractor]*

This is to notify you that your Tender dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Accepted Contract Amount *[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Tenderers, is here by accepted by .....*(name of Procuring Entity)*.

You are requested to furnish the Performance Security within in accordance with the Conditions of Contract, using, for that purpose, one of the Performance Security Forms included in Section VIII, Contract Forms, of the Tender Document.

Authorized Signature: .....

Name and Title of Signatory: .....

Name of Procuring Entity: .....

Attachment: *Contract Agreement:* .....

FORM NO 3: CONTRACT AGREEMENT

THIS AGREEMENT made the day of……. 20……., between……. ……...of……. (hereinafter "the Procuring Entity"), of the one part, and_____of _____(hereinafter "the Contractor"), of the other part:

WHEREAS the Procuring Entity desires that the Works known as _____s should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution andcompletion of these Works and the remedying of any defects there in,

The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

   a) The Notification of Award
   b) the Form of Tender
   c) the addenda Nos_____(if any)
   d) the Special Conditions of Contract
   e) the General Conditions of Contract;
   f) the Specifications
   g) the Drawings*;* and
   h) the completed Schedules and any other documents forming part of the contract.

3. In consideration of the payments to be made by the Procuring Entity to the Contractor as specified in this Agreement, the Contractor here by covenants with the Procuring Entity to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring Entity here by covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects there in, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

   INWITNESS where of the parties here to have caused this Agreement to be executed in accordance with the Laws of Kenya on the day, month and year specified above.

   Signed and sealed by_____(for the Procuring Entity)

   Signed and sealed by_____(for the Contractor).

FORM NO. 4 - PERFORMANCE SECURITY
[Option 1 - Unconditional Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary: *[insert name and Address of Procuring Entity]*

Date: _____*[Insert date of issue]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that_____(hereinafter called "the Contractor") has entered into Contract No._____dated_____ _____with (*name of Procuring Entity*)_____(the Procuring Entity as the Beneficiary), for the execution of _____(here in after called "the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

3. At the request of the Contractor, we as Guarantor, here by irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of_(*in words*),[1] such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand it self or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

4. This guarantee shall expire, no later than the……...Day of……,2 .....[2], and any demand for payment under it must be received by us at the office indicated above on or before that date.

5. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

.....

[Name of Authorized Official, signature(s) and seals/stamps]

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

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[1]*The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency of the Contract or a freely convertible currency acceptable to the Beneficiary.*

[2]*Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

FORM No. 5- PERFORMANCE SECURITY

[Option 2– Performance Bond]

*[**Note:** Procuring Entities a readvised to use Performance Security – Unconditional Demand Bank Guarantee instead of Performance Bond due to difficulties involved in calling Bond holder to action]*

[Guarantor letterhead or SWIFT identifier code]

Beneficiary:

[insert name and Address of Procuring Entity*]*

Date: _____*[Insert date of issue]*

PERFORMANCE BOND No.:_____

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. By this Bond_____as Principal (hereinafter called "the Contractor") and_____] as Surety (hereinafter called "the Surety"),are held and firmly bound unto_____] as Oblige (hereinaftercalled "the Procuring Entity") in the amount of_____for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS the Contractor has entered into a written Agreement with the Procuring Entity dated the _____day of_____,20_____, for _____in accordance with the documents, plans, specifications, and amendments there to, which to the extent here in provided for, are by reference made part here of and are here in after referred to as the Contract.

3. NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Procuring Entity to be, in default under the Contract, the Procuring Entity having performed the Procuring Entity's obligations there under, the Surety may promptly remedy the default, or shall promptly:

   a) Complete the Contract in accordance with its terms and conditions; or

   b) Obtain a tender or tenders from qualified tenderers for submission to the Procuring Entity for completing the Contract in accordance with its terms and conditions, and upon determination by the Procuring Entity and the Surety of the lowest responsive Tenderers, arrange for a Contract between such Tenderer, and Procuring Entity and make a variable as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of theContract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "Balance of the Contract Price," as used in this paragraph, shall mean the total amount payable by Procuring Entity to Contractor under the Contract, less the amount properly paid by Procuring Entity to Contractor; or

   c) Pay the Procuring Entity the amount required by Procuring Entity to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

4. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

5. Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing

of the Taking-Over Certificate. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Procuring Entity named here in or the heirs, executors, administrators, successors, and assigns of the Procuring Entity.

6. In testimony whereof, the Contractor has here unto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly at tested by the signature of his legal representative, this day_____of_____20_.

SIGNED ON_____on behalf of_____

By_____in the capacity of_____

In the presence of

_____

SIGNED ON_____on behalf of_____

By_____in the capacity of_____

In the presence of

_____

FORM NO. 6 - ADVANCE PAYMENT SECURITY

[Demand Bank Guarantee]
[Guarantor letterhead]

Beneficiary:_____*[Insert name and Address of*

Procuring Entity*]* **Date:**_____*[Insert date of issue]*

ADVANCE PAYMENT GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: [*Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that_____(hereinafter called "the Contractor") has entered into Contract No._____*dated*_____with the Beneficiary, for the execution of _____ (Hereinafter called" the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum _____(*in words*_____) is to be made against an advance payment guarantee.

3. At the request of the Contractor, we as Guarantor, here by irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (*in words* _____)[1] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:
   a) Has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or
   b) Has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Contractor on its account number_____at_____.

5. The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, or on the_____day of_____,2 ,[2] whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

_____

[Name of Authorized Official, signature(s) and seals/stamps]

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

[1] *The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency of the advance paymen tas specified in the Contract.*

[2] *Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

FORM NO. 7 – RETENTION MONEY SECURITY

[Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary: _____ *[Insert name and Address of* Procuring Entity*]*

Date: _____ *[Insert date of issue]*

Advance payment guarantee no. *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that _____ *[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Contractor") has entered into Contract No. _____ *[insert reference number of the contract]* dated _____ with the Beneficiary, for the execution of _____ *[insert name of contract and brief description of* Works*]* (hereinafter called "the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, the Beneficiary retains moneys upto the limit set forth in the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, and payment of *[*insert the second half of the Retention Money] is to be made against a Retention Money guarantee.

3. At the request of the Contractor, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* _ (*[insert amount in words* _____ *])*[1] upon receipt by us of the Beneficiary's complying demands supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or showgrounds for your demand or the sum specified there in.

4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the second half of the Retention Money as referred to above has been credited to the Contractor on its account number ___ at _____ *[insert name and address of Applicant's bank]*.

5. This guarantee shall expire no later than the.....Day of.....2.....[2], and any demand for payment under it must be received by us at the office indicated above on or before that date.

6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

_____

[Name of Authorized Official, signature(s) and seals/stamps]

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

[1] *The Guarantor shall insert an amount representing the amount of the second half of the Retention Money.*

[2] *Insert a date that is twenty-eight days after the expiry of retention period after the actual completion date of the contract. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guaran*

PART III - WORKS REQUIREMENTS

SECTION VIII – SPECIFICATIONS AND BILLS OF QUANTITIES

A. 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.

A. SITE CLEARANCE

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

B. WHITE ANT-INSECTICIDE TREATMENT

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

C. EXCAVATION

i. The excavations are to be executed to the widths shown on the Drawings, and to the depth below existing ground levels as directed by the Architect in order to obtain satisfactory foundations. If the contractor excavates to any widths or depths greater than those shown on the drawings or as instructed by the Architect, he shall at his own expense fill in such widths or depths of excavation beyond that instructed or shown with concrete to the satisfaction to the Architect.

ii. Level and ram bottoms of all excavations to receive concrete, form steppings if necessary or directed to allow for sloping ground, and well water excavations before pouring concrete.

iii. The contractor shall report to the Architect when secure bottoms to the excavations have been obtained. Any concrete of other work executed before the excavations have been inspected and approved shall, if so directed, be removed and new work substituted after the excavations gave been approved all at the contractor‟s expense.

iv. Excavations made below required levels shall be filled with mass concrete (1:4:8) at the contractor‟s expense.

D. ROCK

(a) Definition

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

(b) Other materials to be taken with normal excavations

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

E. HARDCORE FILLING

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

F. FILLING OBTAINED FROM THE EXCAVATIONS

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

G. MATERIALS FOUND IN THE EXCAVATIONS

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

H. INSECTICIDE / ANTI-TERMITE TREATMENT

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

I. PROTECTION OF PIPES, CABLES ETC.

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

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

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

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

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

J. RATES OF DISPOSAL

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

K. POLYTHENE SHEETING

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

L. GRASSED AREAS

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

PART FOUR - CONCRETE WORK SPECIFICATIONS

CONCRETE WORK

A. BENDING SCHEDULES

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

B. APPROVALS

Well before construction commences the Contractor shall supply to the Engineer for his approval details of his proposed layouts of concreting plant and on- s i t e workshop; details of formwork systems and the

construction devices, e.g., cranes, chutes, scaffolding, which he proposes to use for the structural work. The information is to be sufficiently detailed to enable the Engineer to approve or otherwise.

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

MATERIALS

C. CEMENT

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

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

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

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

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

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

D. AGGREGATES OF CONCRETE

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

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

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

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

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

The Engineer may require that any aggregate be tested for soundness in accordance with ASTM Test C88 - 73 before giving approval to any proposed source of supply. The Engineer may require that any aggregate be tested for potential reactivity in accordance with ASTM Test C289-71.

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

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

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

Stockpiles shall be protected against contamination from any source.

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

E. WATER FOR USE WITH CEMENT

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

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

Water for use in mixing with cement shall neither be hotter than 25 degrees centigrade (77 degrees Fahrenheit) nor colder than 5 degrees centigrade (41 degrees Fahrenheit) at the time of mixing.
11

F. STEEL ROD REINFORCEMENT

Steel rod reinforcement shall consist of:

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

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

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

Where hot rolled high yield deformed bar are to be used the results of bond tests to ASTM 234-71, using concrete of the same quality as that to be used in the works, shall be forwarded to the Engineer.

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

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

G. STEEL FABRIC REINFORCEMENT

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

H. TYING WIRE

Tying wire for fixing reinforcement shall be either:
(a) No. 16 gauge soft annealed iron wire, or
(b) No. 18gauge stainless steel wire.

I. SPACERS

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

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

J. ADMIXTURES

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

K. WALL TIES

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

L. JOINT FILLERS

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

M. JOINT SEALANTS

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

N. HOLLOW CLAY POTS

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

O. WATER STOPS

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

WORKMANSHIP

P. FIXING STEEL REINFORCEMENT

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

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

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

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

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

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

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

(a) Nominal Concrete Cover to Reinforcement

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

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

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

Q. FORMWORK

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

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

1. General Specifications

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

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

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

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

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

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

formwork shall be done under the personal supervision of a competent foreman.

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

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

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

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

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

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

R. CONSTRUCTION, CONTRACTION AND EXPANSION JOINTS

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

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

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

S. CONCRETE MIXES - DESIGNS MIX

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

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

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

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

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

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

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

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

T. CONCRETE MIXES - NOMINAL MIXES

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

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

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

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

U. CONCRETE MIXES - GENERAL

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

For all structural concrete the following representative samples shall be taken and tested in accordance with BS 1881.
One each day on which less than 50 cm of concrete is being poured:

(a) six 150mm cubes - three for test at 7 days and three for test at 28 days; and

(b) two slump tests; or

(c) two compacting factor tests

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

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

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

The cube strength shall be calculated from the maximum load sustained by the cube at failure. The appropriate strength requirements as given in Table I, shall be considered to be satisfied if

(a) None of the strength of the three cubes is below the specified cube strength, or if

(b) The average strength of the three cubes is not less than the specified cube strength

and the difference between the greatest and the least strengths is not more than 20 percent of that average.

V. READY MIXED CONCRETE

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

W. PLACING AND COMPACTING CONCRETE

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

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

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

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

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

X. UNFORMED FINISHES FOR CONCRETE

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

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

Y. CURING AND PROTECTING CONCRETE

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

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

a) Covering with damp hessian canvas sacks or similar absorbent materials kept constantly damp and wholly covering the exposed concrete surface.
b) Covering with an impermeable material raised approximately 50mm over the surface so to prevent loss of moisture
c) An approved membrane curing compound.

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

a) Formwork in close contact with the concrete but kept cool at all times.
b) Direct and continuous application of water preferably in the form of mist so as not to damage the surface.
c) Covering as (a) to (c) above

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

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

A. PRECAST CONCRETE

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

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

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

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

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

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

AB. CONCRETE FOR WATER RETAINING STRUCTURES

Concrete and its constituents for water retaining structures, in addition to the general and particular provisions

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

In addition to the requirements of clause 4.20 concrete for the water retaining structures shall have a maximum cement content of 400 kg/m3.

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

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

Minimum works cube strength at 28 days 15MN/M2

Maximum size of aggregate 40mm
Mix proportions 1 cement:2.5 fine aggregate:
5 course aggregate

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

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

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

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

(a) Precast Concrete

General

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

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

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

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

(b) Precast Concrete Cladding Units

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

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

combined unit.

PART FIVE

WALLING SPECIFICATIONS

MATERIALS

A. CEMENT

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

B. LIME

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

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

C. SAND

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

E STONE

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

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

Where snecked rubble walls are specified; the snecks shall not be less than 100mm square on the exposed face. Stone for masonry shall have a minimum compressive strength of 10 N/mm2. (stone shall not be required to be tested to failure). The density of stone for masonry shall be not less than 230 kg/m3. The drying shrinkage of stone shall not exceed 0.05%.

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

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

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

to ordering the stone.

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

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

The contractor shall provide six samples of stone measuring 150mm x 150mm for testing prior to delivering any stone to site. As work proceeds the contractor shall provide six samples 150 x150 x 150mm for testing from every 300m2 of work. All stone shall be stacked on prepared dry areas free of clinker, ashes and sulphate bearing strata.

F. WALL REINFORCEMENT

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

G. WALL TIES

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

H. DAMP - PROOF COURSES

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

WORKMANSHIP

I. CEMENT MORTAR

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

J. MIXING MORTAR

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

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

K. GENERAL CONSTRUCTION

(a) Setting out

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

(b) Building in Wood Frames

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

(c) Building in Metal windows and doors

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

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

(d) Walls to Receive Plaster & Similar Finishes

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

L. BUILDING WALLING

(a) Laying and Jointing

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

(b) Bonding

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

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

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

(c) Tolerances

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

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

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

(d) Curing

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

(e) Cavities

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

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

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

continuously supported for the depth.

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

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

M. POINTING

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

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

PART SIX

ROOFING & RAIN WATER PIPES SPECIFICATIONS

A. GALVANIZED CORRUGATED IRON SHEETS

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

B. TIMBER ROOF TRUSSES

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

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

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

C. ALUMINIUM FLASHINGS

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

D. PVC RAINWATER PIPES

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

Pipes are to be case into concrete or to be fixed to the structure with PVC holderbats built-in or plugged and screwed at maximum 2 metre centers.

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

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

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

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

PART SEVEN

CARPENTRY & JOINERY SPECIFICATIONS

CARPENTRY & JOINERY

A. GENERALLY

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

MATERIALS

B. QUALITIES OF TIMBER

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

C. INSECT DAMAGE

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

D. SEASONING OF TIMBER

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

E. PREPARATION AND PROTECTION OF TIMBER

(i) All timber necessary for the works is to be purchased immediately the contract is signed, and when delivered is to be open stacked for such further seasoning as may be necessary. Preparation of the timber is to be commenced simultaneously with the commencement of the works generally.

(ii) All timber and assembled woodwork is to be protected from the weather and stored in such a

way as to prevent attack by decay fungi, termites or other insects.

F. PRESSURE IMPREGNATED TIMBER

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

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

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

G. HARDWOOD

All hardwood will comply with the requirement of BS 1186 part 1 BS 4047. It shall show a straight and regular grain throughout.
Hardwood shall be free from wooly texture, soft heart, sap wood, splits, shakes, all evidence of insect of fungi attack and rot and all
faults caused by compression failure. There shall be no waney edges. Hardwood shall be free from knots on exposed faces. Any hardwood showing visible imperfections will be rejected.

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

H. SOFTWOOD

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

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

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

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

I. PLYWOOD

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

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

J. CHIPBOARD

Chipboard shall be medium density wood particle board complying with BS 2604 part 2, produced in factories

by an approved process.

K. BLOCKBOARD

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

L. TIMBER DOORS

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

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

Vision panels where required shall be 150mm wide 900mm deep.
Flush doors shall be obtained from a supplier to be approved by the Architect. Flush doors shall comply with the requirements of BS 459 parts 1,2 and 3. All edges shall be lipped with hardwood tongued into edge of the door.

Fire resistant flush doors are to be constructed in accordance with BS 459 part 3.
The core of solid core flush doors shall be constructed of longitudinal laminations of precision planed timber, butt joined and glued with resin based adhesive under hydraulic pressure, the whole forming a rigid fire resistant raft.

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

M. HARDWOOD VENEERS

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

N. CARPENTRY WORK

(a) All carpentry shall be executed with workmanship of the best quality. Scantlings and board shall be accurately sawn and shall be uniform in width and thickness throughout and shall be as long as possible and practicable in order to eliminate joints

(b) All work shall be left with a swan surface except where specified to be wrot.

(b) All work shall be accurately set out and in strict accordance with the drawings, and shall be framed together and securely fixed in the best possible manner with properly made joints. Provide all braids, nails, screws etc., as necessary and as directed and approved.

(c) Actual dimensions of scantling for carpentry shall not vary from the specified dimensions by
(d) more than +3mm or -1mm. Sizes and thickness of wrot carpentry timber are nominal, that is to say a variation of 3mm from the specified sizes will be allowed from each wrot surface unless the thickness or size id described as finished in which case no variation from the stated thickness or size will be permitted.

O. JOINERY WORK

All joinery work shall be wrot unless otherwise described.

(a) Sizes and thickness of joinery are nominal that is to say a variation of 3mm from the specified sizes will be allowed from each wrot surface unless the thickness or size is described as finished in which case no variation from the stated thickness or size will be permitted.

(b) No joinery to be put in hand until the details have been supplied or approved by the Architect and in all cases the details are to be worked to.

(c) All joinery shall be executed with workmanship of the best quality in strict accordance with the detailed drawings, moulding shall be accurately and truly run on the solid and all work planed, sandpapered and finished to the approval of the Architect. All arrises to be slightly rounded. All framed work shall be cut out, and framed together as soon after the commencement of the building as is practicable but should not be wedged up until the building is ready for fixing the same and any portions that warp, get in winding, develop shakes or other defects shall be replaced with new. In-door frames etc., the heart face of the timber shall be fixed away from the wall. As soon as required for fixing in the building the framing shall be glued together with glue as described and properly wedged or pinned etc., as directed.

(d) All beads, fillets and small members shall be fixed with round or oval braids or nails well punched in and stopped. All larger members shall be fixed with screws, the screws let in and pelletted over with wood pellets to match the grain.

(e) Cups and screws for fixing beads and fillets shall be spaced 150mm apart and 25mm from angles.

(f) All joinery immediately upon delivery to the site is to be sorted and protected from the weather.

(g) All joinery is to be primed before fixing but no work is to be primed until it has been approved by the Architect.

(h) All fixed joinery which is liable to become bruised or damaged in any way, shall be properly cased and protected by the contractor until completion of the work.

(i) When natural finish is specified, the timber in adjacent pieces shall be matched and uniform or symmetrical in colour and grain.

P. SOFTWOOD

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

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

Q. HARDWOODS

Hardwoods are as described.

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

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

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

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

R. PLYWOOD

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

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

S. CHIPBOARD

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

T. BLOCKBOARD

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

U. LAMINATED PLASTIC VENEER

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

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

V. FIXING DOORS AND FRAMES

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

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

Except where indicated doors shall be kept clean for clear polyurethane varnish.
Door frames shall be treated to match doors.
Glazing shall be wired glass 6mm thick with edges wrapped in wash-leather and secured with hardwood glazing bead size 10mm x 15mm mitred at angles secured with brass screws and cups.

W. CONSTRUCTION OF DOORS

a) Flush doors specified as solid construction shall have a 100% solid core of vertical laminate Cedar or equal and approved.
b) Flush doors specified as semi-sold construction shall be constructed with timber stiles and rails, infilled with horizontal intermediate rails spaced equally apart and tenoned into stiles.
c) Unless otherwise specified, doors scheduled to receive a clear or veneered finish shall be lipped on all edges.
d) Where panels over doors are specified, such panels shall be constructed in the same way and with the same materials as the doors above in which they are situated, and the panels shall match the doors in every respect.
e) For doors specified as plywood faced, the plywood shall not be less than 3mm thick, complying with the requirements of BS 1455, WBP type. Face veneers shall be Grade 1 for painted doors in every respect.

f) All doors shall be provided with lock blocks of minimum size 300mm x 75mm.
g) Glass beading strips shall be approved wash-leather self-adhesive tape turned up over both sides of the glass and glazing surfaces and turned to the straight line.
h) All screws shall be countersunk and screwed and pelleted in un-painted work.
i) Timber pellets shall be glued and tapped into the hole, making sure the grains line up, and are carefully trimmed back flush with joinery to give a clear, smooth overall surface.

X. FITTINGS AND FIXTURES

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

AA. COMPLETION OF WORKS

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

AB. DEFECTIVE WORK

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

IRONMONGERY

AC. GENERALLY

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

PART EIGHT

STRUCTURAL STEELWORK AND OTHER METAL WORK SPECIFICATIONS

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

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

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

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

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

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

G. GAUGE METAL SECTIONS
Sections shall be manufactured from continuously hot dipped galvanized steel coil to B.S.2989 using steel to B.S.1449, part 1A and 1B, classification CR4 with a guaranteed minimum yield stress of 280 N/mm2.

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

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

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

STRUCTURAL STEELWORK AND OTHER METAL WORK SPECIFICATIONS

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

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

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

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

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

M. EDGE PREPARATION

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

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

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

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

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

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

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

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

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

T. ELECTRODES

All covered electrodes for the manual metal are welding of grades of steel to B.S4360 shall comply with the requirements of B.S639 and B.S.1719: part 1. All electrode wires and fluxes for the submerged arc welding of grades of steel to B.S.4360 shall comply with the requirements of B.S 4164.

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

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

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

covering broken away or damaged in any respect whatsoever shall be discarded.

U. WELDING TRIALS

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

The samples of material to be used in the aforesaid trials shall be selected and marked by the Engineer when the materials are inspected at the rolling mills and the various types and categories of members and joints shall be welded in a manner simulating the most unfavorable conditions that will be experienced during fabrication or assembly. After completion of welding the various examples shall be sectioned for subsequent examinationand testing.

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

V. WELD TESTING

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

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

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

W. WELDING PLANT

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

Black bolts and nuts shall be in accordance with B.S. 4190 and shall have their bearing faces machined. Close tolerance bolts and nuts shall be in accordance with B.S3692 and shall have their bearing faces machined, be turned on the shank and shall be screwed with unified coarse threads to B.S.1580. Flat and taper steel washers shall be in accordance with B.S4320. Washers shall be provided under the nuts of all black bolts and close tolerance bolts so that the nut, when screwed up tight, does not bear on the shank of the bolt.

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

X. BOLTS

Black bolts and nuts shall be in accordance with B.S. 4190 and shall have their bearing faces machined. Close tolerance bolts and nuts shall be in accordance with B.S3692 and shall have their bearing faces machined, be turned on the shank and shall be screwed with unified coarse threads to B.S.1580. Flat and taper steel washers shall be in accordance with B.S4320. Washers shall be provided under the nuts of all black bolts and close

tolerance bolts so that the nut, when screwed up tight, does not bear on the shank of the bolt.

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

Y. HIGH STRENGTH FRICTION GRIP BOLTS

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

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

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

USE OF HIGH STRENGTH FRICTION GRIP BOLTS

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

A. SURFACES

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

B. MINIMUM PLY THICKNESS

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

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

C. SPACING OF BOLTS

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

D. ASSEMBLY OF JOINT

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

E. TIGHTENING

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

Appropriate allowance shall be made in the gap for the location of the indicating washer relative to the bolt.

Tightening may be carried out using manual or power wrenches but not torque wrenches and must be carried out until the bolt reaches the minimum specified tension.

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

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

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

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

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

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

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

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

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

L. ERECTION OF STRUCTURAL STEELWORK

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

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

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

M. BEDDING OF BASE PLATES

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

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

N. CONCRETING IN OF MEMBERS

Where any portion of a steel member is designed to be cast into concrete, the surfaces in contact with concrete shall be thoroughly cleaned of paint or other adherent matter.
When members are to be concrete in, whether supplied with temporary positioning bolts or otherwise, they shall be lined and levelled and plumbed and firmly supported before concreting in.

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

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

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

P. FIXING METAL WINDOWS, DOORS, ETC

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

Q. METAL WINDOWS

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

PART NINE

FINISHES SPECIFICATIONS

GENERAL

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

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

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

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

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

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

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

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

INSITU FINISHINGS

G GENERALLY

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

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

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

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

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

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

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

I PREPARATION OF SURFACES FOR PLASTER ETC.

Irregularities in the surfaces to be plastered or rendered shall be filled with mortar, without lime, twenty four hours before plastering is commenced. Joints in blockwork etc., are to be wel raked out before plastering to form a good key. Smooth concrete surfaces to be plastered shall be treated with an approved proprietary bonding agent or hacked to provide an adequate key for the plaster.
All surfaces to be plastered or rendered shall be clean and free from dust, loose mortar and all traces of salts. All surfaces shall be thoroughly sprayed with water and all free water allowed to disappear before plaster is applied.

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

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

J APPLICATION OF PLASTER AND RENDER

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

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

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

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

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

K CURING OF PLASTER

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

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

C ANGLE BEADS

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

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

A. PLASTER STOPS

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

B. CEMENT AND SAND SCREEDS

Screed shall be mixed and formed as described.

C. GRANOLITHIC PAVING

The granolithic paving shall be laid by a specialist floor layer and constructed as follows: -
Curing compounds if specified or approved by the Architect shall be used in strict accordance with the manufacturer‟s instructions.

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

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

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

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

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

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

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

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

The granolithic topping shall be mixed for a period of not less than 11/2 minutes after all the materials have been placed in the mixer drum. No concrete shall be removed from the drum so that some water will enter the drum before the cement and aggregates.

Each batch shall be discharged completely before the next batch is introduced. No extra water or other material

shall be added to the mix after it has left the mixer.

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

The granolithic toping shall be laid in areas not exceeding 14M2. The length of any bay should not exceed 1½ times the width of that bay. Joints shall be made in the granolithic topping over all joints in the base concrete and over all supporting beams for suspended floors.

D. INSITU TERRAZZO WORK

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

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

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

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

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

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

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

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

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

The in-situ terrazzo paving is to consist of two parts of white marble chippings to one part of white Portland Cement to B.S.1014.
The marble chippings to be fine (graded 3mm to 6mm in equal proportions) rounded glanular clean and free from dust and impurities.

In-situ terrazzo paving should be laid on the screed as soon as practicable and not more than three days after

the laying of the screed. After laying the surfaces are to be kept moist until ready for polishing.

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

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

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

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

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

Lay in-situ skirtings to match paving or of approved colour and finish coved at junction with paving of floor finish to 20mm radius.
Execute all required angles and stopped or fair returned ends.

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

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

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

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

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

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

E. GLAZED WALL TILES

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

F. PRECAST CONCRETE PAVING SLAB

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

G. RATES

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

PART TEN
GLAZING

A. GENERAL

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

B. STANDARDS

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

C. CLEAR SHEET GLASS ETC.

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

D. PLATE GLASS

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

E. OBSCURED GLASS

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

I <u>Putty</u>
(a) The putty for glazing to wood sashes is to be linseed oil putty all as B.S.544.

(b) The putty for glazing to metal windows is to be gold size metal window putty specially designed for tropical use, or patent mastic putty if approved by the Architect.

(c) All putty shall be delivered on site in the original manufacturer‟s sealed cans or drums and used direct therefrom, with the addition only of pure linseed oil if necessary. No mineral or other oils may be used in the putty except genuine linseed oil.

A. MIRRORS

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

WORKMANSHIP
B. GENERAL

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

C. MEASUREMENTS

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

D. SINGLE GLAZING

Single glazing shall be executed with glass of the various types described herein. Ordinary (non –safety) glass

may be pre-cut or cut on site.

E. WIRED GLASS

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

F. SAFETY GLASS

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

G. TORAGE AND HANDLING

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

H. PROTECTION

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

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

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

C. GLAZING TO WOOD
Glazing shall be secured to wood framing with hardwood beads. Edges shall be wrapped in wash leather so that the wash leather finishes just below the surface of the bead. No adhesives shall be used.

D. GLAZING TO METAL
Glazing shall be secured to metal framing with clip in butyl rubber gaskets.

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

PART ELEVEN

SPECIFICATIONS PAINTING & DECORATING

PAINTING AND DECORATING

MATERIALS

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

B. GENERAL

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

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

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

C. EMULSION PAINTS

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

D. GLOSS PAINT

Gloss paint shall be hard gloss finish oil paint.

E. LEAD BASED PAINT

The use of lead-based paints will not be permitted.

F. CLEAR FINISHES

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

G. PRIMERS AND UNDERCOATS

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

H. KNOTTING

Shellac knotting shall comply with B.S 1336

A. WHITE SPIRIT

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

B. TIMBER STAIN

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

C. STOPPING

The stopping shall be as follows: -

(a) plasterwork shall be plaster based filler.
(b) Concrete and brick work shall be similar material to the background and finished in a similar texture.
(c) Internal woodwork, plywood and blockboard shall be putty complying with B.S.544.

(d) External woodwork shall be white lead paste complying with B.S 2029.

(e) Internal clear wood finishes: the stopping shall be that recommended by the clear lacquer manufacturer.

D. FILLERS

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

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

primers.

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

E. TEXTURED COATING

Textured coating is to be of proprietary manufacture approved by the architect and of an approved colour. Technical information concerning the coating is to be submitted to the Architect before ordering, but the minimum qualities of the coating are to as follows: -

(a) Suitable for application internally and externally, plastered, rendered, concrete, block stone, brick, asbestos and timber surfaces.

(b) Minimum durability of 10 years even in exposed conditions

(c) Maintenance free

d) Built- in mould resistant fungicide.

WORKMANSHIP

A GENERAL

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

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

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

B BRUSHWORK

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

C STOPPING AND FILLING

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

D STIRRING

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

E INSPECTION

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

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

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

C UPRIMED WOODWORKS

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

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

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

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

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

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

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

A GALVANIZED METALWORK

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

B PRIMED METALWORK

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

C COPPER

Copper scheduled for painting shall be lightly abraded with emery cloth, washed with white spirit and wiped dry with clean rags.
Apply a coat of each primer immediately the cleaned surfaces have been approved.

D BRICKWORK, CONCRETE ETC.

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

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

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

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

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

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

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

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

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

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

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

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

D Packaging, Delivery and Storage

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

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

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

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

A VINYL EMULSION PAINT

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

B GLOSS FINISH PAINT

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

C CLEAR POLYURETHANE VARNISH

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

D TEXTURED COATING
The manufacturer‟s instructions concerning application of the coating are to be strictly followed under the direction of the Architect.

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

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

PART TWELVE

SPECIFICATIONS DRAINAGE

GENERAL

A. REGULATIONS ETC.

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

B. CEMENT, SAND ETC

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

MATERIALS

C. PITCH FIBRE PIPES

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

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

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

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

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

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

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

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

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

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

C PRECAST CONCRETE MANHOLES

Concrete manhole ring sections shall be unreinforced ogee jointed complying with the requirements of B.S.

556. Shaft and
chambers slabs shall be either mild steel reinforced heavy or light duty type, as specified.

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

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

E GULLIES
Precast concrete gullies shall be unreinforced and shall comply with the requirements of B.S 556.
Glazed ware gullies shall comply with the requirements of B.S 539. Cast iron gullies shall be of approved manufacture and shall conform with the dimensions and weight specified.

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

F MANHOLE COVERS AND FRAMES

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

G MANHOLES LADDERS

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

H MANHOLE SAFETY CHAINS

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

A MANHOLE STEP IRONS

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

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

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

WORKMANSHIP

C UNDERGROUND PIPELINES

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

„Rigid pipes" shall mean pipes of cast or spun iron concrete, asbestos cement, clay or similar materials. „Flexible

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

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

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

A TRENCH EXCAVATION

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

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

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

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

Table A- pipe Trench widths

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

Above 1200 Outside dia. Of Outside dia.

Above 1200 Pipes plus 800 mm of pipes plus
1000mm

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

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

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

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

(i) The trench shall be excavated down to solid ground and the extra shall be refilled with lean mix concrete, granular bedding material, gravel or broken stone, as the Architect directs, well compacted to form even bed or:

(ii) The pipe shall be supported by facines, piles or such other means as the Architect may direct.

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

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

The material excavated in forming pipelines shall if unsuitable be run to spoil and replaced with suitable materials as so defined.
Suitable material shall be set aside for use as backfill. Unsuitable material shall comprise all material such as material from bogs, marshes, swamp peat, logs, stumps, perishable material, clays having a liquid limit exceeding 80 or a plasticity content greater than 30% of the dry weight.

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

A PIPELAYING – GENERAL

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

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

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

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

Flat braided wire slings or band slings shall be used for slinging all pipes except externally coated pipes and plastic pipes for which only special band slings not less than 300 mm wide shall be used. Chain or rope slings,

hooks or other devices working on scissors or grab principles must not be used.

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

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

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

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

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

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

A WITHDRAWAL OF SUPPORTS

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

B BEDDING AND PROTECTING PIPES – GENERAL

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

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

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

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

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

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

A CONCRETE BEDDING, HAUNCHING, SURROUNDING AND ANCHORING

Concrete for bedding, haunching or surrounding pipes shall be 1:2:4 nominal mix concrete and no back filling of the trench shall be done until the concrete has reached a strength of 15 N.mm2.

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

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

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

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

PVC pipes shall be wrapped in polythene sheet or roofing felt about 2 mm thick before being haunched or anchored in concrete.
Nominal 1:2:4 mix concrete shall be placed at all bends, tees, junctions, changes of direction and gradients to prevent movements of pipelines due to thrust from water pressure, in such positions and quantities as directed.

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

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

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

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

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

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

B JOINTING PIPES
Joints shall be made strictly in accordance with the manufacturer‟s instructions. The contractor shall make use of the technical advisory services offered by manufacturers for instructing pipe jointers in the methods of

assembling joints. Where manufacturers recommend the use of special jointing tackles, the contractor shall use these for the assembly of all joints to pipes. Sockets shall be laid looking uphill unless otherwise approved.

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

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

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

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

A CAST IRON JOINT FITTINGS

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

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

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

B CEMENT MORTAR JOINTS

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

C BACKFILLING TRENCHES

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

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

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

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

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

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

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

A FIELD OR FRENCH DRAINS

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

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

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

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

B OPEN SURFACE WATER CHANNELS

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

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

C MANHOLE INSITU CONCRETE

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

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

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

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

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

A CHAMBERS

Chambers for access to valves and fittings on pressure pipelines for water or sewage, unless otherwise directed shall be constructed in concrete blockwork.

B SEPTIC TANKS

Septic tanks shall be constructed to the dimensions and general arrangement detailed on the drawings and in the contract. Tanks with blockwork shall be constructed as for manholes.

C TESTING FOR SEPTIC TANKS

Septic tanks and other chambers shall be tested by filing with water after completion of backfilling.

The first 1.0 metre of depth may be filled as quickly as the supply permits. Between this and top water level the rate of filling must
not exceed 1.0 metre in 24 hours. After filling to top water level no further water shall be introduced for 2 days. At the end of this
period the tanks shall be topped up to top water level and allowed to stand for 24 hours. The test shall be considered satisfactory if
the fall in water level in 24 hours does not exceed 15mm.

In the event of a fall exceeding the above tank will be emptied and any defects made good prior to retest as before, all at the
contractor‟s expense.

D CONNECTION TO SEWER

All connections to sewers are to be made with angle junctions set at the correct angle to minimize the use of bends. All angles shall not exceed 45 degrees.

The open ends of all house connections and other pipes not required for immediate use shall be sealed up with purpose made stoppers secured in position. The ends of connections and all junction positions will be clearly marked by posts and painted boards of a type and size to be approved by the Architect and the board shall be plainly marked with the letter „S‟ and the size and depth below kerb level or ground level. A length of 4.5 mm galvanized iron wire shall be fixed to the face of the last pipe and the marking post.

Every care shall be taken to prevent the marking boards being disturbed and the contractor shall take responsibility for their safety.
The information shall also be painted on the kerbs in an approved manner when all works are complete and the contractor shall record the position of all branches fixing distances from the manhole immediately downstream of the branch.

A TESTING SEWER

Wherever possible, testing shall be carried out from manhole to manhole. Short branch drains connected to main sewer between manholes shall be tested as one system with the main sewer. Long branches shall be tested separately. Pipes not exceeding 750mm nominal diameter shall be tested in one of the following ways: -

i. WATER TEST

A test pressure of 1.2 metres head of water above the soffit of the sewer shall be applied at the high end but not more than 6 metres at the low end by means of a stand-pipe. Steeply graded sewers shall be tested in stages where the above maximum head shall be exceeded if the whole section is tested in stages where the above maximum head shall be exceeded if the whole section is tested at once. A period of one hour shall be allowed for absorption. The loss of water over a period of 30 minutes shall be measured by adding water from a measuring vessel at regular intervals of 10 minutes and noting the quantity required to maintain the original water level in the standpipe. The average quantity of water added for sewers up to 300mm nominal bore must not exceed 0.06 litre per hour per 100 linear metres per mm of nominal bore of sewer. For sewers exceeding 300mm nominal bore the average quantity of water added must not exceed 0.12 litre per hour per 100 linear metres per mm of nominal bore of the sewer.

ii. AIR TEST

The length of sewer under test shall be effectively plugged and air pumped in by suitable means e.g. a hand pump, until a pressure of 100mm head of water is indicated in a U-tube connected to the system. The air pressure must not fall to less than 75mm head of water during a period of 5 minutes, without further pumping, after a period of 2 minutes for requisite stabilization.

Sewers will be tested:

i. after laying and placing concrete if any but before backfilling over joints and after backfilling has been completed.

Sewers constructed of steel, spun iron or other materials designed for high pressure shall be tested in accordance with the provisions of clause 33.00 below. Pipes exceeding 750mm nominal diameter shall be tested as required by the contract.

Where required by the contract the sewer shall be tested for obstruction by the insertion and pulling through of twin-coupled rubber plunges of the same diameter as the sewer.

Sewer shall be tested for infiltration after backfilling. All inlets to the system shall be effectively closed and the residual flow shall be deemed to be infiltration. The following limits of infiltration must be exceeded: -

ii. for sewers not exceeding 750mm nominal internal diameter, 0.08 litre per hour per 100 linear metres per mm of nominal bore of the sewer.

iii. for sewer exceeding 750mm nominal internal diameter 0.16 litre per hour per 100 linear metres per mm of nominal bore of the sewer.
Infiltration to manhole must not exceed 5 litres per hour per manhole

A MANHOLES AND CHAMBERS

Manholes and chambers shall be constructed in accordance with the drawings and specifications and in the positions as detailed on the drawings or directed by the Architect.

Pipes in and out
of manholes are to be as short as practicable and shall be built in monolithically with the manhole and the manhole made watertight. Where line, level and pipe diameter permit and where approved by the architect, the pipeline may be laid broken through the manhole position subject to the pipe joints external to the manhole not exceeding 600mm from the inner face of the manhole wall.

The depth of the main channel must not be less than the diameter of the largest pipe. Where pipes have been laid unbroken through the manhole position the crown of the pipe shall be broken out to the half diameter over the full length of the manhole and the benching completed as directed by architect.

Branch bends shall be curved in the direction of flow and will be trowelled smooth with a steel float finish. Spaces between branch bends shall be completely filled with concrete and the faces above the m

channel inverts shall be trowelled smooth with a steel float finish.

Bases and benching shall be formed in 1:2:4 nominal mix concrete trowelled smooth with a steel float finish

Manholes inside buildings and elsewhere as shown in the contract shall have cast iron pipes with access openings and bolted cover plates with the requisite branches in lieu of open channels and branch bends. The bottom of the manhole shall be brought up in concrete to the underside of the cast iron cover plate of the access pipe and benched up at slope of 1:12 and trowelled smooth.

Manhole covers and frames shall be fixed in the position shown, the frame shall be solidly bedded in cement mortar so that generally the cover when in position are fair and even with the adjacent surfaces except where directed by the architect when they shall be kept 75mm above the adjacent surfaces. Where shown or directed frames shall be bedded on one or two courses of blockwork in cement mortar.

Step irons are not required where the depth to benching is less than 900mm and the diameter of the largest pipe is less than 450mm. Channels more than 450mm in depth shall have one or more step irons in a recess, or toe holes and hand rail or post within easy reach, as detailed. A manhole shaft (excluding the 1-2 courses of blockwork under the cast iron cover) shall not be constructed unless the complete length shall exceed 1.0 metres.

Where depth from ground level to top of benching exceeds 4.5 metres a ladder may be used instead of a step iron where directed.

Manhole ladders shall have brackets (not less than two pairs per ladder) of material equal to the stingers built into the blockwork or concrete at intervals of not more than 2.0 metres.

In deep manholes suitable rest chambers shall be provided at about 6 metre intervals, each with a landing platform incorporating a hinged trap door immediately under the ladder as detailed in the contract.

Cover slabs of manholes shall be reinforced as shown on the drawings, minimum cover to steel 40mm, and the concrete shall be as detailed in the contract. All manholes on sewers of 600mm diameter and over shall be provided with safety chains across the mouth of the sewer on the downstream side and handholds or a 25mm solid bar handrail shall be provided on the edges of all benching platforms etc., as detailed or directed. The contractor shall supply two sets of lifting keys for each pattern of manhole cover incorporated in the work. *General Specifications* All manholes and chambers when completed must be watertight and to the satisfaction of the architect.

A CONCRETE BLOCKWORK MANHOLES

Concrete blockwork manholes for sewers up to 750 mm diameter shall be constructed as detailed on the drawings, using concrete blocks as specified laid in English bond beds and vertical joints shall be completely filled with mortar as the blocks are laid. External joints shall be flush pointed and internal joints shall be raked out to receive rendering as work proceeds. Cuts blocks shall only be incorporated when necessary for closures.

Where built into manhole walls, pipes of 375mm diameter and above shall have 150mm thick concrete relieving arches turned over to the full thickness of the blockwork. Where the depth of the invert exceeds 5.0 metres below the finished ground level the arch shall be 300mm thick. Walls of manholes up to 2.0 metres deep and up to 4.0 metres shall be increased in thickness to 400mm blockwork. Walls over 4.0 metres deep and upto 7.0 metres shall be 600mm blockwork and over 7.0 metres deep manholes shall be precast concrete or in-situ concrete as directed by the architect. Overall manhole deep manholes shall be adjusted to the nearest half block size with the approval of the architect.

Manhole shafts shall be 750mm by 675mm and where ladders are used this size shall be increased to 825mm by 675mm with the shaft top corbelled as necessary.

Step iron having tail 230mm long shall be built in at 300mm vertical intervals as shown with the uppermost step iron from 60mm to 900mm from the top of the manhole cover as detailed

SECTION D 1

PARTICULAR SPECIFICATION OF MATERIALS AND WORKS ELECTRICAL WORKS

GENERAL SPECIFICATIONS OF MATERIALS AND WORK ELECTRICAL WORKS

2.1 General

2.2 Standard of Materials

2.3 Workmanship

2.4 Procurement of Materials

2.5 Shop Drawings

2.6 Record Drawings

2.7 Regulations and Standards

2.8 Setting out Works

2.9 Position of Electrical Plant and Apparatus

2.10 M.C.B Distribution Panels and Consumer Units

2.11 Fused Switchgear and Isolators

2.12 Conduits and Conduit Runs

2.13 Conduit Boxes and Accessories

2.14 Labels

2.15 Earthing

2.16 Cables and Flexible Cords

2.17 Armored PVC Insulated and Sheathed Cables

2.18 Cable Supports; Markers and Tiles

2.19 PVC Insulated Cables

2.20 Heat Resisting Cables

2.21 Flexible Cords

2.22 Cable Ends and phase Colours

2.23 Cable Insulation Colours

2.24 Sub-circuit Wiring

2.25 Space Factor

2.26 Insulation

2.27 Lighting Switches

2.28 Sockets and Switched sockets

2.29 Fused Spur Boxes

2.30 Cooker Outlets

2.31 Connectors

2.32 Lamp holders

2.33 Lamps

2.34 lighting Fittings Street lighting Lanterns

2.35 Position of Points and Switches

2.36 Street/Security Lighting Columns

2.37 Timing Control Switch

2.38 Wiring System for Street Lighting

2.39 Metal control Pillar

2.40 Current Operated Earth leakage circuit breaker

2.41 MV Switchboard

2.42 Steel Conduits and Steel Trunking

2.43 Testing on Site

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.

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.

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

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.

POSITIONS OF ELECTRICAL PLANT AND APPARATUS

The routes of cables and approximate positions of switchboards etc, as shown on the drawings shall be assumed to be correct for purpose of Tendering, but exact positions of all electrical Equipment and routes of cables must be agreed on site with the Engineer before any work is carried out.

MCB DISTRIBUTION PANELS AND CONSUMER UNITS

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

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

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

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

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

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

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.

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-contractors 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, and 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 withdraw able 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-contractors expense.

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

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

2.13 CONDUIT BOXES AND ACCESSORIES

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

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

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

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

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

2.14 LABELS

Labels fitted to switches and fuse boards;-

(i) Shall be Ivorine engraved black on white.

(ii) Shall be secured by R.H brass screws of same manufacturing throughout.

(iii) Shall be indicated on switches:-

a) Reference number of switch

b) Special current rating

c) Item of equipment controlled

(iv) Shall indicate on MCB panels

a) Reference number
b) Type of board, i.e.; lighting, sockets, etc,
c) Size of cable supplying panel
d) where to isolate feeder cable

(v) Shall be generally not less than 75mm x 50mm.

EARTHING

The earthing of the installation shall comply with the following requirements;-

(i) It shall be carried out in accordance with the appropriate sections of the current edition of the Regulations, for the Electrical Equipment of Buildings issued by Institute of Electrical Engineers of Great Britain.

(ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross sectional area Copper tape shall be provided and all equipment including the lead sheath and armoring 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 structure it shall be by means of purpose made non-ferrous saddles which space the conductor away from the structure a minimum distance of 20mm. Fixings, shall be made using purpose made plugs; No fixings requiring holes to be drilled through the tape will be accepted.

(xi) Joints in copper tape shall be tinned before assembly riveted with a minimum of two copper rivets and seated solid.

(xii) Where holes are drilled in the earth tape for connection to items of equipment the effective cross sectional area must not be less than required to comply with the IEE regulations.

(xiii) Bolts, nuts and washers for any fixing to the earth tape must be of non-ferrous material.

(xiv) Attention is drawn to the need for the earthing metal parts of lighting fittings and for bonding ball joint suspension in lighting fittings.

2.16 CABLES AND FLEXIBLE CORDS

All cables used in this Sub-Contract shall be manufactured in accordance with the current appropriate Kenya standard Specification which are as follows:-

P.V.C. Insulated Cables and Flexible Cords - Ks 04-192:1988

PVC Insulated Armored Cables - Ks 04-194:1990

Armoring 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 with the details stated in the "Cable Braid and insulation Colours" Clause.

2.17 ARMOURED P.V.C. INSULATED AND SHEATHED CABLES:

Shall be 600/1000 volt grade manufactured to Ks 04-194:1988 and Ks 04-187/188 with copper stranded conductors.

The wire armour of the cable shall be used wholly as an earth continuity conductor and the resistance of the wire armour shall have a resistance not more than twice of the largest current carrying conductor of the cable.

P.V.C./S.W.A./P.V.C. cables shall be terminated using "Telecom" "B" type or approved equal or approved equal glands and a P.V.C. tapered sleeve shall be provided to shroud each gland.

Where cables rise from floor level to switchgear etc., they shall be protected by P.V.C. conduit, to a height of 600mm from finished floor level, whether the cable is run on the surface or recessed into the wall.

2.18 CABLE SUPPORTS, MARKERS AND TILES

All PVC/SWA/PVC cables run inside the building shall be fixed in rising ducts or on ceilings by means of die cost cables hooks or clamps, or 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 galvanized 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 rawl bolts.

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

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

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

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

The Sub-Contractor shall include for the provision of fixing of approved type coloured slip on cables end markers to indicate permanently the correct phase and neutral colours on all ends. Provision shall be made for supplying and fixing approved non-corrosive metal cable markers to be attached to the outside of all PVC/SWA/PVC cables at 15mm intervals indicating cable size and distinction.

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

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

2.19 PVC INSULATED CABLES

Shall be of non-braided type as CMA reference 6491 x 600/1000/1000 volt grade cables, or equal approved.

PVC cables shall conform to the details of the “Cables and Flexible cords” and “Cable Braid and Insulation Colours” clauses.

2.20 HEAT RESISTING CABLES

Final connections to cookers, water heaters, etc., shall be made using butyl rubber insulated cable as CMA reference 610 butyl (Single core 600/1000 Volt).

This type of cable shall be used in all instances where a temperature exceeding 100°F, but not exceeding 150°F is likely to be experienced. Final connections to all lighting fittings (and other equipment where a temperature in excess of 150°c likely to be experienced) shall be made using silicon rubber insulated cable or equal and approved.

2.21 FLEXIBLE CORDS

Shall be in accordance with the “Cable and Flexible Cords” clause. No cord shall be less than 24/0.2mm in size unless otherwise specified.

Circular white twin TRS flex shall be used for plain pendant fittings up to 100 watts. For all other types of lighting fittings the flexible cable shall be silicone rubber insulated.

No polythene insulated flexible cable shall be used in any lighting fitting or other appliance (see “Heat Resisting Cables” Clause 30).

2.2 CABLE ENDS AND PHASE COLOURS

All cable ends connected up in switchgear, MCB panels etc;, shall have the insulation carefully cut back and the ends sealed with Heller man rubber slip on cable end markers.
The markers shall be of appropriate phase colour for switch and all other live feeds to the details of the “Cable Insulation Colours” clause. Black cable with black end markers shall only be used for neutral cables.

2.23 CABLE INSULATION COLOURS

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

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

SYSTEM	INSULATION COLOUR	CABLE END MARKER
Main and Sub-Main		
a) Phase	Red	Red
b) Neutral	Black	Black

1) Sub-Circuits
Single Phase

a) Phase	Red	Red
b) Neutral	Black	Black

2.24 SUB-CIRCUIT WIRING

For all lighting and sockets wiring shall be carried out in the "looping in" system and there shall be no joints whatsoever. No lighting circuits shall comprise more than 20 points when protected by 10A MCB. Cables with different cross-section area of copper shall not be used in combination.

Lighting circuits P. V.C. cable 1.5mm² for all lighting circuits indicated on the drawing.
Power circuits P.V.C cable (minimum sizes).

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

(ii) 2.5mm² for one 15Amp socket.

(iii) 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.

2.2 SPACE FACTOR

The maximum number of cables that may be accommodated in a given size of conduit or trunking or duct is not to exceed the number in Tables B.5 and B.6 or as stated in Regulation B.91, B.117 and B.118 of the I.E.E Regulations whichever is appropriate.

2.26 INSULATION

The insulation resistance to earth and between poles of the whole wiring system, fittings and lumps, shall not be less than the requirements of the latest edition of the I.E.E Regulations. Complete tests shall be made on all circuits by the Sub-contractor before the installations are handed over.

A report of all tests shall be furnished by the Sub-Contractor to the Engineer. The Engineer will then check test with his own instruments if necessary.

2.27 LIGHTING SWITCHES

These shall be mounted flush with the walls, shall be contained in steel or alloy boxes and shall be of the gangs ratings and type shown in the drawings. They shall be as manufactured by M.K. Electrical Ltd., or other equal and approved to KS 04 – 247: 1988

2.28 SOCKETS AND SWITCHED SOCKETS

These shall be flush pattern in steel/pvc box and shall be of the gangs and type specified in the drawings.

They shall be 13- Amp, 3-pin, shuttered, switched and as manufactured by "M.K. Electrical Co. Ltd.", or other approved equal to KS 04 – 246: 1987

2.29 FUSED SPUR BOXES

These shall be flush, D.P switched as in steel/pvc box and of type and make specified in the drawings complete with pilot light and as manufactured by "M. K. Electrical Company Ltd", or other approved equal. KS 04 – 247: 1988

2.30 COOKER OUTLETS

These shall be flush mounted with 13-A switched socket outlet and neon indicator Lamps.
The cooker control units shall be as manufactured by "M.K. Electrical Company Ltd", or other approved equal KS 04 – 247: 1988

2.31 CONNECTORS

Shall be specified in the drawings and appropriate rating. These shall be fitted at all conduit box lighting point outlets for jointing of looped P.V.C cables with flexible cables of specified quality.

2.32 LAMPHOLDERS

Shall be of extra heavy H.O skirted and shall be provided for every specified lighting fitting and shall be B.C;, E.S;, or G.E.S as required. All E.S. and G.E.S. holders shall be heavy brass type (except for plain pendants where the reinforced bakelite type shall be used). The screwed cap of the E.S and G.E.S. holders shall be connected to the neutral.
Where lamp holders are supported by flexible cable, the holders shall have "cord grip" arrangements and in the case of metal shades earthing screws shall be provided on each of the holders.
The Sub-Contractor must order the appropriate type of holder when ordering lighting fittings, to ensure that the correct types of holders are provided irrespective of the type normally supplied by the manufacturers.

2.33 LAMPS

All lamps shall be suitable for normal stated supply voltage and the number and sizes of lamps detailed on the drawings shall be supplied and fixed. The Sub-Contractor must verify the actual supply voltage with the supply authority before ordering the lamps.

Tungsten filament lamps shall be manufactured in accordance with KS 04 – 112:1978 for general service lamps and KS 04 – 307:1985 for lamps other than general services. Tubular fluorescent lamps shall comply with KS 04 – 464:1982

Pearl lamps shall be used in all fittings unless otherwise specified.

2.34 LIGHTING FITTINGS AND STREET LIGHTING LANTERNS

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

All fittings and pendants shall be fixed to the conduit boxes with brass R/H screws. These to be in line with metal finish of fittings. The lighting fittings are detailed for the purpose of establishing a high standard of finish and under no circumstances will substitute fittings be permitted.
In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to the central conduit box fittings. Supports shall be provided and fixed by the Sub-Contractor.

The whole of the metal work of each lighting fittings shall be effectively bonded to earth. In the case of ball and/or knuckle joints short lengths of flexible cable shall be provided, bonded to the metal work on either side of the joints. If the above provisions are not made by the manufacturers -, the Sub-contractor shall include cost of additional work necessary in his tender. See "Flexible Cords" clause for details of internal wiring of lighting fittings. Minimum size of internal wiring shall be 20/0.20mm (23/0067). Each lighting fitting shall be provided with number type and size of lamps as detailed on the drawings. It is to be noted that some fittings are suspended as shown on the drawings.

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

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

2.35 POSITIONS OF POINTS AND SWITCHES

Although the approximate positions of all points are shown on the drawings, enquiry shall be made as to the exact positions of all M.C.B panels, lighting points, socket outlets etc, before work is actually commenced. The Sub-contractor must approach the Architect with regard to the final layout of all lights on the ceiling and walls.

The Sub-contractor must consult with the Engineer in liaison with the Clerk of Works, or the General Foreman on site regarding the positions of all points before fixing any conduit etc. The Sub-Contractor shall be responsible for all alterations made necessary by the non-compliance with the clause.

2.36 STREET/SECURITY OUTDOOR LIGHTING COLUMNS:

The column shall be at a minimum of 225mm in the ground on 75mm thick concrete foundations and the pole up to 150mm shall be surrounded with concrete. The top bracket and plain section of the columns shall be common to and interchangeable with all brackets with maximum mismatching tolerance of 3mm between any pole and bracket. After manufacture and before erection the columns shall be treated with an approved mordant solution which shall be washed off and the whole allowed to dry. Thereafter, the columns shall be painted with one undercoat and two coats of gloss paint to an approved colour. All columns shall be complete with fused cut-outs.

2.37 TIMING CONTROL SWITCH

These shall be installed where shown on the drawings. Photocell timing control circuits which will operate „on" with a specified level of darkness and „off" with a given level of light. The initial adjustment will be done with approval of the Electrical Engineer.

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2.38 WIRING SYSTEM FOR STREETLIGHTING

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 murram at least 50mm thick and covered with a concrete surrounded 150mm thick.

2.39 METAL CONTROL PILLAR

These shall be metal clad and fabricated as per contract drawings and specification. The Sub-Contractor shall supply, install, test and commission control pillars including supplying, fixing connecting switchgears as detailed on the appropriate drawings.

2.40 CURRENT OPERATED EARTH LEAKAGE CIRCUIT BREAKER

Current operated earth leakage circuit breaker shall conform to B.S.S. 4293:68 rated at 240 volts D.P. 50 cycles A.C. Mains.

The breaker shall be provided with test switch and fitted in weather proof enclosure for surface mounting. The rated load current and earth fault operating current shall be as specified in the drawings. These shall be as manufactured by Crabtree, Siemens or other equal and approved.

2.41 M.V. SWITCHBOARD AND SWITCHGEAR

The switchboard shall be manufactured in accordance with KS04-226 which co-ordinates the requirements for electrical power switchgear and associated apparatus. It is not intended that this K.S. should cover the requirements for specified apparatus for which separate Kenyan Standard exist. All equipment and material used in the switchboard shall be in accordance with the appropriate Kenya Standard.

The switchboard shall comprise the equipment shown on the drawings together with all current transformers, auxiliary fuses, labels, small wiring and interconnections necessary for the satisfactory operation of the switchboard

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 meters. 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 colored according to the phase or neutral connection.

Switches and fuse switches, shall be in strict accordance with KS04-183:1978 Class 2 switches. Means of locking the switch in the “OFF” position shall be provided.

All fuse switches shall comply with KS04-183:1978, PARTS 2 and 3 a fault rating at least equal to the fault rating of the switchboard in which they are installed. Cartridge fuse links to KS 04-183:1978 category A.C. 46, class Q1 and fusing factor not exceeding 1.5 shall be supplied with each fused switch.

Mounting arrangements shall be such that individual complete fuse switches may be disconnected and withdrawn when necessary without extensive dismantling work. When switches are arranged in their formation all necessary horizontal and vertical barriers shall be provided to ensure segregation from adjacent units. Means of locking the switch in the “OFF” position shall be provided.

2.42 STEEL CONDUITS AND STEEL TRUNKING

Conduits shall be of heavy gauge class "B" welded to Standard specification KS 04-180:1985. In no case will conduit smaller than 20mm diameter be used on the works. Conduits installed within buildings shall be black enameled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanized. Conduit fittings, accessories or equipment used in conjunction with galvanized conduits shall also be galvanized 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 galvanized, the links shall be made by galvanized 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 fuse boards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

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

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

Where a wiring system incorporates galvanized conduit and trunking, the trunking shall be deemed to be galvanized 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 galvanized 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 bed 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 enameled or galvanized according to the type of conduit specified. All accessory boxes shall have threaded brass inserts.

Box lids where required shall be heavy gauge metal, secured by means of zinc plated or cadmium plated steel screws.

All adaptable boxes and lids of the same size shall be interchangeable.
Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.

Where used in conjunction with mineral insulated copper sheathed cable, galvanized boxes shall be used and painted after erection.

Draw-in boxes in the floors are generally to be avoided but where they are essential they must be grouped in positions approved by the services engineer and covered and by the suitable floor traps, with non-ferrous trays and covers.

The floor trap covers are to be recessed and filled in with a material to match the floor surface.

The Sub-contractor must take full responsibility for the filling in of all covers, but the filling in material will be supplied and the filling carried out by the main building contractor.

Where buried in the ground outside the building the whole of the buried conduit is to be painted with two coats of approved bitumastic composition before covering up.

Where run on the surface, unpainted fittings and joints shall be painted with two coats of oil bound enamel applied to rust and grease free metalwork.

2.43 TESTING ON SITE

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

(a) Tests shall be carried out to prove that all single pole switches are installed in the „live‟ conductor.

(b) 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.

(c) 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.

(d) 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.

(e) 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.

The Sub-contractor shall generally attend on other contractors employed on the project and carry out such electrical tests as may be necessary.

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.

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

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SECTION D-2

PARTICULAR AND TECHNICAL SPECIFICATIONS

OF

MATERIALS AND WORKS

STRUCTURED CABLING

SECTION E

PARTICULAR SPECIFICATIONS

A. TECHNICAL SPECIFICATIONS

Network Control Equipment

MINIMUM REQUREMENTS

i) The active device to be used as the core switch shall have at least 1 G capacity

ii) The active device to be used as the core switch shall be stackable with a stack bandwidth of 480 Gbps and shall be supplied complete with stacking kit and stacking cables.

iii) The core switch at the main distribution cabinet shall have dual redundant power supply and fans.

iv) All active devices must have SMARTNET License for one year as a mandatory requirement.

v) Active devices used as access switches at the LAN edge will be 24/48 Port for connection to the horizontal cabling as may be appropriate and must be rack mounted.

vi) Active devices used at the LAN edge will have 24/48 Port supporting 10/100/1000Mps Autosensing RJ45 Ports with at least 4 SFP uplink ports.

vii) Active devices used at the LAN edge must support Power Over Ethernet+.

viii) Active devices used as access switches must be stackable with stack bandwidth of at least 80Gps. They must be supplied with stacking modules and stacking cables.

ix) Active devices for LAN Edge must support high performance IP routing features such IP unicast protocols i.e. EIGRP Stub and RIPng. Additionally, they must support equal cost routing to facilitate layer 3 load balancing and redundancy across the stack.

x Active devices for LAN Edge must support Identity Services Engine to ensure security management for all connected devices.

B EQUIPMENT CABINETS

MINIMUM REQUREMENTS

i) All network equipment i.e switches and patch panels shall be housed in the cabinets/ racks supplied by the contractor.

ii) All free standing cabinets shall be 42U or 22U.

iii) The cabinet at the Main Distribution cabinet room shall be 42U.

iv) All wall mount cabinets shall be 12U.

v) All cabinets for active devices must have forced cooling and low noise fans.

vi) Equipment cabinets must provide enough space to accommodate the cabling, equipment racks, panels and network control devices as required and the locations should provide for convenient access to operational personnel.

vii) The exact placing of the cabinets should be defined at the start of the works.

viii) Cabinets should have at least 4U space free to accommodate additional components later.

ix) All cabinets shall have a PDU for power connection inside the cabinet.

x) All cabinets shall be earthed.

C UNINTERRUPTIBLE POWER SUPPLY UNITS (UPS)

MINIMUM REQUREMENTS

i) Each floor distribution cabinet must have one UPS of capacity of at least 1000VA, installed as Eaton or an approved equivalent.

ii) The main distribution cabinet room shall have at least 5000VA UPS installed.

iii) All UPS equipment shall be rack mountable.

iv) UPS equipment supplied shall have Line Interactive HF technology.

v) UPS equipment supplied shall have remote supervision using point to point power management, SNMP and relay outputs.

vi) Supplied UPSes shall have both serial and USB communication ports

D IP TELEPHONY

MINIMUM REQUREMENTS

i) The contractor will be required to install IP Telephony License on the existing PABXS system (Karel DS200) to support 200 IP Phones as Yearlink, Karel, Dlink or an approved equivalent.

ii) The contractor shall supply 115 IP Phones handsets which must be highly usable and intuitive arrangement of lines, features and calls

iii) The IP Phones must have internal 2 -port Ethernet which allows for a direct connection to 10/100/ BASE-T Ethernet network through an RJ-45 interface with single LAN connectivity for both the phone and a collocated PC. System administrator can designate separate VLANs(802.IQ) for the PC and phone, providing improved security and reliability of voice traffic.

iv) IP phone handsets supplied shall have power over Ethernet capability.

v) IP phone handsets supplied shall have 132*64 graphic LCD with backlight.

vi) The contractor shall supply 4 IP Operator Console handsets as yealink T46G with two expansion modules.

vii) IP Operator console supplied shall have at least 4.3" display and at least 16 voip accounts.

D WIRELESS ACCESS POINT SPECIFICATION

MINIMUM REQUREMENTS

i) Three Wireless Access points will also be installed in every floor and two outdoor access points.

ii) Wireless access points shall support enhanced PoE capability.

iii) All wireless devices must support 10/100/1000 BASE-T autosensing (RJ-45)

iv) All wireless devices must support 802.11a, 802.11ac, 802.11n and802.11a/g standards.

v) All wireless devices must support band selection

vi) All wireless devices must be configured to work with existing wireless infrastructure.

H PATCH PANELS

MINIMUM REQUREMENTS

i) All Patch panels must conform to ANSI/TIA/EIA-568A.

ii) Patch panels must be equipped with RJ45 contacts of category 6 or above, sockets with capacity of 24 or 48 RJ45 ports.

iii) All patch panels, including fibre optic patch panels must be rack mounted.

iv) All panels and racks must be earthed to provide electrical safety for users and

v Fibre Optic patch panels are to be configured to the amount of strands terminated terminated at each location.

vi) Fibre Optic patching should be done from cabinet housing optic boxes/panels as well as the optic electronic equipment.

I HORIZONTAL CABLING

MINIMUM REQUREMENTS

i) The Primary media for horizontal cabling will be 4 pair unshielded, twisted pair (UTP) which must meet or exceed ANSI/TIA/EIA-568-B and ISO/IEC 11801 standard.

ii) Unshielded twisted pair (UTP) Category6 or Above quality cable shall be employed.

iii) Each room to be networked shall have wall plates installed and each outlet terminated with 8-pin modular jacks (RJ-45)

iv) Each designated network interface will have capacity to support 1 Giga Ethernet.

v) Each cable will be required to move through the tie if firmly pulled.

vi) Cables will not be crushed using cable ties.

vii) Cable conduits must not be overfilled.

viii) All cables must pass through 150mm×50mm three compartment metal trunking and should not be seen from outside.

ix There shall be no splicing of any of the cables installed. Intermediate cross-connect and transition points are not allowed.

x Data outlets shall be flash mounted on the metal trunking.

xi) All user area patch chords and cabinets patch chords will be supplied to match the total number of data outlets.

xii) A faceplate installed on the trunking will be capable of accommodating two data outlets modules which will be installed and terminated.

J CATEGORY 6:

Backbone Cabling

i) The primary media for backbone cabling will be fibre optic

ii Multi-mode 1G Fibre optic indoor/outdoor cable will be used.

iii) The fibre optic cable shall have a minimum of 8(eight) strands for backbone cable connecting the DeKUT Data centre with resource centre 111 Main Distribution cabinet.

iv) The fibre optic cable shall have a minimum of 4 strands for backbone cable connecting the resource 111 Floor distribution cabinets.

v) All strands must be terminated at each end of the fibre cable whether used or not.

vi) Each designated network interface will have capacity to support 1GB Ethernet

vii) All optical fiber components and installation practices shall meet applicable building and safety codes, provide well organized installation with cable

management
in accordance with manufacturers guidelines.

viii) Fibre optic cables running through risers/cable ducts and conduits must be protected by PVC conduits to protect them from interference by other contractors
providing other services in future.

ix) All the fibre optic backbone links will aggregated at the main distribution Cabinet
room.

SECTION D-3

GENERAL SPECIFICATION FOR

FIRE DETECTION AND FIRE

ALARM SYSTEMS

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

FIRE DETECTION AND FIRE ALARM SYSTEMS

1.0 GENERAL

1.1 This specification is to be read in conjunction with the electrical installation drawings issued by Chief Electrical and Mechanical Engineer (BS). Bills of quantities and items listed in the Schedule of Units Rates shall be the basis of all additions and omissions during the progress of the works.

1.2 This specification states the general requirements for supplying, delivering, off-loading, assembling, co-ordination, fixing in position, connecting, inspecting, testing, commissioning and leaving in working order new, modified or additional fire detection and alarm system.

1.3 The work shall comprise the whole of the labour and, unless otherwise indicated, the entire supply of materials spare parts and any necessary auxiliary items necessary to form a complete installations and such tests, adjustments and commissioning as are prescribed in subsequent clauses and as may otherwise be required to give an effective working installation to the satisfaction of the CE&ME (BS) or his agent.

1.4 The words 'complete installation' shall mean not only the entire items of fire alarm equipment conveyed by this specification or accompanying drawings, but all the incidental sundry components necessary for the complete execution of the works and for the proper operation of the installation, whether or not these sundry components are mentioned in detail in the Bills of Quantities of this tender documents issued in connection with this contract/sub-contract.

1.5 Unless otherwise indicated, the following will also be carried out:

1.5-1 Trenching, hole digging/drilling and backfilling.

1.5-2 Duct laying and construction of cable entries and draw pits and all builders‟ works associated with fire alarm installation work.

1.5-3 Provision of 2no. Sets of the following; as installed drawings, Installation manuals, maintenance manuals, and all test certifications documents upon successful completion of the works.

1.5-4 The Engineer shall not be liable for the malfunction or complete destruction of the FACP during testing and commissioning. The Contractor shall replace such faulty or defective FACP at no extra cost to the client.

WORKMANSHIP

2.1 The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman to the satisfaction of the Engineer. Unskilled Helpers shall have at all time‟s qualified supervision.

2.2 Any work that in the opinion of the Engineer does not conform to the best standard practice and relevant government regulations, will be removed and reinstated at the installers' expense.

2.3 Permits, Certificates or Licences must be held by all tradesmen for the type of work in which they are involved where such permits, certificates or licences exist under Government legislation.

PROCUREMENT OF MATERIALS

No assistance shall be given in the procurement or allotment of any material or products to be used in and necessary for the construction and overall completion of the works.

TYPE OF FIRE ALARM PANEL

4.1 The type of the fire alarm control panel (FACP) shall be as specified in the particular specification of the tender document and where such specifications do not exist, the type of fire alarm supplied by the contractor shall be deemed to meet the requirements of the General Specification.

4.2 The requirements related to the level of protection, zoning of detectors and call points, circuiting and grouping of fire alarm devices, circuit arrangements(open or closed), circuit monitoring, two -stage alarms, repeater indicators panels shall be as specified in the Bills of Quantities.

4.3 Operation of ancillary services and connections to a central fire alarm station if specified shall be done in consultation with the relevant Fire brigade Authority/ Municipal Council or Police Department and Chief Fire officer Ministry of Public Works or any other method as provided for in the tender document.

4.4 All components in the fire alarm system must be compatible with each other and shall be installed in accordance with the manufacturer's recommendation. Components from different manufacturers shall only be used with the approval of the project Engineer and such usage must be as recommended by the FCAP manufacturer. Where such approval has been granted to the contractor, the contractor still remains liable for sound installation of the entire fire alarm system.

4.5 Systems involving detectors shall be so designed that removal of one detector indicates a fault but does not render other detectors inoperative. Provision shall be included so that testing of individual detectors can be made without sounding an alarm, shutting down plant etc. nor necessitating the complete system to be disabled to prevent an alarm being raised.

REGULATIONS AND STANDARDS

5.1 Mounting height shall be as indicated in the provided drawings or as directed by the Engineer.

5.2 A logbook shall be provided to enable records to be kept of inspections and tests of the system and of incidents, together with their cause and action taken.

5.3 The fire alarm system shall include requirements for the system components typical of, but not limited to, those below:

5.3.1 Manual call points(Breakglass)
5.3.2 Smoke detectors
5.3.3 Duct smoke detectors
5.3.4 Linear beam smoke detectors
5.3.5 Fixed temperature heat detectors
5.3.6 Rate of rise heat detectors
5.3.7 Fire gas detectors
5.3.8 Flame detectors
5.3.9 Combination detectors

5.3.10 Indicating devices
5.3.11 Indicating appliances -ie LED beacons

5.3.12 Fire alarm control panel (F ACP)
5.3.13 Output relays
5.3.14 Sounders
5.3.15 Remote indicators
5.3.16 Door retainers
5.3.17 Beam detectors

5.4 Installation of each of the above items shall comply with all relevant statutory instruments, Particular Specifications and regulations including the following:

5.4.1 Regulations for Electrical Installations' latest edition, issued by the Institution of Electrical Engineers, including all the Appendices contained therein, and referred to herein as the 'lEE Wiring Regulations' and the associated guidance notes;

5.4.2 Regulations and requirements of CCK.

5.4.3 Current regulations by Kenya Bureau of Standards applicable to fire detection system

5.4.4 NFP A 20, Standard for the Installation of Centrifugal Fire Pumps. NFPA 70, National Electrical Code.

5.4.5 NFP A 90A, Standard for the Installation of Air Conditioning and Ventilating Systems. UL 1971, Standard for Evacuation Notification Signals.

DEFINITION

6.1 **Alarm Signal**: Signifies a state of emergency requiring immediate action. Pertains to signals from operation of an alarm initiating device.

6.2 **Notification Appliance**: A bell, horn, chime, flashing strobe or combination thereof

6.3 **Supervisory Signal**: Indicates abnormal status or need for action regarding fire suppression or other protective system

6.4 **Alarm or trouble Signal**: Indicates that a fault, such as an open circuit or ground, has occurred in indicating appliance circuit, initiating device circuit, or internal to F ACP.

6.5 **Zone**: Initiating device or combination of devices connected to a single alarm-initiating device circuit.

6.7 **Main F ACP**: This is an analog addressable fire alarm system or Conventional fire alarm panel located at 24 hour/day guard/ main entrance area and is responsible for protecting primary building and monitoring all sub- FACP's, and communicating selected zone information with slave FACP.

6.8 **Slave FACP**: An independent conventional hard-wired fire alarm system that protects a designated area within primary building. Slave F ACP exchanges selected zone information with main FACP. Main F ACP maintains certain control aspects over the slave FACP such as, resetting slave indicating appliances after main F ACP alarm initiation.

6.9 Sub- FACP.;. A stand-alone fire alarm system that may be conventional or analog addressable

microprocessor fire alarm system. Microprocessor based systems generally have the ability to communicate to the Main fire alarm system via a communication network. Typically, a sub FACP protects an out-building. Such as a generator house or pump house.

6.10 **Communication Center**: An enclosure, room or series of rooms housing electrical electronic communications equipment and systems important to Government department Fire Safety and Hazard Control Division.ie City council/Local council/urban Council fire brigade, Police and Ministry of Roads and Public Works reporting desk represented by CE&ME.

7.0 FIRE ALARM SYSTEM

7.1 The fire alarm system provided shall be complete and of non-coded fire detection and alarm system with manual and automatic alarm initiation capable of being extended. The extension shall still be controlled by the main FACP. All other systems may be conventional or microprocessor based system provided they can properly be monitored and/, or communicate with the Main F ACP.

7.2 Sub Fire Alarm Control Panel shall be either of a Conventional or Microprocessor based fire alarm system. If it is a microprocessor-based system, it shall be networked to the main FACP through a Style 7 wiring.

7.3 The main F ACP shall share control of the sub FACP, but shall not impact negatively on the normal operation of the sub FACP in case of main FACP faults.

8.0 FIRE ALARM FUNCTIONS AND OPERATING FEATURES

The following shall be the basic required system functions and operating features:

8.1 Priority signals to accomplish automatic response functions initiated by first shall not be altered by subsequent alarms.

8.2 The highest priority alarm signal shall be Supervisory signals.

8.3 All other trouble signals shall have second- and third-level priority.

8.3 Signals of a higher-level priority will take precedence over signals of lower priority, even though lower-priority condition occurs first.

8.4 The fire alarm system must be able to annunciate/indicate alarm signals, regardless of priority or order received.

8.4 Signal on one zone should not prevent the receipt of signals from another zone.

8.5 Zones must be wired in such a way that they are manually re-settable from the F ACP after initiating devices are restored to normalcy.

8.6 For analogue addressable FACP, all analog loops shall be configured with loop isolators. and wired in a manner that prevents complete failure of the loop.

8.7 The fire alarm system; Manual or automatic operation, must be able to initiate the correct supervisory and alarm condition.

WIRING FIRE ALARM SYSTEM

The fire alarm system wiring shall conform to one or a combination of the following;

9.1 Style B Wiring (Class B): Initiating device circuits electrically supervised such that a single break or a single ground fault condition is indicated by a trouble signal at the F ACP no matter where break or ground fault condition occurs. A single ground fault shall not interfere with alarm receipt capability.

9.2 Style Y Wiring (Class B) Notification appliance circuits shall be electrically supervised such that a single short, short to ground, and open fault are indicated with a trouble signal at the FACP. Alarm capability during abnormal conditions can be processed when a short to ground fault is present.

9.3 Style Z Wiring; (Class A) Notification appliance circuits electrically supervised such that a single short, short to ground, and open fault are indicated with a trouble signal at the F ACP. Alarm capability during abnormal conditions can be processed when a short to ground fault and when a single open fault are present.

9.4 Style 4 Wiring: Signaling line circuits (SLC) are analog initiating device class 'B' circuits used in addressable systems. During abnormal conditions such as single open, single ground. wire to wire short, wire to wire short & open, wire to wire short & ground, open and ground and loss of carrier, these circuits shall indicate a trouble condition at the F ACP. Alarm capability when a single open or single ground occurs is a requirement of this style circuit.

9.5 Style 6 Wiring: Signaling line circuits (SLC) are analog initiating device class 'A' used in addressable systems. During abnormal conditions such as single open, single ground, wire to wire short. wire to wire short & open, wire to wire short & ground, open and ground and loss of carrier, these circuits shall indicate a trouble condition at the F ACP. Alarm capability when a single open or single ground occurs is a requirement of this style circuit.

9.6 Style 4 Communications: A 'one-way' communication network that provides integral or external network communications to other systems.

9.7 Style 7 Communications: A 'two-way' communication network that provides integral or external network communications to other systems.

9.8 Conventional Hard-Wired Svstem: Alarm, supervisory, and initiating devices directly connected through individual dedicated conductors, to a central control panel without use of multiplexing circuits or devices.

POWER SUPPLY

10.1 Power supply for Fire alarm system from KPLC shall be obtained from a dedicated emergency power circuits. Circuit breakers shall be fitted with a suitable Mcb fitted with a lock requiring removal to operate. The circuit must be dedicated for used only for fire alarm. Each circuit used for fire alarm purposes shall be permanently labeled for function exclusively for the alarm function,

9.1 Secondary power supply shall be provided using sealed gelled electrolyte batteries(non maintained type).For all fire alarm functions. The battery supply shall be calculated to operate loads in a supervisory mode for twenty four hours with no primary power (KPLC) applied and, after that time, operate in alarm mode for five minutes conventional evacuation notification or two hours voice evacuation notification. Fifteen minutes of all call paging will be considered the equivalent of two hours normal paging use.

9.2 Batteries shall be sized at 125% of the calculated size to compensate for deterioration and aging during the battery life cycle. Battery calculations shall be submitted to CE&ME to justify the battery size.

10.3 Provide battery charging circuitry for each standby battery bank in the system. The charger shall be automatic in design, adjusting the charge rate to the condition of the batteries. All system battery charge rates and terminal voltages shall be read using the fire alarm control panel LCD display in the service mode, indicating directly in volts and amperes. Meters reading in percentage are not acceptable.

10.2 Fire Alarm Power Supply switch must be painted red and label "FIRE ALARM."

11.0 HEAT/SMOKE/BEAM/COMBINATION DETECTORS

11.1 Detection technologies using time delays to verify the existence of an alarm. Condition shall not be acceptable.

11.2 Detectors shall be rated at 57°C fixed, and 8.3 cm per minute rate of rise temperatures. Detectors shall be constructed to compensate for the thermal inertia inherent in conventional type detectors due to the thermal mass, and alarm at the set point of 57°C.

11.3 The detectors shall be spaced as per the manufacturer guidelines.

11.4 Detector bases shall be low profile twist lock type with screw clamp terminals and self wiping contacts.

11.5 Flame detectors shall be of ultraviolet light (UV) type or infra-red (IR) or a combination of the two. The detectors must be positioned with unobstructed view of the protected area

11.6 The smoke detector shall be of the photoelectric type for detecting smoldering fires and ionization type for detection of flaming fires

12.0 MANUAL CALL POINT.

12.1 Provide single action manual stations where shown on the drawings, The manual station installed shall be flush or surface mounted as required in the Bills of quantities.

12.2 The manual station shall be equipped with terminal strip and pressure style screw terminals for the connection of field wiring.

12.3 Surface mounted manual stations shall be mounted using a manufacturer's prescribed matching red enamel outlet box as indicated on the drawings/ or BQ.

13.0 REPLACING OLD/OBSOLETE FIRE SYSTEM

13.1 Existing Fire Alarm Equipment must be Maintain fully operational until new equipment has been tested and accepted. As the new equipment is being installed, label it "NOT IN SERVICE" until new equipment is tested and commissioned.

Remove tags from new equipment when put into service and tag existing/old/obsolete fire alarm equipment "NOT IN SERVICE" until removed from building.

13.2 After acceptance of new fire alarm system, remove existing disconnected fire alarm equipment, and

restore damaged surfaces. Package operational fire alarm and detection equipment that has been removed and deliver to Client as directed by Chief electrical and Mechanical Engineer.

14.0 CLEANINGAND ADJUSTING

14.1 All paint splatters and other spots, dirt and debris must be removed once the installation is complete.

14.2 Clean internal surface of al I units installed using methods and materials recommended by the manufacturer.

14.3 Provide the services of Manufacturer's factory authorized service representative to demonstrate and train Government maintenance personnel as specified below;

14.3.1 After completion of commissioning, the contractor must arrange for training of Ministry of roads Technical personnel in procedure and schedules involved in operating, troubleshooting, servicing, and preventive maintenance of the system installed. The training offered shall run for not less than eight (8No.)Hours.

14.3.1 Schedule training with client personnel at least twenty one days in advance. The training offered shall cover general usage/operation of the installed system

14.3.2 The contractor shall also be required to provide 6 copies of Manufacturers standardized and comprehensive system operation and user manuals covering all equipment installed.

14.3.3 The contractor shall also provide 6 copies of instructions listing routine maintenance procedures and noting possible breakdowns. Provide repair and troubleshooting guide, which lists common causes for breakdowns, malfunctions, and recommended repairs.

15.0 TESTING

15.1 Pre-testing and Commissioning: Activities to be performed by manufacturer's-authorized service representative prior to final acceptance by Chief Electrical and Mechanical Engineer on behalf of the Government of the Republic Kenya.

15.2 CE&ME representative will be present during commissioning to witness and certify successful operation of: fire alarm systems.

15.3 Product data for system components including descriptive and technical literature, catalogues and installation instructions, Dimensioned plans and elevations showing minimum clearances and installed features and devices including list of materials and UL listed data must be provided by the contractor.

154 The contractor shall provide operation and maintenance data. Provide data for inclusion in Operating and Maintenance Manual. The data so provided must be for each product type, their features and operating sequences, both automatic and manual as well as recommendations for spare parts to be stocked at site. The names, addresses, and telephone numbers of service organizations that have stock of spare parts for system must be given.

15.5 The contractor shall also provide as installed drawing showing floor plans and the location of all fire alarm device. 3nos. copies of point to point wiring diagram reflecting all wiring to all devices, including number, size, type of conductors and size and type of conduit must also be provided.

15.6 Battery calculations that meet manufacturers and NFPA requirements must be provided.. The battery supplied must meet the demands of the entire fire alarm system installed.

15.7 Provide product certification signed by manufacturers of fire alarm system components or their local authorized distributor, certifying that the products comply with indicated requirements.

15.8 Identify and mark all wiring.

15.9 Provide operating instructions for FACP

16.0 COMMISSIONING

16.1 Test each initiating and indicating device for alarm operation and proper response at control unit Test smoke detectors with actual products of combustion. Test sensitivity of each initiating device with analog sensitivity equipment in accordance with Ministry Public Works testing and commissioning guide. Use test equipment designed to allow anyone to test proper operation of detectors utilized. Retain equipment and special tools at site through the time period when pretesting and testing work is to be completed.

16.2 Test system for specified functions according to Manufacturer's operating and maintenance manual. The contractor shall systematically initiate specified functional performance items at each station including making every type of possible alarm and monitoring initiation and using every communication option. For each item, observe related performance at devices as per the requirement.. Observe indicating lights displays, signal and annunciator indications.

16.3 Test both primary power and secondary power. Verify, by test that secondary power system is capable of operating system for the period and in manner specified.

16.4 Measure resistance Signal Line Circuits (SLC). Maximum line resistance for Style 4 circuit (both wires) is 100 ohms, when using Style 6, the total allowable resistance is 100 ohms (25 ohms per conductor).

16.5 Measure resistance of communication network circuit Maximum allowable line resistance is 80 ohms (both wires).

16.6 After pre-testing is complete, provide letter certifying installation is complete and fully operational; include names and titles of witnesses present during pretesting.

16.7 Correct deficiencies indicated by tests, and completely retest work affected by such deficiencies. Verify by system tests that total system meets requirements and complies with applicable standards.

16.8 Provide a written record of inspections, tests, and detailed test results, in the form of test log. All smoke detector sensitivity voltage measurements must be properly documented. Submit log upon satisfactory completion of tests.

16.9 Provide 21-day minimum notice in writing when system is ready for final acceptance testing (Commissioning).

SECTION D:

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 minimise 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.

2.09 **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.

SECTION E:

PARTICULAR SPECIFICATIONS
FOR
PLUMBING AND DRAINAGE

PARTICULAR SPECIFICATIONS FOR PLUMBING AND DRAINAGE

3.1 GENERAL

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

3.2 MATERIALS AND STANDARDS

3.2.1 Pipe work and Fittings

Pipe work materials are to be used as follows:

a) CPVC Pipework

The pipe work for the plumbing installation shall be chlorinated polyvinyl chloride (CPVC) tubing which meets the requirements of SDR 11 of ASTM F441 and be suitable for potable water installations.

The pipe fittings shall CPVC pipe fittings and shall meet or exceed the requirements of ASTM D2846.

They will conform to ASTM F441 and ASTM F442, ASTM F1970. All changes in direction will be with standard bends or long radius fittings.

All socket type joints shall be assembled employing solvent cements that meet or exceed the requirements of ASTM F493 and primers that meet or exceed the requirements of ASTM F656. The standard practice for safe handling of solvent cements shall be in accordance with ASTM F402. Solvent cement and primer shall be listed by NSF International for use with potable water, and approved by the pipe and fittings manufacturers.

b) Galvanized Steel Pipe work

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.

c) Copper Tubing

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

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

Short copper connection tubes between galvanized pipe work and sanitary fitments 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.

d) 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.

e) 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, centres 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.

f) PVC Soil System

The Sub-contractor shall supply and fix PVC soil pipes and fittings as indicated on the Drawings and Schedules. Pipes and fittings shall be in accordance with relevant British Standards, including B.S. 4514 and fixed to the manufacturer‟s instructions and B.S. 5572.

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

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

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

The Sub-contractor shall be responsible for the joint into the Gully Trap on Drain as indicated on the Drawings.

3.2.2 **Valves**

a) Draw-off Taps and Stop Valves (Up to 50mm Nominal Bore)

Draw-off taps and valves up to 50mm nominal bore, unless otherwise stated or specified for attachment or connection to sanitary fitment shall be manufactured in accordance with the requirements of B.S.1010.

a) 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 Little shampton, 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) CPVC Pipework

The pipe work for the plumbing installation shall be chlorinated polyvinyl chloride (CPVC) tubing which meets the requirements of SDR 11 of ASTM F441 and be suitable for potable water installations.

The pipe fittings shall CPVC pipe fittings and shall meet or exceed the requirements of ASTM D2846.

They will conform to ASTM F441 and ASTM F442, ASTM F1970. All changes in direction will be with standard bends or long radius fittings.

All socket type joints shall be assembled employing solvent cements that meet or exceed the requirements of ASTM F493 and primers that meet or exceed the requirements of ASTM F656. The standard practice for safe handling of solvent cements shall be in accordance with ASTM F402. Solvent cement and primer shall be listed by NSF International for use with potable water, and approved by the pipe and fittings manufacturers.

b) Steel and Copper Pipes and Tubes

Pipe runs shall be secured by clips connected to pipe angers, wall brackets, or trapeze type supports. „U" bolts shall not be used as a substitute for pipe clips without the prior approval of the Engineer.

An approximate guide to the maximum permissible supports spacing in metres for steel and copper pipe and tube is given in the following table for horizontal runs

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

The support spacing for vertical runs shall not exceed one and a half times the distances given for horizontal runs.

c) Expansion Joints and Anchors

Where practicable, cold pipework systems shall be arranged with sufficient bends and changes of direction to absorb pipe expansion providing that the pipe stresses are contained within the working limits prescribed in the relevant B.S. specification.

Where piping anchors are supplied, they shall be fixed to the main structure only. Details of all anchor design proposals shall be submitted to the Engineer for approval before erection commences.

The Sub-contractor when arranging his piping shall ensure that no expansion movements are transmitted directly to connections and flanges on pumps or other items of plant.

The Sub-contractor shall supply flexible joints to prevent vibrations and other movements being transmitted from pumps to piping systems or vice versa.

3.2.5 **Sanitary Appliances**

All sanitary appliances supplied and installed as part of the Sub-contract works shall comply with the general requirements of B.S. Code of Practice 305 and the particular requirements of the latest B.S. Specifications.

3.2.6 **Pipe Sleeves**

Main runs of pipework are to be fitted with sleeves where they pass through walls and floors. Generally the sleeves shall be of P.V.C. except where they pass through the structure, where they shall be mild steel. The sleeves shall have 6mm - 12mm clearance all around the pipe or for insulated pipework all around the installation. The sleeve will then be packed with slag wool or similar.

3.3 **INSTALLATION**

3.3.1 **General**

Installation of all pipework, valves, fittings and equipment shall be carried out under adequate supervision from skilled staff to the relevant codes and standards as specified herein. The Sub-contractor shall be responsible to the Main Contractor for ensuring that all builders work associated with his piping installation is carried out in a satisfactory manner to the approval of the Engineer.

3.3.2 **Above Ground Installation**

a) Water Services

Before any joint is made, the pipes shall be hung in their supports and adjusted to ensure that the joining faces are parallel and any falls which shall be required are achieved without springing the pipe.

Where falls are not shown on the Contract Drawings or stated elsewhere in the Specification, pipework shall be installed parallel to the lines of the buildings and as close to the walls, ceilings, columns, etc., as is practicable. All water systems shall be provided with sufficient drain points and automatic air vents to enable them to function correctly.

Valves and other user equipment shall be installed with adequate access for operation and maintenance. Where valves and other operational equipment are unavoidably installed beyond normal reach or in such position as to be difficult to reach from a small step ladder, extension spindles with floor or wall pedestals shall be provided.

Screwed piping shall be installed with sufficient number of unions to facilitate easy removal of valves and fittings and to enable alterations of pipework to be carried out without the need to cut the pipe.

Full allowances shall be made for the expansion and contraction of pipework, precautions being taken to ensure that any force produced by the pipe movements are not transmitted to valves, equipment or plant.

All screwed joints to piping and fittings shall be made with P.T.F.E. tape.

The test pressure shall be maintained by the pump for about one hour and if there is any leakage, it shall be measured by the quantity of water pumped into the main in that time. A general leakage of 4.5 litres per 25mm of diameter, per 1.6 kilometres per 24 hours per 30 metres head, may be considered reasonable but any visible individual leak shall be repaired.

b) Sanitary Services

Soil, waste and vent pipe system shall be installed in accordance with the best standard of modern practice as described in B.S. 5572 to the approval of the Engineer.

The Sub-contractor shall be responsible for ensuring that all ground waste fittings are discharged to a gully trap before passing to the sewer via a manhole.

The Sub-contractor shall provide all necessary rodding and inspection facilities within the draining system in positions where easy accessibility is available.

Where a branch requires rodding facilities in a position to which normal access is unobtainable, then that branch shall be extended so as to provide a suitable purpose made rodding eye in the nearest adjacent wall or floor to which easy access is available.

The vent stacks shall terminate above roof level and where stack passes through roof, a weather skirt shall be provided. The Sub-contractor shall be responsible for sealing the roof after installation of the stacks.

The open end of each stack shall be fitted with a plastic coated or galvanised steel wire guard.

Access for rodding and testing shall be provided at the foot of each stack.

c) Sanitary Appliances

All sanitary appliances associated with the Sub-contract works shall be installed in accordance with the best standard of modern practice as described in C.P. 305 to the approval of the Engineer.

3.4 TESTING AND INSPECTION

3.4.1 Site Tests – Pipework Systems

a) Above Ground Internal Water Services Installation

All water service pipe system installed above ground shall be tested hydraulically for a period of one hour to not less than one and half times to design working pressure.

If preferred, the Sub-contractor may test the pipelines in sections. Any such section found to be satisfactory need not be the subject of a further test when system has been completed, unless specifically requested by the Engineer.

During the test, each branch and joint shall be examined carefully for leaks and any defects revealed shall be made good by the Sub-contractor and the section re-tested.

The Sub-contractor shall take all necessary precautions to prevent damage occurring to special valves and fittings during the tests. Any item damaged shall be repaired or replaced at the Sub-contractor‟s expenses.

d) Above Ground Soil Waste and Ventilation System

All soil, waste and ventilating pipe system forming part of the above ground installation, shall be given appropriate test procedures as described in B.S. 5572, 1972.

Smoke tests on above ground soil, waste and ventilating pipe system shall not be permitted. Pressure tests shall be carried out before any work which is to be concealed is finally enclosed.

In all respects, tests shall comply with the requirements of B.S. 5572.

3.4.2 **Site Test – Performance**

Following satisfactory pressure test on the pipework system operational tests shall be carried out in accordance with the relevant B. S. Code of practice on the systems as a whole to establish that special valves, gauges, control, fittings, equipment and plant are functioning correctly to the satisfaction of the Engineer.

All hot water pipework shall be installed with pre-formed fibre glass lagging to a thickness of 25mm where the pipe runs above a false ceiling or in areas where the ambient temperature is higher than normal with the result that pipe “sweating”, due

to condensation will cause nuisance.

All lagged pipes which run in a visible position after erection shall be given a canvas cover and prepared for painting as follows:

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

ii) Apply two coats of an approved paint and finish in suitable gloss enamel to colors approved by the Engineer.

All lagging for cold and hot water pipes erected in crawl ways, ducts and above

false ceiling which after erection are not visible from the corridors of rooms, shall be covered with a reinforced aluminium foil finish banded in colours to be approved by the Engineer.

In all respects, unless otherwise stated, the hot and cold water installation shall be carried out in accordance with the best standard of modern practice and described in C.P.342 and C.P.310 respectively to the approval of the Engineer.

The test pressure shall be applied by means of a manually operated test pump or, in the case of long main or mains of large diameter, by a power driven test pump which shall not be left unattended. In either case precautions shall be taken to ensure that the required pressure is not exceeded.

Pressure gauges should be recalibrated before the tests.

The Sub-contractor shall be deemed to have included in his price for all test pumps, and other equipment required under this specification.

The test pressure shall be one and a half times the maximum working pressure except where a pipe is manufactured from a material for which the relevant B.S. specification designates a maximum test pressure.

3.5 STERILISATION OF COLD WATER SYSTEM

All water distribution system shall be thoroughly sterilised and flushed out after the completion of all tests and before being fully commissioned for handover.

The sterilisation procedures shall be carried out by the Sub-contractor in accordance with the requirements of B.S. Code of Practice 301, Clause 409 and to the approval of the Engineer.

SECTION F:

PARTICULAR SPECIFICATION FOR PORTABLE FIRE EXTINGUISHER BOOSTED HOSE REEL SYSTEM, DRY RISER AND FIRE HYDRANT INSTALLATIONS

1.0 PORTABLE FIRE EXTINGUISHER AND HOSE REEL INSTALLATIONS

1.1 General

The particular specification details the requirements for the supply and installation and commissioning of the Portable Fire Extinguishers, Hose Reel, Fire Hydrant and Dry Riser. 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.

1.2 Scope of Works

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

1.3 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.

1.4 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

1.5 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.

1.6 Air Foam Fire Extinguisher

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

Cylinder:	**to B.S. 1449**
Necking:	to be 76mm outside diameter steel EN 3A $2^3/_4$ X 8TPI female thread**.**
Head cap:	to be plastic moulding acetyl resin.
CO_2 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.

1.7 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.

2.0 Boosted Hose Reel System

2.1 General

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

2.2 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.

2.3 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.

2.3.1 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-galvanized cabinet recessed on the wall.

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

2.3.2 Pipe Work

The pipe work for the hose reel installation shall be galvanized wrought steel tubing heavy grade Class B 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.

2.3.3 Pipe Fittings

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

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

2.3.4 Non-return Valves

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

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

2.3.5 Gate Valves

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

2.3.6 Sleeves

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

2.3.7 Earthing

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

2.3.8 Finish Painting

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

2.3.9 Testing and Commissioning

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

2.3.10 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.

3.0 Signage-Fire Instruction /Fire Exit

3.1 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.

3.1.1.1 Fire Exit Sign

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

1. Lettering **IN RED COLOR** 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.

3.1.1.2 Hose Reel Label

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

1. Lettering **IN RED COLOR** 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.

4.0 The Dry Riser Installation

4.1 Definition

Dry riser installation is a system where a pipe is installed vertically through a building with and inlet breeching provided at a street level through which the fire brigade can pump water.

4.2 Installation

The dry riser is installed with Fire Brigade Breeching inlet installed at street level in front of the building at a position where fire brigade can access and pump water into the building. Landing valves are then installed on each floor above the ground level to which the fire brigade can attach fire fighting hoses.

4.3 Landing Valves

The Hydrant outlets shall comply with the requirements of C.P 5306 Part 1:1976 and B.S 5041 Part 1. The hydrant Riser outlets shall be 2No minimum per floor including the roof and shall be mounted with their centre line between 910mm and 1060mm above finished floor level positioned at the entry lobby on each floor.

4.4 Fire Brigade Breeching Inlets

One of the Brigade Breeching inlets shall consist of four (4No.) 64mm internal diameter instantaneous male coupling for connection to the fire brigade pumps and other two shall consist of two (2No.) 64mm internal diameter instantaneous male coupling.

The breeching inlet shall incorporate a 100mm diameter flanged connection to the 100mm dry riser mains.

The breeching inlet shall be located 1000mm to the centre line of the box above ground level.

The breeching inlet shall be enclosed in a galvanized mild steel cabinet of suitable dimensions to contain all visible pipe work. A 7.5mm thick wired glass front shall be provided with 50mm high, red lettering, **DRY RISER BREECHING CONNECTOR.** The reminder of the box is to be finished in fire red enamel paint.

4.5 Pipework

The pipe work fittings shall be wrought steel pipe fittings welded or seamless fittings conforming to B.S 1740 Part 1971 or malleable iron fittings to B.S 193.
All changes in direction will be standard bends or long radius fittings. **No elbows will be permitted.**

4.6 Flanges

The flanges shall comply with B.S 4504:1969. All flanges shall comply with a nominal Pressure Rating of 16 bars and shall be of either grey cast iron or steel.

4.7 Gaskets

The gaskets for use with flanges to B.S 4504: 1969 shall comply with B.S 4865 Part 1: 1972 for pressure up to 64 bars.

4.8 Air Relief Valves

The dry riser shall terminate 1M above the roof landing valve with an air relief valve. The valve construction shall be of iron Grade E conforming to B.S 1452. Float Guide and Seat Ring shall be of A.B.S plastic with seal ring of moulded rubber, Maximum working pressure of the valve is to be 16 bar.

4.9 Non-Return Valves

The non-return valves up to and including 80mm diameter shall conform to B.S 5153:1974 with flanges to B.S 4504 PN 16. The valves shall be of cast iron construction with gunmetal seat and disc with spring of phosphor bronze.

Non return valves exceeding 80mm diameter and up to 300mm diameter shall be conform to B.S 5153:1974 with flanges to B.S 4504 PN 16. The valve shall be is Cast Iron Construction with Gunmetal seat to B.S 1400.

4.10 Gate Valves

The gate valves up to and including 80mm shall be non rising stem and wedge disc to B.S. 1952:1964 (B.S 5154:1974) with screwed threads to B.S.21(KS ISO 7 – 1) taper thread. The valves shall be of high grade bronze construction.

Gate valves exceeding 80mm and up to 300mm shall be to B.S 5163 with flanges to B.S 4504 PN 16. The valve is to be double flanged cast iron wedge gate valve for water works purposes with cast iron body to B.S 1452 GRADE 14 with rubber covered cast iron gate. The stem is to be of Forged Stainless Steel to B.S 970 with cast iron hand wheel.

4.11 Sleeves

Where Pipework pass through walls or floors or ceiling a sleeve shall be provided one diameter larger than the diameter of the pipe the space between to be the packed with mineral wool, to the Engineers approval.

4.12 Floor and Ceiling Plates

Where pipes pass through floors, walls and ceilings, floor, wall and ceilings plates shall be secured around the pipe. The plated shall be of stainless steel construction and will serve no other purpose than to present a neat finish to the exposed installations.

4.13 Earthing

The dry riser shall be electrically earthed by a direct earth connection. The installation of the earthing to be

carried out by the electrical Sub-Contractor

4.14 Finish Painting

Upon completion, testing and commissioning of the dry rise installation the pipe work shall be primed and finish painted with 2No. Coats of paint by the Sub-Contractor to the Engineer‟s requirements.

4.15 Testing and Commissioning

The installation is to be tested to one and half times the working pressure of the installation, all to the approval of the Engineer. The pressure shall be maintained for about 1 hour ensuring that there is no change in pressure is observed

4.16 Canvas Hose

The canvas hose shall be 65mm diameter 30m long designed for a bursting pressure of 34 bars. The canvas hose shall have attached instantaneous hose coupling, branch pipes and nozzle to B.S 336: 1965.

4.17 Hose Cradle

The hose cradle shall be a high quality fitting designed for use in public buildings. The cradle **shall be made in aluminium** throughout and shall be supplied with a wall bracket and the finish shall be polished or chrome plated

5.0 Fire Hydrant

5.1 Fire Hydrant Details

5.1.1 Definition

The fire hydrant is a system which is installed along the water mains to used as a means of providing water to the fire brigades through the connection of the hose from a stand pipe.

5.1.2 Installation

The fire hydrants are installed along the water mains with the first hydrant at a location which is not more than 60 m from the entry of any building and they should not be more than 120 m apart.

5.1.3 Hydrant body

The body of the hydrant shall be made of grey cast iron complying with the requirements of BS 1452 having a tensile strength not less than that given for grade 14.

5.1.4 Hydrant Valve

The valve shall be faced with suitable resilient material. The threaded part of the valve, which engages with the spindle, shall be of bronze.

Body seating for the valves shall be of copper alloy complying with the requirements of BS 1400 (KS 06 – 744 – 1:1991) or high tensile brass complying with the requirements of BS 2872 or BS 2874.

Turning the spindle cap in a clockwise direction when viewed from above shall close valves and the direction of opening shall be permanently marked on the gland.

5.1.5 Spindle & Spindle Cap

The spindle note shall be either of the same material as the spindle, or of copper alloy complying with the requirements of BS 1400 (KS 06 – 744 – 1:1991). It shall have a squared top formed to receive either a cast iron spindle cap.

The spindle shall be made of copper alloy complying with the requirements of BS 2874 (KS 06 – 744 – 1:1991), and it shall have a threaded machined of trapezoidal form. The spindle cap shall be of a cast iron secured to the spindle by on M12 hexagon socket set screw conforming to BS 4168.

5.1.6 Hydrant Outlet

The outlet flange of the hydrant shall have above nominal diameter 65mm, and shall be fitted with a screwed outlet – Both flanges shall be 50 mm conforming to BS 4504: Part 1: 1969

The screwed outlet shall be provided with a cap of cast iron or other suitable material. The cap shall cover the outlet thread completely and shall be attached to the hydrant by a chain

The distance between the axis of the outlet and the nearest point on the spindle fitting shall be not less than 100 mm.

The screwed outlet shall be made of Copper alloy to BS 1400 (KS 06 – 744 – 1:1991), or Copper alloy to BS 2872, or Suitable Spheroidal graphite iron to BS 2789 protected against corrosion accordance with CP 2008.

5.1.7 Drain Boss

Each shall be provided with a suitable drain boss on the outlet side. This shall be located at the lowest practical point which will permit the filling of self-operating a drilled drip plug.

5.1.8 Jointing

The hydrants shall have machined joint faces throughout and the fitting of adjoining parts shall be such as to make sound joints, corresponding parts of hydrants of the same design and manufacture shall be interchangeable.

5.1.9 Hydrant coating

The hydrant shall be coated in accordance to BS. 4164.

5.1.10 Surface Box

The clear opening of hydrant surface boxes at ground level shall not be less than 250mm x 380mm.
The depth of frame shall normally be:

a) For boxes located on footpaths: 100mm
b) For boxes located in roads: 125mm

5.1.11 Marking

Surface box covers shall be clearly marked by having the words **„FIRE HYDRANT"** in letter not less than 30mm high, or the initials **„FH"** in letters not less than 75mm high cost into the cover.

5.1.12 Surface Box Covers & Frames

The surface box frames and covers shall be graded in accordance with BS 497:1967 and shall meet the loading test requirement also given in BS 497

5.2 Stand Pipes

One end of these shall have internal threads to couple with the 80mm diameter external threads of the screw down type or above ground fire Hydrant (BS 750 type 2 hydrants) outlet. It shall have 65mm diameter internal threads to couple with the interconnect or hose of the pump set

5.3 Hose Pipe

Each cotton synthetic fibre rubberized fire hosepipe to be at least 30 metres long with 65mm diameter female instantaneous type connector complete with nozzle.

6.0 Testing

The hydrants shall be deemed to have undergone the necessary hydrostatic and flow test at time of manufacture. Necessary test certificates from the manufacturer shall be needed. The test, to conform to BS 750: 1977:

B. BILLS OF QUANTITIES

1. Should the Contractor be in doubt about the precise meaning of any item, word or figure, for any reason whatsoever, or observe any apparent omission of words or figures he must inform Nyeri County Public Service Board in order that the correct meaning may be decided upon or before the date for the submission of the Tender.

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

3. The Contractor shall not alter or otherwise qualify the text of these Bills of Quantities. Any alteration or qualification made without authority will be ignored and the text of the Bills of Quantities as printed will be adhered to.

4. The Contractor shall be deemed to have made allowance in his prices generally to cover items of not ca provided for in the Preliminaries

5. All items of measured works shall be priced in detail and tenders containing lump sums to cover traders or groups of work must be broken down to show prices for each item before they will be accepted. Lump sums to cover items of preliminaries shall likewise be broken down if so required.

6. The Copyright of these Bills of Quantities is vested in the Nyeri County and no part thereof may be reproduced without their express permission given in writing.

7. The Contractor is solely responsible for the accurate ordering of materials in accordance with the Drawings and instructions and no claims for any loss or expense will be entertained for orders for materials based upon the Bills of Quantities.

8. The Bills of Quantities must be priced in Kenya Currency, i.e. Shillings and Cents.

9. In no case will any expenses incurred by Contractors in preparation of this Tender be reimbursed.

NOTES TO BILLS OF QUANTITIES

Throughout these Bills, units of measurement and terms are abbreviated and shall be interpreted as follows: -

C.M. Shall mean cubic metre
S.M. Shall mean square metre
L.M. Shall mean linear metre
MM Shall mean Millimeter
KG. Shall mean Kilogramme
No. Shall mean Number
Prs. Shall mean Pairs
B.S. Shall mean the British Standard Specification Published by the British Standards Institution,
Ditto Shall mean the whole of the preceding description except as qualified in the description in which it occurs.

m.s. Shall mean measured separately.
a.b.d Shall mean as before described.

Adjustment of Provisional Sums

In the final account all Provisional Sums shall be deducted and the value of the work properly executed in respect of them upon the PROJECT MANAGER's order added to the Contract Sum. Such work shall be valued, but should any part of the work be executed by a Nominated Sub-Contractor, the value of such work or articles for the work to be supplied by a Nominated Supplier, the value of suchwork or articles shall be treated as a P.C. Sum and profit and attendance comparable to that containedin the priced Bills of Quantities for similar items added.

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

1. These Notes for Preparing a Bill of Quantities are intended only as information for the Procuring Entity or the person drafting the Tender Documents. Priced Bills of Quantities shall be part and parcel of the Contract Documents.

2. The objectives and purpose of the Bills of Quantities are to provide sufficient information on the specifications, descriptions and quantities of Works to be performed to enable tenders to be prepared efficiently and accurately and when a contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed. In order to attain these objectives, Works should be itemized in the Bill of Quantities insufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and clear as possible.

3. The Bills of Quantities should be divided generally into the following sections:

a) Preambles
b) Preliminary items
c) Work Items
c) Daywork Schedule; and
d) Provisional items
e) Summary.

4. NOTES TO PREPARING PREAMBLES

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

42 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 mt	milliliter	mm

4.3 The Bills of Quantities shall be read in conjunction with the Instructions to Tenders, General and Special Conditions of Contract, Technical Specifications, and Drawings.

4.4. The quantities given in the Bills of Quantities are estimated and partly provisional and are given to provide a common basis for tendering. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Quantity Surveyor and valued at the rates and prices tender in the priced

Bills of Quantities, where applicable, and otherwise at such rates and prices as the Architect may fix within the terms of the Contract.

4.5. The rates and prices tender in the priced Bills of Quantities shall, except in so far as it is otherwise provided under the Contract, include all Constructional Plant, labour, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.

4.6. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of Items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.

4.7. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bills of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

4.8. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bills of Quantities. References to the relevant sections of the Contract documents shall be made before entering prices again teach item in the priced Bills of Quantities.

4.9 Provisional Sums and contingency sums included and so designated in the Bills of Quantities shall be expended in whole or in part at the direction and discretion of the Architect in accordance with Sub-Clause13.5 and Clause 13.6 of the General Conditions of contract.

4.10 In preparing the Bills of Quantities, notes should be removed as they are intended to guide the person preparing the Tender Documents. The Contractor must allow in his rates for any costs associated with and complying with the requirements in the Preambles.

4.11 Should a tenderer/contractor not price any item in any section of the Bills of Quantities including Preliminary items, it will be assumed that he/she has spread its cost in other areas that he/she will have priced. Therefore, the item or items will be executed without any additional costs or without being treated like variations.

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

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

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

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

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

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

BILL NO.1: PRELIMINARIES					
ITEM	**DESCRIPTION**	**QTY**	**UNIT**	**RATE**	**AMOUNT**
	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				
	BID SECURITY				
A	The contractor shall provide a bid security duly signed, sealed and stamped from an approved Bank or Insurance company of required the amount.				
	SIGNBOARD				
B	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.				
	PERFORMANCE GURANTEE				
C	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 Guarantee.				
	INSURANCE				
D	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.				
	TOTAL CARRIED TO COLLECTION				
PR/1					

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	COMPIANCE WITH LABOUR LAWS				
A	Allow for complying with all Government Labor 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.				
	LABOUR CAMPS				
B	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.				
	PROJECT MANAGER OFFICE				
C	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.				
	SITE SECURITY				
D	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.				
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	**WATER AND ELECTRICITY SUPPLY FOR THE WORKS** 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.				
B	**SANITATION OF THE WORKS** 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				
C	**STORAGE OF MATERIALS** 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.				
D	**HOARDING** 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				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	**SAMPLES** 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.				
B	**EXISTING SERVICES AND PROPERTY** 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				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	PROTECTION OF THE WORKS.				
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.				
	PLANT, TOOLS AND VEHICLES				
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.				
	CLEARING AWAY				
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				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	PRELIMINARIES SUMMARY				
	TOTAL CARRIED FORWARD FROM PAGE PR/1				
	TOTAL CARRIED FORWARD FROM PAGE PR/2				
	TOTAL CARRIED FORWARD FROM PAGE PR/3				
	TOTAL CARRIED FORWARD FROM PAGE PR/4				
	TOTAL CARRIED FORWARD FROM PAGE PR/5				
	TOTAL FOR PRELIMINARIES CARRIED TO GRAND SUMMARY				

BILL NO. 2: BUILDERS WORK

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 1 **DEMOLITIONS AND ALTERATIONS** **(ALL PROVISIONAL)** ***Items of demolition and removal shall include shoring and making good disturbed areas to match existing and loading and carting away debris unless otherwise specified***				
A	Carefully demolish existing storage room overall size size 20 square metres comprising of concrete ground bed; temporary glavanized roofing sheets walling; 2,400mm (average) high existing pitched roof comprising of galvanized roofing sheets on timber purlins; timber trusses consisting of rafters, ties and struts; including eaves roof over hangs; safely store arising materials as directed by the Project Manager		ITEM		
	TOTAL FOR DEMOLITIONS AND ALTERATIONS CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2				
	SUBSTRUCTURES				
	(ALL PROVISIONAL)				
A	Clear site of all grass, bushes, shrubs, undergrowth and small trees including grubbing up roots and burn arisings	580	SM		
B	Cutting down trees inclusive of roots and stumps (overall girth 600 - 900mm)	1	NO		
C	Excavate oversite to remove vegetable soil commencing from reduced levels not exceeding 150mm deep	491	SM		
D	Excavate oversite to reduce levels not exceeding 1,500mm deep commencing from stripped level	221	CM		
E	Excavate trenches for strip foundation not exceeding 1,500mm commencing from reduced level	174	CM		
F	Excavate for column bases not exceeding 1,500mm deep from reduced level	7	CM		
G	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		
	Backfilling				
H	Return, fill and ram selected excavated material around foundations and columns	100	CM		
	Disposal				
J	Load and cart away surplus excavated material and spread over site not exceeding 10m away	302	CM		
	Imported filling				
K	300mm thick hardcore fill in making up levels; well-watered, rolled and compacted in layers of 150mm, to Structural Engineer's approval	90	CM		
L	50mm selected fine material to hardcore surfaces, well rolled and levelled to receive concrete	336	SM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Damp-Proof membrane				
A	Polythene sheet; 1,000 gauge, 200mm welted laps (no allowance made to laps), horizontal; 1 no. layer laid on compacted quarry dust blinding	336	SM		
	Anti-termite treatment				
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	336	SM		
	Concrete Class (1:3:6) in 50mm thick blinding under: -				
C	Strip footing	116	SM		
D	Column bases	5	SM		
	Vibrated reinforced concrete grade 20/20 (1:2:4) in:				
E	Strip footing	29	CM		
F	Ground beam	3	CM		
G	Foundation columns	1	CM		
H	150mm thick ground bed	336	SM		
	Sawn cypress formwork to:				
J	Sides of strip footing	97	SM		
K	Ditto to column bases	3	SM		
L	Ditto to foundation columns	8	SM		
M	Ditto but to ground beam	23	SM		
N	Edges of floor slab exceeding 75mm but n.e 150mm wide	85	LM		
	Steel reinforcement as described including cutting to length, bending and fixing including all necessary tying wires and spacing blocks (All Provisional)				
P	12mm diameter bars	171	KG		
Q	10mm diameter bars	887	KG		
R	8mm diameter bars	90	KG		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Steel fabric mesh reinforcement to B.S. 4483				
A	B.R.C fabric mesh reinforcement ref. A142 weighing 2.22kg/m² laid with 200mm laps to ground floor slab	336	SM		
	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				
B	200mm thick walling	488	SM		
	Plinths				
C	12mm thick cement and sand (1:3) render to plinths	43	SM		
D	Prepare and apply three coats bituminous paint to rendered plinths	43	SM		
	TOTAL CARRIED TO COLLECTION				
	COLLECTION				
	TOTAL CARRIED FORWARD FROM PAGE BW/2				
	TOTAL CARRIED FORWARD FROM PAGE BW/3				
	TOTAL CARRIED FORWARD FROM PAGE ABOVE				
	TOTAL FOR SUBSTRUCTURES CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 3				
	REINFORCED CONCRETE SUPERSTRUCTURE				
	Vibrated reinforced concrete grade 20/20 (1:2:4) in:				
A	Columns	1	CM		
B	Beams	12	CM		
C	100mm thick concrete worktop	8	SM		
	Sawn cypress formwork to:				
D	Sides and soffits of beams	213	SM		
E	Sides of vertical columns	14	SM		
F	Soffits of worktops	8	SM		
G	Edges of slab exceeding 75mm but not exceeding 150mm thick	10	LM		
	Steel reinforcement as described including cutting to length, bending, hoisting and fixing including all necessary tying wires and spacing blocks (All Provisional)				
H	12mm diameter bars	216	KG		
J	10mm diameter bars	70	KG		
K	8mm diameter bars	103	KG		
	TOTAL FOR REINFORCED CONCRETE SUPERSTRUCTURE CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 4				
	WALLING				
	External Walling				
	Approved smooth chisel dressed/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				
A	200mm thick walling	190	SM		
	Damp Proof Course				
B	200mm wide; B.S. 743 Type A bitumen hessian base 150 mm laps (no allowance made for laps); horizontal, 1 no. layer, bedded in cement sand (1:3) mortar	79	LM		
	Internal Walling				
	Smooth chisel dressed/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				
C	200mm thick walling	241	SM		
D	Ditto but 150mm thick	20	SM		
	Damp Proof Course				
E	200mm wide; B.S. 743 Type A bitumen hessian base 150 mm laps (no allowance made for laps); horizontal, 1 no. layer, bedded in cement sand (1:3) mortar	91	LM		
F	Ditto but 150mm wide	7	LM		
	Permanent Ventilation				
G	Form or leave holes in 200mm thick wall	20	NO		
H	Pair of permanent ventilation fixed with and including mosquito wire gauze	20	PRS		
	TOTAL FOR WALLING CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 5				
	ROOF CONSTRUCTION (ALL PROVISIONAL)				
	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				
A	100 x 50mm rafters	367	LM		
B	Ditto ceiling joist	286	LM		
C	Ditto kingpost	79	LM		
D	Ditto ties and struts	343	LM		
E	75 x 50mm purlins	612	LM		
	Wall-Plate in first grade sawn celcured cypress				
F	100 x 50 mm wall plate bolted to wall with and including 12mm diameter bolts 60mm long at 1,000mm centres	56	LM		
	Roof Covering				
G	APPROVED Pre-painted IT-5 gauge 28 roofing sheets as 'MRM' or any other equal and approved nailed to timber purlins (m.s)	457	SM		
	Accessories, fixing as necessary to roofing sheets				
H	Matching ridge/hip cap	47	LM		
J	Ditto valley flushing	10	LM		
	Fascia/ Barge Board				
K	225 x 25 mm thick wrot cypress fascia /barge boards fixed to end of rafters (m/s)	108	LM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Rain water goods				
	Gutters				
A	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	91	LM		
B	Extra over gutter for stopped ends	8	NO		
	Downpipe				
C	110mm Diameter UPVC down pipe fixed to wall with matching brackets at 1,000mm centres	18	LM		
D	Extra over downpipe for 110mm bend	12	NO		
E	Extra over for shoe	6	NO		
	Decoration and painting				
	Knot, stain prepare and apply three coats oil gloss paint to:				
F	Ditto but exceeding 200mm but n.e 300mm girth	108	LM		
	TOTAL CARRIED TO COLLECTION				
	COLLECTION				
	TOTAL CARRIED FORWARD FROM PAGE BW/7				
	TOTAL CARRIED FORWARD FROM PAGE ABOVE				
	TOTAL FOR ROOF CONSTRUCTION CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 6				
	DOORS				
	Steel Grille Doors				
	The following purpose made mild steel grille doors complete wih hanging and locking accessories fabricated in accordance with Architectural designs, primed with red oxide before delivery to the site, cutting pinning fixing lugs to walls and plastering reveals in cement and sand mortar (1:3) with all main frames in 40 x 25mm S.H.S tubing				
A	Single leaf door overall size 1,500 x 2,700mm high overall comprising of 40 x 25 x 3mm thick framing with 25 x 25mm SHS vertical infills flush welded and jointed to full width of door and mild steel plate welded to steel members	1	NO		
	WROT MAHOGANY (PRIME GRADE)				
	50mm thick solid hardwood panelled door comprising of 200 x 50mm stiles, top and bottom rails infilled with 6 No. moulded panels vertically/horizontally; 4mm thick clear glazed fanlight 600mm high with and including viewing panel in 6mm thick glazing; to Architect's detail and approval in;-				
B	Double leaf door overall size 1,500 x 2,700mm	4	NO		
C	Single leaf door overall size 900 x 2,700mm high	9	NO		
	Wrot Mahogany or other equal and approved: -				
D	150mm x 50mm frame with two labours plugged	84	LM		
E	75 x 25mm architrave with four labours	84	LM		
	Flush Doors				
	50mm thick semi-solid core flush doors faced both sides with plain internal quality "Mahogany" veneer and hardwood lipped all edges to approval				
F	Single leaf overall size 900 x 2,700mm high	3	NO		
G	Ditto but overall size 850 x 2,000mm high	5	NO		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Wrot Cypress or other equal and approved: -				
A	100mm x 50mm rebated frame with two labours plugged	43	LM		
B	45 x 20mm architrave	43	LM		
C	25mm diameter quadrant	43	LM		
D	30 x 30mm glazing bead	36	LM		
	Glass and Glazing				
E	4mm thick clear sheet glass 0.10-0.50sm	7	SM		
	SUPPLY AND FIX the following ironmongery as 'Union' catalogue or equal and approved; from Assa Abloy (EA) Ltd. Or other equal and approved including matching handles, screws and fixing accessories				
F	3 Lever Mortice lock complete with a pair of polished brass handles	13	NO		
G	2 Lever mortice lock and set furniture Ref.Union 2295.	8	NO		
H	100mm brass butt hinges	38	PRS		
J	40mm Diameter rubber door stops	21	NO		
K	Door closer as ' Bricon' brass coated ***(to be approved)***	13	NO		
	Painting and Decoration				
	Prepare and apply three coats 2- pack clear polyurethane varnish as 'Crown' or other equal and approved manufacturer(s) on: -				
L	General surfaces of timber	76	SM		
M	Ditto but exceeding 100mm but n.e 200mm girth	168	LM		
	Prepare and apply three coats gloss oil paint to:				
N	General surfaces of metal	8	SM		
P	General surfaces of timber	32	SM		
Q	Ditto but exceeding 100mm but n.e 200mm girth	43	LM		
R	Ditto n.e 100mm girth	122	LM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	COLLECTION TOTAL CARRIED FORWARD FROM PAGE BW/9 TOTAL CARRIED FORWARD FROM PAGE BW/10				
	TOTAL FOR DOORS CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 7				
	WINDOWS				
	Steel Casement Windows				
A	250 x 25mm in-situ concrete window cill bedded and jointed with cement and sand (1:3) mortar	35	LM		
	Supply, assemble and fix the following purpose-made mild steel casement windows; standard metal section from approved manufacturer complete with frames, transomes, mullions and with and including permanent ventilators comprising "T" bar, gauze and 16 gauge sheet metal hood 50mm high x 50mm projection to full width of window, coupling mullions, approved ironmongery and one coat manufacturer's primer; all welding ground to smooth finish and inclusive of Galvanized Mild Steel grille framed with 40 x 25 x 3mm thick R.H.S Sections				
B	Window overall size 2,000 x 1,500mm high	12	NO		
C	Ditto but 1,500 x 1,500mm high	1	NO		
D	Ditto but 1,400 x 1,500mm high	2	NO		
E	Ditto but 800 x 600mm high	5	NO		
	Glass and Glazing				
	4mm thick clear glass and glazing fixed with and including putty to steel windows				
F	Panes 0.1 - 0.5 square metres	43	SM		
	4mm thick obscure glass and glazing fixed with and including putty to steel windows				
G	Panes 0.1 - 0.5 square metres	2	SM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Curtain rods				
A	APPROVED 25mm diameter double curtain rod laid on mild steel metal brackets, drilled into wall at each end including painting and making good disturbed wall surfaces	33	LM		
	Prime, prepare and apply three coats gloss oil paint to:				
B	General surfaces of metal (measured gross)	90	SM		
	Anodized Aluminuim Windows				
	Heavy duty powder coated aluminium windows to B.S. 4813 to be executed by an approved sub-contractor				
	The following in heavy duty powder coated aluminium windows from approved manufacturer(s) complete with frames, mullions, transomes, railings and necessary intermidiate reinforcement elements including all weather strips, rubber glazing strips, couplings, ironmongery includuing hinges, fasteners and stays, sliding rails (where necessary) including plugging to concrete or stonework; panes glazed; to Architect's schedule and approval				
C	Window overall size 2,900mm x 1,500mm high	1	NO		
	TOTAL CARRIED TO COLLECTION				
	COLLECTION TOTAL CARRIED FORWARD FROM PAGE BW/12 TOTAL CARRIED FORWARD FROM PAGE ABOVE				
	TOTAL FOR WINDOWS CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 8				
	EXTERNAL FINISHES				
A	25mm rendering to beams finished with a wood float thickness; to Architect's detail and approval	68	SM		
B	Ditto but to walls	190	SM		
C	Ditto but to columns	14	SM		
	Prepare and apply three coats of premium quality paint as "Basco Paints - Duracoat" or "Crown Paints" or equal and approved to: -				
D	Rendered surfaces	272	SM		
	Paving Slabs				
E	600 x 600 x 50mm thick precast concrete paving slabs laid to falls on blinded hardcore surface; jointed in cement and sand mortar (1:3)	102	SM		
	TOTAL FOR EXTERNAL FINISHES CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 9				
	INTERNAL FINISHES				
	WALL FINISHES **Cement and sand (1:3) plaster**				
A	12mm thick plaster to wall surfaces	712	SM		
	Cement and sand (1:4) backing				
B	15mm thick screed prepared to receive ceramic wall tiles (m.s)	93	SM		
	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				
C	250 x 400 x 6mm thick wall tiles	93	SM		
	Prepare and apply three coats of premium quality paint as 'Basco Paints - Duracoat' or 'Crown Paints' or equal and approved to: -				
D	Plastered surface of walls	619	SM		
	CEILING FINISHES				
	SUPPLY AND FIX gypsum ceiling boards to shapes and patterns in stepped form complete with and including metal studs, channels and railing supplied and fixed in accordance with manufacturer's printed instructions; to Architect's design and approval				
E	12mm thick water proof gypsum ceiling boards	300	SM		
F	100 x 30mm polyurethane cornice by Classic Moldings Ltd. or other equal and approved	379	LM		
	Prepare and apply three coats of premium quality paint as 'Basco Paints - Duracoat' or 'Crown Paints' or equal and approved to: -				
G	Gypsum ceiling soffits	300	SM		
H	Surfaces exceeding 100mm but n.e 200mm girth	379	LM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	FLOOR FINISHES				
	Cement and sand (1:4) screeding smooth trowelled				
A	25mm thick screed prepared to receive non-slip ceramic floor tiles (m.s)	23	SM		
B	Ditto but granito floor tiles (m.s)	277	SM		
	APPROVED non-slip ceramic floor 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				
C	400 x 400 x 8mm thick floor paving	23	SM		
	APPROVED polished 'Granito' floor tiles as 'Saj Ceramics' fixed to prepared cement and sand (1:4) backing with approved adhesive and grouted in matching colour				
D	600 x 600 x 8mm thick floor tiles	277	SM		
E	Ditto but 100mm high x 8mm thick skirting	335	LM		
	Worktop finishes				
	The following in Granite worktop tiles:				
	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: -				
F	18mm thick worktop tiles	8	SM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	COLLECTION TOTAL CARRIED FORWARD FROM PAGE BW/15 TOTAL CARRIED FORWARD FROM PAGE BW/16				
	TOTAL FOR INTERNAL FINISHES CARRIED TO BUILDERS WORK SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	BUILDERS WORK SUMMARY DEMOLITIONS AND ALTERATIONS SUBSTRUCTURES REINFORCED CONCRETE SUPERSTRUCTURE WALLING ROOF CONSTRUCTION DOORS WINDOWS EXTERNAL FINISHES INTERNAL FINISHES				
	TOTAL FOR BUILDERS WORK CARRIED TO GRAND SUMMARY				

BILL NO. 3: SEPTIC TANK (100 PERSONS CAPACITY) AND SOAK PIT

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SEPTIC TANK				
	ELEMENT NO. 1				
	SUBSTRUCTURES (ALL PROVISIONAL)				
	Excavation and Earth works				
A	Clear the site of all grass, shrubs, undergrowth and small trees including grubbing up roots and burn arisings	39	SM		
B	Excavate to remove top soil commencing from ground level, average depth 150mm	39	SM		
C	Excavate oversite to reduce levels not exceeding 1,500mm deep commencing from stripped level average 350mm	12	CM		
D	Excavate for septic tank commencing from reduced level not exceeding 1,500mm deep	49	CM		
E	Ditto 1,500mm to 3,000mm deep	31	CM		
F	Allow for keeping excavation free from water & uphold sides of excavation		ITEM		
G	Load and cart away surplus excavated material and spread over site not exceeding 10m away	92	CM		
H	Return, fill and ram selected excavated material around foundations	29	CM		
J	Carefully cut sloping bed surfaces to required falls	13	SM		
	Concrete Works **Vibrated Reinforced Concrete Class 20/20mm (1:2:4) in:**				
K	150mm thick concrete to floor bed	20	SM		
L	150mm thick cover slab	3	CM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	Beams	1	CM		
B	200mm thick walls	10	CM		
	Sawn formwork to:				
C	Soffits of cover slab	21	SM		
D	200mm thick reinforced concrete walls	108	SM		
E	Sides and soffits of beam	5	SM		
F	Edges of slab girth 75mm to 150mm	23	LM		
G	Boxing to form rebated opening through cover slab for cover and frame size 600mm x 450mm	4	NO		
	Natural stone walling				
H	200mm thick natural stone walling in cement and sand mortar (1:3) with minimum crushing strength of 7.0 N/mm^2; reinforced with 25x3mm thick hoop iron in every alternate course	5	SM		
	Steel reinforcement as described including cutting to length, bending, hoisting and fixing including all necessary tying wires and spacing blocks (All Provisional)				
J	12mm dimeter bars	424	KG		
K	Ditto but 10mm	653	KG		
L	Ditto but 8mm	19	KG		
M	Steel fabric reinforcement mesh ref. A142 with 150mm end and side lapse	20	SM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Finishes				
A	12mm thick cement and sand (1:3) water proof plaster to walls and floor slab	42	SM		
B	Ditto to top cover slab	21	SM		
	Manhole covers				
C	Heavy duty fibre composite manhole cover from an approved manufacturer size 600 x 450mm complete with frame including bedding frame in cement and sand (1:4) mortar and cover in grease	4	NO		
	TOTAL CARRIED TO COLLECTION				
	COLLECTION TOTAL BROUGHT FORWARD FROM PAGE ST/1 TOTAL BROUGHT FORWARD FROM PAGE ST/2 TOTAL BROUGHT FORWARD FROM PAGE ABOVE				
	TOTAL FOR SEPTIC TANK CARRIED TO SEPTIC TANK AND SOAK PIT SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SOAK PIT				
	ELEMENT NO. 2				
	SUBSTRUCTURES (ALL PROVISIONAL)				
	Excavation and Earth works				
A	Clear site of all grass, shrubs, undergrowth and small trees including grubbing up roots and burn arisings	17	SM		
B	Excavate to remove top soil commencing from ground level, average depth 150mm.	17	SM		
C	Excavate for foundations not exceeding 1,500mm deep	2	CM		
D	Excavate for soak pit not exceeding 1,500mm deep from reduced level.	11	CM		
E	Ditto 1,500mm but not exceeding 3,000 mm	11	CM		
F	Ditto 3,000mm but not exceeding 4,500 mm	6	CM		
G	Allow for keeping excavation free from water & uphold sides of excavation		ITEM		
H	Load and cart away excavated materials from site.	30	CM		
J	Return, fill and ram selected excavated material around foundations.	1	CM		
	Concrete work **50mm thick blinding in plain concrete (1:4:8) in: -**				
K	Strip footing	8	SM		
	Vibrated Reinforced Concrete Class 20/20mm (1:2:4) in:				
L	Foundation strip footing	2	CM		
M	150mm thick cover slab	2	CM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Natural Stone Walling				
A	200mm thick natural stone walling in cement and sand mortar (1:3) with minimum crushing strength of 7.0 N/mm^2; reinforced with 25x3mm thick hoop iron in every alternate course	15	SM		
	Backfilling				
B	Approved local hardcore filling	20	CM		
	Manhole cover				
C	Heavy duty fibre composite manhole cover from an approved manufacturer size 600 x 450mm complete with frame including bedding frame in cement and sand (1:4) mortar and cover in grease	1	NO		
	Steel reinforcement as described including cutting to length, bending, hoisting and fixing including all necessary tying wires and spacing blocks (All Provisional)				
D	12mm diameter bars	144	KG		
E	Ditto but 10mm	52	KG		
	Sawn formwork to:				
F	Soffits of cover slab	13	SM		
G	To sides of footing	5	SM		
H	Edges of slab girth 75 to 150mm	13	LM		
	TOTAL CARRIED TO COLLECTION				
	COLLECTION TOTAL CARRIED FORWARD FROM PAGE ST/4 TOTAL CARRIED FORWARD FROM PAGE ABOVE				
	TOTAL FOR SOAK PIT CARRIED TO SEPTIC TANK AND SOAK PIT SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SEPTIC TANK AND SOAK PIT SUMMARY SEPTIC TANK SOAK PIT				
	TOTAL FOR SEPTIC TANK AND SOAK PIT CARRIED TO GRAND SUMMARY				

BILL NO. 4: WATER TANK BASE

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	WATER TANK BASE				
	ELEMENT NO. 1				
	SUBSTRUCTURES				
A	Clear site of all grass, bushes, shrubs, undergrowth and small trees including grubbing up roots and burn arisings	3	SM		
B	Excavate for S.H.S steel columns not exceeding 1,500mm deep from reduced level	1	CM		
	Disposal				
C	Load and cart away surplus excavated material and spread over site not exceeding 10m away	1	CM		
	Plain concrete (1:3:6) mix to: -				
D	Mass concrete surround to S.H.S steel columns	1	CM		
	Vibrated reinforced concrete grade 20/20 (1:2:4) in:				
E	Steel column bases	1	CM		
	Steel reinforcement as described including cutting to length, bending and fixing including all necessary tying wires and spacing blocks (All Provisional)				
F	D - 10mm diameter bars	17	KG		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2				
	STRUCTURAL STEELWORK				
	The following in structural steel; structural steel to conform to B.S 5950; fabricated from standard universal sections; including two coats of approved metal primer, all welding, bolts, fixing plates and joint accessories; smooth ground joints; fixing to position by hoisting or otherwise; to Structural Engineer's detail and approval to: -				
A	100 x 100 x 4mm S.H.S	24	LM		
B	50 x 25 x 2mm R.H.S	60	LM		
	Supporting timber members				
C	150 x 50mm timber members	32	LM		
D	50 x 50mm timber members	5	LM		
	TOTAL CARRIED TO COLLECTION				
	COLLECTION				
	TOTAL CARRIED FORWARD FROM PAGE WB/1				
	TOTAL CARRIED FORWARD FROM PAGE ABOVE				
	TOTAL FOR WATER TANK BASE CARRIED TO GRAND SUMMARY				

BILL NO.5: ELECTRICAL WORKS					
ITEM	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
	Supply, installation, test and commission the following: -				
	POWER				
A	10 Way, flush mounted single-phase consumer unit complete with 63A microgap switch as Crabtree or an approved equivalent.	1	NO		
B	Submains cables from the Meter box to the CCU, comprising of 3x10mm ² single core PVC Copper cables (Red, Black& Green) each in 25 mmØ pvc H/G conduits concealed in the building fabric.	60	LM		
C	6A mcb Schneider or approved equivalent.	3	NO		
D	32A mcb Schneider or approved equivalent.	4	NO		
E	63A double pole as of Crabtree or approved equivalent.	1	NO		
F	Power point wired with 3x2.5mm² sc pvc cable in 25 mmϕ heavy gauge pvc conduit concealed in building fabric.	26	ITEM		
G	13 A twin switched sockets outlets as CLIPSAL or an approved equivalent.	26	NO		
H	Power points wired with 3×4.0mm² SC pvc cables in 25mmØ PVC H/G conduits concealed in the building fabric.	1	ITEM		
J	650 W Shower head AS LORENZETTI	1	NO		
K	45A water heater switch as Crabtree or an approved equivalent.	1	NO		
	LIGHTING				
L	Lighting points wired with 3×1.5 mm² SC PVC cables in 20 mmØ pvc H/G conduits concealed in the building fabric.	34	ITEM		
M	5A, 2 way, 1 gang switch as MK or an approved equivalent.	16	NO		
N	5A, 2 way, 2 gang switch as MK or an approved equivalent.	2	NO		
	4 FT single fluorescent fitting complete with 24W LED Tube as Philips or approved equivalent.	20	ITEM		
P	50W IP65 LED flood light c/w mounting bracket as Philips or approved equivalent.	6	ITEM		
Q	Electronic timer as Hager or approved equivalent.	1	NO		
R	12W LED moisture proof ceiling mounted as Philips.	6	NO		
S	Earthing at the meter box with 6mm² Earth lead with 1500mm×15mm earth rod c/w clamp and inspectable masonry manhole.	1	ITEM		
T	Lockable meter box fabricated from 14swg powder coated to IP 65 complete with bonding nut.	1	ITEM		
U	Allow provisional sum of Ksh **(140,000)** One Hundred and forty thousand shilling for KPLC connection fee.	1	ITEM		
V	Allow provisional sum of Ksh **(50,000)** fifty thousand shilling for internet points.	1	ITEM		
	TOTAL FOR ELECTRICAL WORKS CARRIED TO GRAND SUMMARY				

BILL NO.6: MECHANICAL WORKS					
Item	**Description**	**Unit**	**Qty**	**Rate**	**Amount (Kshs.)**
	SANTITARY FITTINGS				
	Water Closet				
A	Squatting water closet suite comprising of white ceramic floor mounted squatting pan and integral foot threads,'P' or 'S' trap connector to be as "Twyfords Nile" or approved equivalent.	No.	4		
B	Top entry type toilet flush valve with integral vacuum breaker and non-hold-open feature and butterfly valve with wall plate comprising of flush valve, bent flush pipe and rubber pipe connector. All to be as "Flushmaster" or approved equivalent.	No.	4		
C	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 other necessary accessories. To be as Duravit or approved equivalent.	No.	1		
	Wash Hand Basin				
D	Wash hand basin size 510 x 420mm with one tap hole and chain stay hole, 32mm diameter chrome plated pop up chain waste, concealed wall bracket, chrome plated bottle trap (32mm 'P' trap) with 75mm seal. The wash hand basin to be as Twyfords 'Sola 510' or equal and approved.	No.	3		
	Urinal Bowls				
E	Vitreous china white in colour urinal bowl for one-person, single bowl complete with bowl supports, 40mm diameter chrome plated outlet grating, 40mm diameter chrome plated bottle trap. The bowl should be operated by infrared automatic flush valve as Duravit or approved equivalent.	No.	2		
F	Touchless automatic Urinal flush valve compatible with the above urinal bowl. The system to operate on a 240V electricity mains and should have all accessories necessary for proper functioning. To be as Geberit Hytronic touchless system **MAMBO** or approved equivalent.	No.	2		
	TOTAL CARRIED TO COLLECTION				

Item	Description	Unit	Qty	Rate	Amount (Kshs.)
A	**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 1.8KW and to be of size 270 x 64 x 143mm deep as **HEATRAE SADIA** "Handi Dri" or approved equivalent.	No.	3		
B	**Toilet Roll Holder** Toilet roll holder in vitreous china to BS 3402 in white colour of size 165 x 165mm and recessed into wall. Toilet roll holder to be as Twyfords "SEMI RECESSED & ORNAMENTAL" accessories Ref. No. VC 9808 WH.	No.	5		
C	**Robe Hook** Robe hook in vitreous china and in white colour mounted onto a concealed screw to wall wedges, to be as Twyfords OC 6858 1998 or approved equivalent.	No.	5		
D	**Paper Dispenser** as mediclinics wall mounted complete with fixing screws	No.	3		
E	**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 equivalent approved.	No.	3		
F	**Mirrors** 6mm thick polished glass, silver blacked mirror with bevelled edges, sizes 600 x 600mm plugged and screwed to wall with 4No. Chrome plated chrome capped screws and 5mm thick foam back nest.	No.	3		
G	**Kitchen Sink** Single bowl, single drainer stainless steel kitchen sink of size 1800 x 600mm as manufactured by **ASL.** The bowl size to be 430 x 420 x 200mm deep complete with chrome plated 40mm waste fittings, plugs, chain stays, overflow, 1No. 15mm diameter chrome plated sink mixer with over-arm swivel spout as **Cobra model 166/04** with carina handles, chrome plated bottle trap with 75mm deep seal and chain waste fitting.	No	1		
	TOTAL CARRIED TO COLLECTION				

Item	Description	Unit	Qty	Rate	Amount (Kshs.)
	INTERNAL PLUMBING WORKS				
	Supply, deliver and install Polypropylene Random Copolymer (PPR) pipes, including all fittings e.g. couplings, connectors, joints unions etc. as required in running length of pipework. Also where necessary for pipe fitting clips, holder bats plugged or screwed.				
	PPR Pipe				
A	40mm -diameter PPR pipe	Lm	15		
B	25mm -ditto-	Lm	200		
C	20mm -ditto-	Lm	40		
	Bends				
D	40mm -Diameter Bend	No.	5		
E	25mm -ditto	No.	30		
	Tees				
F	25mm equal tee	No.	15		
	GMS Reducers				
G	40x25mm diameter reducer	No.	1		
H	25x20 -ditto-	No.	7		
	Threaded Fittings				
J	20x20mm diameter female threaded elbow	No.	15		
K	40mm diameter male adapter	No.	3		
	Gate Valves				
L	40mm dia. Approved medium pressure screw down full way non-rising stem wedge gate valve to BS 1952, with wheel and head joints to steel tubing. The gate valve to be as "Pegler" or approved equivalent	No.	1		
M	25 -ditto-	No.	5		
	WATER TANK				
N	Supply and install water storage tanks of capacity 5000 litres made of plastic of dimensions 1.5m diameter and 1.4m height as Rotor or equivalent approved. The tank shall be complete with inlet, outlet, overflow and drain connection. It should have a 20mm diameter medium ball valve with silencer pipe, bronze lever and copper float all as "Glenfield or approved equivalent. The tank shall be firmly supported in the roof at high level.	No.	1		
P	Allow for water connection including water meter	Item	1		
Q	Excavate trench for small pies not exceeding 1000mm deep and average 750mm	Lm	100		
R	Allow pressure testing, flushing out and sterilization of the cold-water system as required to the satisfaction of the Engineer	Item	1		
	TOTAL CARRIED TO COLLECTION				

Item	Description	Unit	Qty	Rate	Amount (Kshs.)
	INTERNAL FOUL DRAINAGE Supply, deliver and install the following UPVC, MUPVC, soil and waste system respectively to B.S 5255 with fittings fixed to manufacturers 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 allow for connection to the nearest manholes and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system. **UPVC and MUPVC Soil and Waste**				
A	150mm diameter Heavy gauge golden brown UPVC pipe	Lm	100		
B	100mm diameter Heavy gauge grey UPVC pipe	Lm	6		
C	50mm -ditto-	Lm	25		
D	32mm -ditto-	Lm	20		
	Bends				
E	100mm diameter long radius bend	No.	5		
F	100mm diameter long radius bend with access	No.	5		
G	40mm diameter bend	No.	10		
	Tees				
H	32mm diameter sweep tee	No.	4		
J	32mm diameter access cap	No.	4		
K	100mm floor gully trap complete with cover	No.	5		
L	100mm vent cowl	No.	1		
M	100mm diameter weathering slate and apron	No.	1		
N	Inspection chamber (manhole)	No.	15		
P	Excavation Excavate a trench for the water pipe not exceeding 1,500mm deep, part return, fill in, ram and remainder cart a way	Lm	100		
Q	Testing and commissioning the internal drainage installation	Item	1		
	TOTAL CARRIED TO COLLECTION				

Item	Description	Unit	Qty	Rate	Amount
	FIRE FIGHTING EQUIPMENT Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.				
A	**Carbon dioxide Gas Fire Extinguisher** 5 Kg carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	No.	1		
B	**Water/Carbon dioxide Gas Fire Extinguisher** 9 litres water/Carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	No.	1		
C	**Dry Chemical Powder Fire Extinguisher** 9kg dry chemical powder portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	No.	1		
D	**Manual Alarm Bell** 9" (225mm) manual operated alarm bell (Gong)	1	No		
E	**Fire notices** Allow for fire signage for the hose reel system, fire exits and fire instructions as described in the particular specifications and to the Project Engineer's approval.	No	5		
F	**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.	No.	1		
	TOTAL CARRIED TO COLLECTION				

Item	Description	Amount (Kshs.)
	COLLECTION PAGE	
1	Total brought forward from page MW/1	
2	Total brought forward from page MW/2	
3	Total brought forward from page MW/3	
4	Total brought forward from page MW/4	
5	Total brought forward from page MW/5	
	Total Cost for Sanitary Fittings, Plumbing Works and Drainage works.	

BILL NO.7: EXTERNAL WORKS					
ITEM	**DESCRIPTION**	**QTY**	**UNIT**	**RATE**	**AMOUNT**
	ELEMENT NO. 1				
	CABRO PAVING				
	Excavations and Earthworks				
A	Excavate oversite to reduce levels n.e. 1,500mm deep commencing from existing ground level	149	CM		
	Filling and Cart away				
B	Load and cart away excess soil material and spread around site for landscaping purposes	149	CM		
C	Provide, lay and compact 300mm thick approved hand packed hardcore sub base.	99	CM		
D	Provide and spread on hand packed stones 50mm thick stone dust to receive cabro paving blocks	330	SM		
E	Provide, lay and compact 60mm thick medium duty precast concrete paving blocks crushing strength conforming to BS 6717-1:1993 or Kenya Bureau of Standard equivalent (KS 827:2003). Minimum strength 60 N/mm2	330	SM		
	Precast Concrete				
F	Precast concrete road kerb 250x125mm jointed in cement/sand on mass concrete bed and haunch (mix 1:3:6) and any necessary formwork and excavation	122	LM		
G	Precast concrete road channel 125 x 250 x 900mm long jointed in cement/sand on mass concrete bed any necessary formwork and excavation	142	LM		
H	300mm diameter half round shallow Invert Block Drains laid & joined with 1:3 cement/sand mortar, inclusive of excavations and including 75mm compacted murram backing/base as directed by the Engineer	97	LM		
	Road Marking Paint				
J	Prepare and apply first quality two coats road-marking paint to kerbs	122	LM		
	TOTAL FOR CABRO PAVING CARRIED TO EXTERNAL WORKS SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2				
	CHAIN LINK FENCING (300M)				
	Site Clearance				
A	Clear site of all shrubs and undergrowth including grubbing up of roots and dispose of as directed	300	SM		
	Excavations and Earth works				
B	Excavate for precast concrete post footings not exceeding 1,500mm deep from ground level	15	CM		
C	Excavate for precast concrete struts and strainer footings not exceeding 1,500mm deep from existing ground level	6	CM		
D	Excavate 300mm deep for concrete underlay to chainlink fence	14	CM		
	Filling and carting away				
E	Load and spread excavated materials on site as directed	35	CM		
	Concrete Works				
	Plain concrete in 1:3:6 mix in: -				
F	Benching to precast concrete posts	21	CM		
G	50mm thick benching to precast chainlink fencing	45	SM		
H	Ditto but under column bases	3	SM		
	Vibrated reinforced concrete grade 20/20 (1:2:4) in:				
J	Column bases	1	CM		
K	Columns	1	CM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Sawn formwork to:				
A	Sides of column bases	2	SM		
B	Sides of columns	8	SM		
	Mild steel reinforcement as described including cutting to length, bending and fixing including all necessary tying wires and spacing blocks (All provisional)				
C	12mm diameter bars	29	KG		
D	8mm diameter bars	14	KG		
	Precast Concrete Posts				
E	APPROVED 100 x 125 x 3,000mm high precast concrete posts and mortised to footing (m/s) with and including 450mm long cranked top 7 times holed for 4 No S.W.G wire (m/s) and 3 No barbed wire through cranked ends	100	NO		
F	Strainers size 100 x 125 x 1,500mm long *(every 15 metres)*	40	NO		
G	4 strands of galvanized wire at 1,000mm centres	1,200	LM		
	Chain Link Fence				
H	14-gauge galvanized chainlink fence average height 2,400mm fixed to 100 x 125 x 3,000 mm concrete post (m/s)	300	LM		
J	16 Gauge galvanized barbed wire fixed to cranked top in 3 No strands	900	LM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Gates				
	Purpose made mild steel gate in two equal leafs comprising of 50 x 50 x 2mm square hollow section outer and centre frames and diagonal braces welded together including 25 x 25 x 1.5 mm rolled hollow section vertical infills at 150 mm centres; sheeting and decoration to detail including all necessary fixing and supporting; complete with locking and hanging accessories as described per Architects detail and approval (Contractor is advised to see details before pricing)				
A	Overall size 4,000 x 2,000mm	1	NO		
B	Ditto but 1,200mm x 2,000mm pedestrian gate	1	NO		
	EXTERNAL FINISHES				
C	25mm thick rendering to columns finished with wood float thickness	8	SM		
	In-situ concrete coping				
D	Approved 400 x 400 x 50mm in-situ concrete column coping molded to Architect's design and approval	2	NO		
	Painting and Decoration				
	Prepare and apply three coats gloss oil paint on:				
E	General surfaces of metal	21	SM		
	Prepare and apply three coats of premium external paint first quality paint as 'Basco Paints - Duracoat' or 'Crown Paints' or equal and approved to: -				
F	Rendered surfaces	8	SM		
	TOTAL CARRIED TO COLLECTION				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	COLLECTION TOTAL CARRIED FORWARD FROM PAGE EW/2 TOTAL CARRIED FORWARD FROM PAGE EW/3 TOTAL CARRIED FORWARD FROM PAGE EW/4				
	TOTAL FOR CHAIN LINK FENCING CARRIED TO EXTERNAL WORKS SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	EXTERNAL WORKS SUMMARY CABRO PAVING CHAIN LINK FENCING				
	TOTAL FOR EXTERNAL WORKS CARRIED TO GRAND SUMMARY				

BILL NO.8 PROVISIONAL SUMS					
ITEM	**DESCRIPTION**	**QTY**	**UNIT**	**RATE**	**AMOUNT**
	PROVISIONAL SUMS				
	Contingencies				
A	Provide a Provisional Sum of Kenyan Shillings One Million Five Hundred Thousand (KShs. 1,500,000/-) for Contingencies				
	Project Management Expenses				
B	Provide a Provisional Sum of Kenyan Shillings Four Hundred Thousand (KShs. 400,000/-) for Project Management Expenses				
	TOTAL FOR PROVISIONAL SUMS CARRIED TO GRAND SUMMARY				

GRAND SUMMARY			
BILL NO.	**DESCRIPTION**	**TENDER'S AMOUNT**	**OFFICIAL USE ONLY**
1	PRELIMINARIES		
2	BUILDERS WORK		
3	SEPTIC TANK AND SOAK PIT		
4	WATER TANK BASE		
5	ELECTRICAL WORKS		
6	MECHANICAL WORKS		
7	EXTERNAL WORKS		
8	PROVISIONAL SUMS		
	SUB TOTAL		
	16% VAT		
	GRAND TOTAL CARRIED TO FORM OF TENDER		

Amount of Tender in words: -Kenya Shillings

……

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Tenderer's Signature and Stamp……

Address……

Date……

Witness Name and Signature……

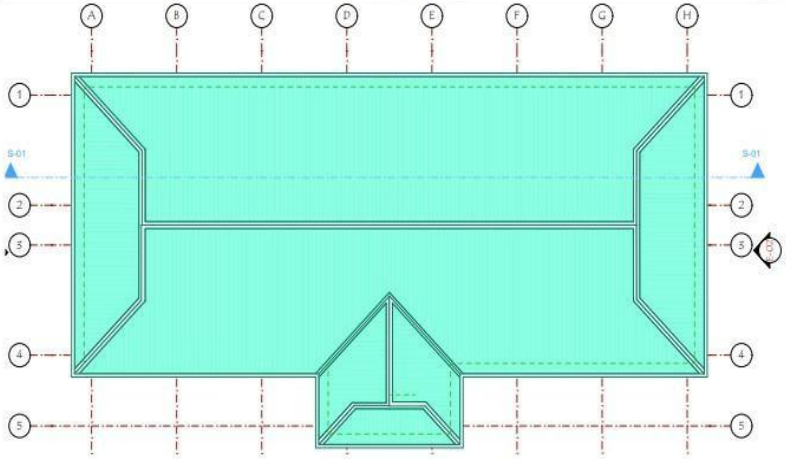
Description……

Address……

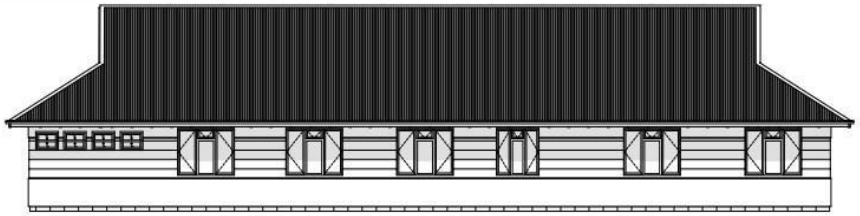
Date……

GS/1

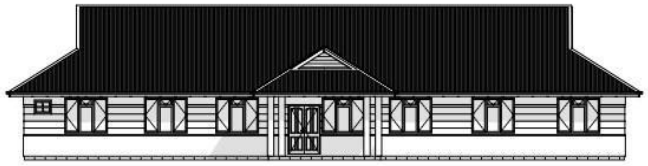
0. FLOOR PLAN 1:100



1. ROOF PLAN 1:100



E-01 1:75



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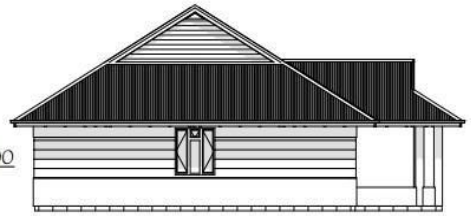

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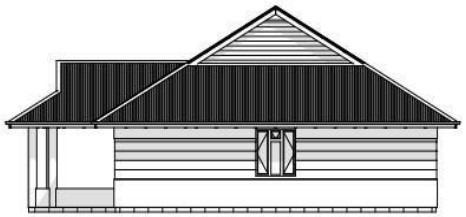
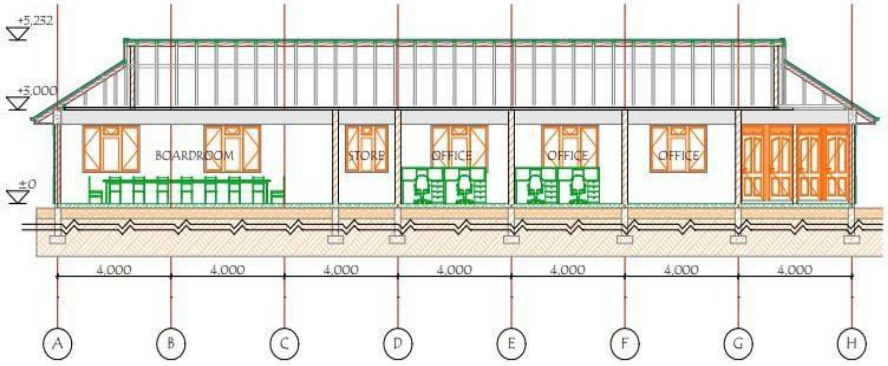


E-02 1:75



S-01 Building Section 1:75

PROJECT: PROPOSED DESIGN FOR ACC'S OFFICE AT MUKURWE-INI.	**CONSULTANTS:** MINISTRY OF TRANSPORT, INFRASTUCTURE, HOUSING AND URBAN DIEVELOPMENT STATE. DEPARTMENT OF PUBLIC WORKS NYERI WORKS OFFICE	**DRAWING TITLE** Working drawings	**DESIGNED AND CHECKED BY:** Arch. J.F.K. Kagiri B.Arch. Hons (Nrb) Reg. Architect. A1165 P.O. BOX 178, Gukanja- Nyeri.	**DRAWING NUMBER:**	**ARCHITECTURAL NOTES:** 1. All works to be carried out in accordance with Local Authority regulations. 2. All figured dimensions to be taken in preference to scaled dimensions. 3. All walls below 200mm to be reinforced with hoop iron at every alternative course. 4. Provide damp proof course (D.P.C.) under all walls. 5. P.V. indicates permanent ventilations. 6. All drainage passing under building and drive area to be of pvc pipe and encased in 150mm thick concrete surround. 7. All inspection chambers in drive area to have heavy duty covers. 8. Check all dimensions on site. 10. 500g polythene sheeting and anti-termite treatment to be provided under ground floor concrete slab. 11. All reinforced concrete works to Structural Eng. detail.	**FIRE NOTES.** 1. Automatic booster pump for FHRs to be provided to the satisfaction of the Chief Fire Officer. 2. 4500 litres reserve for hose reel 3. Electrical fire alarm system to the approval of Chief Fire Officer. 4. Fire alarm and booster to be provided with secondary power supply. 5. 2x9 kg Dry Powder Fire Extinguishers at parking areas. 6. 2x9 litre water and 1x4.5 kg CO2 fire extinguishers to be provided per floor.	**Revision**	**Date**
CLIENT: Client's sign.....	Architect's sign.....	**LOCATION TITLE:**	**DRAWN BY:** NDIRANGU ZACHARIAH	**STATUS:**					
		SCALE: AS INDICATED		**DATE:** 16/05/24					