REPUBLIC OF KENYA

MAMA NGINA UNIVERSITY COLLEGE
PROPOSED CONSTRUCTION OF TUITION BLOCK (PHASE 1) AT MAMA NGINA UNIVERSITY COLLEGE

TENDER DOCUMENT
TENDER NO: MNUC/TO3/2022-2023

CLOSING DATE & TIME: 8TH, MARCH, 2023

WEDNESDAY: 10.00am

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INVITATION TO TENDER
PROPOSED CONSTRUCTION OF TUITION BLOCK (PHASE 1) AT MAMA NGINA UNIVERSITY COLLEGE
TENDER NUMBER: MNUC/TO3/2022-2023

1. **Mama Ngina University College** invites sealed tenders for the **Proposed Construction of Tuition Block (Phase 1)** at Mama Ngina University College in Gatundu South.

2. Tendering will be conducted under open National competitive method using a standardized tender document. Tendering is open to all qualified and interested Tenderers.

3. Tendering is open to all eligible registered appropriately with **Registrar of Companies and NCA Category 4 and above.**

4. Qualified and Interested tenderers may obtain electronically from the University website www.mnu.ac.ke and the Government Tender portal. Tender documents obtained electronically will be free of charge.

5. Tender documents may be viewed and downloaded for free from the website www.mnu.ac.ke / tenders. Tenderers who download the tender document must forward their particulars immediately to *procurement@mnu.ac.ke* to facilitate any further clarification or addendum.

6. 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.**

7. All Tenders must be accompanied by a tender security of **Kshs 1,000,000.**

8. The Tenderer shall chronologically serialize all pages of the tender documents submitted, **One Original** and **a copy** in plain sealed envelopes clearly marked on top with Tender Reference and Description.

9. Completed tenders must be delivered to the address below on or before ***Wednesday 8th, March, 2023***. Electronic Tenders will not be permitted. And must be deposited in the Tender Box situated at the Administration Block, Ground Floor reception area at **Mama Ngina University College.**

10. Tenders will be opened immediately after the deadline of ***Wednesday 8th,March,2023.***Tenders will be publicly opened in the presence of the Tenderers' designated representatives who choose to attend at the address below.

11. Bidders are required to attend a mandatory site Visit at **Mama Ngina University College Gatundu South in Mutomo *on the Wednesday 1st, March, 2023 stictly at 10.00 AM*. (Bidders will be issued with a Site Visit Certificate)**

12. Late tenders will be rejected.

13. The addresses referred to above are:

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

Address for obtaining further information

Mama Ngina University College

P.O BOX 444-01030

Gatundu

Tel:+254 748387501

Attn.

Head of Procurement

Tel No.:+254748387501

Email:procurement@mnu.ac.ke

B. Address for Submission of Tenders.

The Principal
Mama Ngina University College
P.O Box 444-01030,
Gatundu, Kenya
TEL; 020-2085006
Email: info@mnu.ac.ke

C.Address for Opening of Tenders

Mama Ngina University College
P.O Box 444-01030,
Gatundu, Kenya

Venue: University College Boardroom

Procurement Officer

For: Principal

PART1: 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 "inwriting" means communicated in written form (e.g. by mail, e-mail, fax, including if specified in the TDS, distributed or received through the electronic-procurement system used by the Procuring Entity) with proof of receipt;

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

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

2.0 Fraud and corruption

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

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

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

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

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

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

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

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

e) Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the goods or works that are the subject of the tender;

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

g) Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the contract specified in this Tender Document;

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

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

ii) May be involved in the implementation or supervision of such Contract unless the conflicts temming 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. ATenderer 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 enterprisetoenableitcompetewithfirmsintheprivatesectoronanequalbasis.

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) byanactofcompliancewith a decision of the United Nations Security Council taken under Chapter

VII of theCharterof 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 *"SECTIONI II - EVALUATION AND QUALIFICATION CRITERIA, Item 9"*.

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

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

3.13 The Competition Act of Kenya requires that firms wishing to tender as Joint Venture undertakings which may prevent, distort or lessen competition in provision of services are prohibited unless they are exempt in accordance with the provisions of Section 25 of the Competition Act, 2010. JVs will be required to seek for exemption from the Competition Authority. Exemption shall not be a condition for tender, but it shall be a condition of contract award and signature. A JV tenderer shall be given opportunity to seek such exemption as a condition of award and signature of contract. Application for exemption from the Competition Authority of Kenya may be accessed from the website www.cak.go.ke.

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

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.

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

B. CONTENTS OF TENDER DOCUMENTS

6.0 Sections of Tender Document

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

PART 1: Tendering Procedures
Section I – Instructions toTenderers
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. Incase 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 p**rior 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 TheProcuring 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. 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 accordancewithITT20.3;
f) *Qualifications:* documentary evidence in accordance with ITT 17 establishing the Tenderer's

qualifications to per form 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 tenderliable 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 with out any alterations to the text, and no substitutes shall be accepted except as provided under ITT 20.3. All blank spaces shall be filled in with the information requested. The Tenderer shall chronologically serialize all pages of the tender documents submitted.

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

13. Alternative Tenders

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

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

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

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

14.0 Tender Prices and Discounts

14.1 The prices and discounts (including any price reduction) quoted by the Tenderer in the Form of Tender and in the Billof 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 incases 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 sametime.

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

15.0 Currencies of Tender and Payment

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

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

a) A Tenderer expecting to incur expenditures in other currencies for inputs to the Works supplied from outside Kenya (referred to as "the foreign currency requirements") shall (if so allowed in the **TDS**) indicate in the Appendix to Tender the percentage(s) of the Tender Price (excluding Provisional Sums), needed by the Tenderer for the payment of such foreign currency requirements, limited to no more than two foreign currencies.

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

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

16.0 Documents Comprising the Technical Proposal

The Tenderer shall furnish a technical proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Tender Forms, insufficient 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 marg in of preference applies as specified in accordance with ITT 33.1, nation al 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 contractor's 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, iftheProcuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.

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

i) If the procurement process is still ongoing, the tenderer will bed is qualified from the procurement process,

ii) if the contract has been awarded to that tenderer, the contract award will be set as idepending the outcome of (iii),

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

17.10 If a tenderer submits information pursuant to these requirements that is in complete, in accurate 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 requestTendererstoextendtheperiodofvalidityoftheirTenders.Therequestandtheresponsesshallbemade 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 Tendersecurity.ATenderergrantingtherequestshallnotberequiredorpermittedtomodifyitsTender.

19.0 Tender Security

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

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

I) cash;

ii) a bank guarantee;

iii) a guarantee by an insurance company registered and licensed by the Insurance Regulatory Authority listed by the Authority;

(iv) A guarantee issued by a financial institution approved and licensed by the Central Bank of Kenya, from a reputable source, and an eligible country.

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

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

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

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

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

a) if a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender, or any extension there to provided by the Tenderer; or

b) if the successful Tenderer fails to: -

i) sign the Contract in accordance with ITT47; or

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

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

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

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

20.0 Format and Signing of Tender

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

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

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

b) in a nenvelope or package or container marked "COPIES", all required copies of the Tender; and

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

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

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

The inner envelopes or packages or containers shall:

a) bear the name and address of the Procuring Entity,

b) bear the name and address of the Tenderer; and

c) bear the name and Reference number of the Tender.

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

22.0 Deadline for Submission of Tenders

22.1 Tenders must be received by the Procuring Entity at the address specified in the **TDS** and no later than the date andtimealsospecifiedinthe **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 TenderDocumentsinaccordance with ITT 8, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline shall there after be subject to the deadline as extended.

23.0 Late Tenders

The Procuring Entity shall not consider any Tender that arrives after the deadline for submissionof 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 Tenderafterith 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. 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 Entitys hall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 23.1).

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

a) the name of the Tenderer and whether there is a withdrawal, substitution, or modification;

b) the Tender Price, per lot (contract) if applicable, including any discounts;

c) any alternative Tenders;

d) the presence or absence of a Tender Security, if new as required;

e) number of pages of each tender document submitted.

25.9 The Tenderers' representatives who are present shall be requested to sign the minutes. The omission

of a Tenderer's signature on the minutes shall not invalidate the contents and effect of the minutes. A copy of the tender opening register shall be distributed to all Tenderers.

E. EVALUATION AND COMPARISON OF TENDERS

26. Confidentiality

26.1 Information relating to the evaluation of Tenders and recommendation of contract award shall not be disclosed to Tenderersorany 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 Not withstanding 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 aresponse. Any clarification submitted by a tenderer that is not in response to a request by the Procuring Entity shallnot be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the tender shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the tenders, in accordance with ITT 31.

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

28.0 Deviations, Reservations, and Omissions

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

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

29.0 Determination of Responsiveness

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

29.2 A substantially responsive Tender is one that meets the requirements of the Tender document withoutmaterial deviation, reservation, or omission. A material deviation, reservation, or omission is one that, if accepted, would:

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

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

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

30.0 Non-material Non-conformities

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

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

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

31.0 Arithmetical Errors

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

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

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

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

32.0 Conversion to Single Currency

For evaluation and comparison purposes, the currency(ies) of the Tender shall be converted in to a single currency asspecified 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 pecific 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 ProcuringEntity 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** a scan be met by subcontractors referred to hereafter as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractorsproposed by the Tenderer may be added to the qualifications of the Tenderer.

35. Evaluation of Tenders

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

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

a) Price adjustment in accordance with ITT 31.1 (iii); excluding provisional sums and contingencies, if any, but including Daywork items, where priced competitively;

b) price adjustment due to discounts offered in accordance with ITT 14.4;

c) converting the amount resulting from applying (a) and (b) above, if relevant, to a single currency in accordance with ITT 32;

d) pricea djustment due to quantifiable non materialnon-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 consideredin Tender evaluation.

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

36.0 Comparison of tenders

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

37.0 Abnormally low tenders and abnormally high tenders

Abnormally LowTenders

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

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

Abnormally high tenders

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

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

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

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

38.0 Unbalanced and/ or front-loaded tenders

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

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

a) accept theTender;

b) require that the total amount of the Performance Security be increased at the expense of the Tenderer to a level not exceeding a 30% of the Contract Price;

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

d) reject the Tender,

39.0 Qualifications of the tenderer

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

39.2 The determination shall be based upon an examination of the documentary evidence of the Tenderer's

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

39.3 An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in disqualification of the Tender, in which event the ProcuringEntityshallproceedto 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) Mostresponsive 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

Uponaward 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 returnittotheProcuringEntity.

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 otherdocuments 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 inthe Regulations.

49.0 Publication of Procurement Contract

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

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

50.0 Procurement related Complaints and Administrative Review

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

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

Section II - Tender Data Sheet (TDS)

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

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
A. General	
ITT 1.1	The name of the contract is **Proposed Construction of Tuition Block (Phase 1) At Mama Ngina University College** The reference number of the Contract is: **MNUC/TO3/2022-2023** The number and identification of lots (contracts) comprising this Tender are *[Not applicable)*
ITT 2.4	The Information made available on competing firms is as follows: **None**
ITT 2.4	The firms that provided consulting services for the contract being tendered for are: **Mama Ngina University College**
ITT 3.1	Maximum number of members in the Joint Venture (JV) shall be: ***[None].***
B. Contents of Tender Document	
ITT 7.1	(i)The Tenderer will submit any request for clarifications in writing at the Address: - ***Provided in the detailed Tender Notice*** to reach the Procuring Entity not later than: **7 days before bid submission** (ii) The Procuring Entity shall publish its response at the website www.mnu.ac.ke
ITT 7.2	(A) A pre-arranged pretender site visit *shall* take place at the following date, time and place: **As specified in the detailed tender notice** (B) Pre-Tender meeting take place at the following date, time and place: **As specified in the detailed tender notice**
ITT 7.3	The Tenderer will submit any questions in writing, to reach the Procuring Entity not later **than 7 days before bid submission deadline as indicated in the Tender Notice 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 : www.mnu.ac.ke

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 9.1	For Clarification of Tender purposes, for obtaining further information and for purchasing tender documents, the Procuring Entity's address is: (1) Name of Procuring Entity ---------- **Mama Ngina University College** **P.O Box 444-01030,** **Gatundu, Kenya** (2)Physical address for hand Courier Delivery to an office or Tender Box (City, Street, Building, Floor Number and Room) : **Mama Ngina University College,Administration Block,Ground Floor** (3)Postal Address :- **P.O Box 444-01030, Gatundu, Kenya** (4)Insert name, telephone number and e-mail address of the officer to be contacted. **Head of Procurement.** procurement@mnu.ac.ke **Mobile: 0748387501**
C. Preparation of Tenders	
ITT 11.1 (h)	The Tenderer shall submit the following additional documents in its Tender: ***As indicated in the Qualification Form/Criteria.***
ITT 13.1	Alternative Tenders ***shall not be*** considered. *[If alternatives shall be considered, the methodology shall be defined in Section III, Evaluation and Qualification Criteria.]*
ITT 13.2	Alternative times for completion ***shall not*** permitted. *[If alternative times for completion are permitted, the evaluation method will be as specified in Section III, Evaluation and Qualification Criteria.]*
ITT 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: **_____none_____** *[insert parts of the Works]:* *[If alternative technical solutions are permitted, the evaluation method will be as specified in Section III, Evaluation and Qualification Criteria.]*
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 from the specified date of opening as indicated in the invitation to Tender**
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 **0 %** of t*he local currency portion of the Contract price adjusted to reflect local inflation during the period of extension,* *and* *(ii) By_____**0**_____% the foreign currency portion of the Contract price adjusted to reflect the international inflation during the period of extension.*

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 19.1	Tender shall provide **a Tender-Securing Declaration or a Tender Security** *(select one)* The type of Tender security shall be as specified: **in the appendix to form of tender and invitation to tender.**
ITT 20.1	In addition to the original of the Tender, the number of copies is: **Two copies(Original and copy)**
ITT 20.3	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of :-**Certificate of Independent Tender Determination Part B of Form of Tender**
D. Submission and Opening of Tenders	
ITT 22.1	(A) For Tender submission purposes only, the Procuring Entity's address is: **As indicated in the Invitation to Tender and Tender Notice** (5) Tenders shall **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 Invitation to Tender and Tender Notice**
ITT 25.1	If Tenderers are allowed to submit Tenders electronically, they shall follow the electronic tender submission procedures **specified below** *:Not Applicable* _____ _____
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 lowest estimate.
TT 32.1	The currency that shall be used for Tender evaluation and comparison purposes only to convert at the selling exchange rate all Tender prices expressed in various currencies into a single currency is: ***Kenya Shillings*** The source of exchange rate shall be: **The Central bank of Kenya** (mean rate) The date for the exchange rate shall be*:* **the deadline date for Submission of the Tenders.** *For comparison of Tenders, the Tender Price, corrected pursuant to ITT 31, shall first be broken down into the respective amounts payable in various currencies by using the selling exchange rates specified by the Tenderer in accordance with ITT 15.1.* *In the second step, the Procuring Entity will convert the amounts in various currencies in which the Tender Price is payable (excluding Provisional Sums but including Daywork where priced competitively) to the single currency identified above at the selling rates established for similar transactions by the authority specified and, on the date, stipulated above.*
ITT 33.2	A margin of preference *[insert either* ***shall not*** apply. *[If a margin of preference applies, the application methodology shall be defined in Section III – Evaluation and Qualification Criteria.]*

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 33.4	The invitation to tender is extended to the following group that qualify for Reservations **ALL** *(These groups are Small and Medium Enterprises, Women Enterprises, Youth Enterprises and Enterprises of persons living with disability, as the case may be; describe precisely which group qualifies).*
ITT 34.1	At this time, the Procuring Entity _____ *[insert "intends" or "does not intend"]* to execute certain specific parts of the Works by subcontractors selected in advance.
ITT 34.2	Contractor's may propose subcontracting: Maximum percentage of subcontracting permitted is: __***40***_____*% of the total contract amount.* Tenderers planning to subcontract more than 10% of total volume of work shall specify, in the Form of Tender, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience.
ITT 34.3	*[**not applicable**]* The parts of the Works for which the Procuring Entity permits Tenderers to propose Specialized Subcontractors are designated as follows: _____ _____ For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors will be added to the qualifications of the Tenderer for the purpose of evaluation.
ITT 35.2 (e)	Additional requirements apply. These are detailed in the evaluation criteria in Section III, Evaluation and Qualification Criteria.
ITT 48.1	Other documents required in addition to the Performance Security are __**As detailed in the Qualification Criteria /Form_**
ITT 50.1	The procedures for making a Procurement-related Complaint are detailed in the "Notice of Intention to Award the Contract" herein and are also available from the PPRA Website www.ppra.go.ke or email complaints@ppra.go.ke. If a Tenderer wishes to make a Procurement-related Complaint, the Tenderer should submit its complaint following these procedures, in writing (by the quickest means available, that is either by hand delivery or email to: For the attention: ***Principal*** Procuring Entity: ***Mama Ngina University College*** Email address*:* ***info@mnu.ac.ke*** 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

1.0 GENERAL PROVISIONS

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

1.2 Wherever a Tenderer is required to state a monetary amount, Tenderers should indicate the Kenya Shilling equivalent using the rate of exchange determined as follows:

a) For construction turnover or financial data required for each year - Exchange rate prevailing on the last day of the respective calendar year (in which the amounts for that year is to be converted) was originally established.

b) Value of single contract - Exchange rate prevailing on the date of the contract signature.

(c) Exchange rates shall be taken from the publicly available source identified in the ITT 14.3. Any error in determining the exchange rates in the Tender may be corrected by the Procuring Entity.

1.3 EVALUATION AND CONTRACT AWARD CRITERIA

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

2.0 PRELIMINARY EXAMINATION FOR DETERMINATION OF

RESPONSIVENESS Preliminary examination for Determination of

Responsiveness

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

[The Procuring Entity will provide the preliminary evaluation criteria. To facilitate, a template may be attached or clearly described all information and list of documentation to be submitted by Tenderers to enable preliminary evaluation of the Tender]

3.0 TENDER EVALUATION (ITT 35)

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

(i) Alternative Completion Times, if permitted under ITT13.2, will be evaluated as follows: ……

(ii) Alternative Technical Solutions for specified parts of the Works, if permitted under ITT 13.4, will be evaluated as follows:……

(iii) Other Criteria; if permitted under ITT 35.2(j):

……

4.0 MULTIPLE CONTRACTS

4.1 Multiple contracts will be permitted in accordance with ITT 35.4. Tenderers are evaluated on basis of

Lots and a lowest evaluated tenderer identified for each Lot. The Procuring Entity will select one Option of the two Options listed below for award of Contracts.

OPTION 1

(i) If a tenderer wins only one Lot, the tenderer will be awarded a contract for that Lot, provided the tenderer meets the Eligibility and Qualification Criteria for that Lot.

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

OPTION2

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

5.0 ALTERNATIVE TENDERS (ITT 13.1)

Alternative Tenders (ITT 13.1)

Analternative if permitted under ITT 3.1, will be evaluated as follows:

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

6.0 MARGIN OF PREFERENCE

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

6.2 Contractors shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contractor or group of contractors qualifies for a margin of preference.

6.3 After Tenders have been received and reviewed by the Procuring Entity, responsive Tenders shall be assessed to ascertain their percentage of shareholding of Kenyan citizens. Responsive tenders shall be classified into the following groups:

i) *Group A:* tenders offered by Kenyan Contractors and other Tenderers where Kenyan citizens hold shares of over fifty one percent (51%).
ii) *Group B:* tenders offered by foreign Contractors and other Tenderers where Kenyan citizens hold shares of less than fifty one percent (51%).

6.4 All evaluated tenders in each group shall, as a first evaluation step, be compared to determine the lowest tender, and the lowest evaluated tender in each group shall be further compared with each other. If, as a result of this comparison, a tender from Group A is the lowest, it shall be selected for the award of contract. If a tender from Group B is the lowest, an amount equal to the percentage indicated in Item 6.1 of the respective tender price, including unconditional discounts and excluding provisional sums and the cost of day works, if any, shall be added to the evaluated price offered in each tender from Group B. All tenders shall then be compared using new prices with added prices to Group B and the lowest evaluated tender from Group A. If the tender from Group A is still the lowest tender, it shall be selected foraward. If not, the lowest evaluated tender from Group B based on the first evaluation price shall be selected.

7. Post qualification and Contract ward (ITT 39), more specifically,

a) In case the tender was subject to post-qualification, the contract shall be awarded to the lowest evaluated tenderer, subject to confirmation of pre-qualification data, if so required.
b) Incase the tender was not subject to post-qualification, the tender that has been determined to be the lowest evaluated tenderer shall be considered for contract award, subject to meeting each of the following conditions.
    i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow of Kenya Shillings__
    ii) Minimum average annual construction turnover of Kenya Shillings_____*[insert amount]*, equivalent calculated as total certified payments received for contracts in progress and/or completed within the last___*[insert of year]* years.

iii) Atleast_____(*insert number)* of contract(s) of a similar nature executed within Kenya, or the East African Community or a broad, that have been satisfactorily and substantially completed as a prime contractor, or joint venture member or sub-contractor each of minimum value Kenya shillings_____equivalent.

iv) Contractor's Representative and Key Personnel, which are specifiedas_____

v) Contractors key equipment listed on the table "Contractor's Equipment" below and more specifically listed as *[specify requirements for each lot as applicable]*_____

iv) Other conditions depending on their seriousness.

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

Tenderer and each member of JV in case the Tenderer is a JV, shall demonstrate that Non-performance of a contract did not occur because of the default of the Tenderer, or the member of a JV in the last____(*specify years*). The required information shall be furnished in the appropriate form.

b) Pending Litigation

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

c) LitigationHistory

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

QUALIFICATION FORM*

1	2	3	*4*	*5*
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
1	Nationality	Nationality in accordance with ITT 3.6	Forms ELI – 1.1 and 1.2, with attachments	
2	Tax Obligations for Kenyan Tenderers	Has produced a current tax clearance certificate or tax exemption certificate issued by Kenya Revenue Authority in accordance with ITT 3.14.	Attachment	
3	Conflict of Interest	No conflicts of interest in accordance with ITT 3.3	Form of Tender	
4	PPRA Eligibility	Not having been declared ineligible by the PPRA as described in ITT 3.7	Form of Tender	
5	State- owned Enterprise	Meets conditions of ITT 3.8	Forms ELI – 1.1 and 1.2, with attachments	
6	Goods, equipment and services to be supplied under the contract	To have their origin in any country that is not determined ineligible under ITT 4.1	Forms ELI – 1.1 and 1.2, with attachments	
7	History of Non-Performing Contracts	Non-performance of a contract did not occur as a result of contractor default since **1st January 2018**	Form CON-2	
8	Suspension Based on Execution of Tender/Proposal Securing Declaration by the Procuring Entity	Not under suspension based on-execution of a Tender/Proposal Securing Declaration pursuant to ITT 19.9	Form of Tender	
9	Pending Litigation	Tender's financial position and prospective long-term profitability still sound according to criteria established in 3.1 and assuming that all pending litigation will NOT be resolved against the Tenderer.	Form CON – 2	
10	Declaration of Fair employment laws and practices	Bidders shall declare they are not guilty of any serious violation of fair employment laws and practices and will be bound to abide by the industry CBA at minimum	Form CON – 2	
11	Declaration of Knowledge of Site /Pre-Bid	Attend Pre -Tender Site Visits as per TDS, ITT 7.1 Bidders to sign attendance register Certificate must be signed by Employer's representative	Form CON – 3	

	Conference	Bidders to send Technical persons for the site Visit –Min Qualifications –Diploma In Civil/Electrical/Mechanical		
12	Tender Security	Tender Security document	Form in the Prescribed	
13	Priced Bill of Quantities	Fill all rates, and amounts, NO Alterations of the Quantities accepted, All bidders own Corrections must be Countersigned NO Errors noted in the Bills of Quantities	Bills of Quantity in the Prescribed Format	
14	Annual Practicing License with the National Construction Authority	Proof of registration with the National Construction Authority in Class **in Category NCA 4 and above for building Works**	Copy of Current NCA Practicing License	
15	Serialization of the Bid	Bidders shall sequentially serialize all pages of each Tender submitted. Any written Pages or document attached or inserted Documents **MUST** be sequentially serialized	The Serialization MUST be numerically sequential starting from Numeric 1	
16	Completeness of tender document	The person or persons signing the bid **shall** initial all Pages of the bid where entries have been made. Bidders shall own all alterations made to the tender document. Bidders shall duly fill all relevant forms/schedules provided for in the document that requires entries	The person or persons signing the bid **shall** initial all pages of the bid where entries have been made. Bidders shall own all alterations made to the tender document. Bidders shall duly fill all relevant forms/schedules Provided for in the document that requires entries.	
17	Litigation History	No consistent history of court/arbitral award decisions against the Tenderer since **1st January 2018.**	Form CON – 2	
18	Appendix to Form of Bid	Form properly filled & signed	Appendix to Form of Bid in the Prescribed Format	
19	Pre-Contract agreement	Pre -contract agreement with the Electrical, ICT and Mechanical works domestic sub contractors and duly signed by commissioner of Oaths	Appendix III	
20	Domestic sub contractors	The domestic sub contractors provided by the main contractor must satisfy the requirements spelt out in the **Vol 2(for mechanical) Vol 3(For Electrical) and Vol 4(For ICT)**	Appendix IV	

	TECHNICAL EVALUATION			
1	Financial Capabilities	i)Bidders shall provide audited balance sheets or, if not required by the laws of the Tenderer's country, other financial statements acceptable to the Procuring Entity, for the last ***3 years*** shall be submitted and must demonstrate the current soundness of the Tenderer's financial position and indicate its prospective long-term profitability (as demonstrated by Financial Evaluation ratios). (ii)The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated at **25,000,000** equivalent for the subject contract(s) net of the Tenderer's other commitments. The Tenderers shall also demonstrate, to the satisfaction of the Procuring Entity, that it has adequate sources of finance to meet the cash flow requirements on works currently in Progress and for future contract commitments.	Form FIN - 3.1, with attachments ***Attachments include:*** ***i. Audited accounts*** ***All pages must be initialed and stamped by both a practicing Auditor registered with ICPAK and one of the Directors. Auditor's practicing membership number from ICPAK must be indicated and a valid practicing license shall be provided.*** ***The Financial ratio Form to be signed by the Auditor registered with ICPAK and one of the Directors*** - ***Financial Ratios*** Computation shall be made for the following Ratios and marks awarded to each of the ratios Working Capital Debt to Equity Ratio Current ratio Operating Cash Flow ratio - ***Line of Credit*** - ***Bank statements*** ***Etc.***	(Max 10 Marks) 2 Marks 4 marks 4 marks
2	Average Annual Construction Turnover	Minimum average annual construction turnover of Kenya Shillings ***250,000,000*** equivalent calculated as total certified payments received for contracts in progress and/or completed within the last ***3*** **years**, divided by ***3*** *number of* ***years***	Form FIN - 3.2 ***Attachments include Financial Statements***	1 Marks
3	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or	Form EXP -4.1 ***Attach Letters of Award and***	6 Marks *(2 Mark for each*

		management contractor, substantially completed in the last *[**5 years**]* prior to the applications Submission deadline.	***Completion Certificates***	*General Construction project)*
4	Specific Construction &Contract Management Experience	Participation in contract (s) of a similar nature with Minimum cumulative value of ***KSh. One Hundred and Fifty Million (150,000,000.00)*** as filled in Form EXP 4.2(a) that have been satisfactorily and substantially completed by the bidder. The similarity shall be based on the physical size, complexity, methods/technology or other characteristics	Form EXP 4.2(a)&(b) ***Provide Letters of Award and Completion Certificates For subcontracted works, the bidder should provide the following; Award letter of the main contractor Award letter of the subcontract. Completion letter of the subcontract. Subcontract approval from the Engineer/supervision Authority***	**14 Marks**
5	Contractor's Representative and Key Personnel	Curriculum Vitae (CVs) of the Proposed Key Staff must be presented in the provided format and duly signed by the proposed individual. Copies of certificates and Annual Practicing Licenses (for Engineers) and Academic Certificates for all staff is mandatory; **Project Manager** Minimum of a Bcheloar 's Degree in Architecture Minimum of a Bachelor's degree in Architecture, Quantity Surveying, Construction Management or equivalent **Site Agent** Minimum of a Higher Diploma/ Diploma in Building Construction or Equivalent **Foremen** Minimum of Certificate – Building Construction, Electrical, Mechanical	**Schedule F (Form PER. 1 and PER. 2)** **5 years-above 3mks** **3-4 2mks** **Below 3years 1mk** **5 years -above 3mks** **3-4 2mks** **Schedule F (Form PER. 1 and PER. 2)** **Below 3years 1mk** **5 years above 2mks** **Below 5 years 1mk**	**10 Marks**

<table>
<tr><td></td><td></td><td>Artisan
Trade test certified in relevant field</td><td>3 years and above 2 mks
Below 3 years 1 mk</td><td></td></tr>
<tr><td>6</td><td>Contractors key equipment</td><td>Bidders shall declare they have possession/Ownership of various equipment as proposed to be used in the Project by providing
Logbooks that demonstrate proof of ownership

For Bidders planning to hire, they shall provide an Active Lease Agreement in Place that can be used during the Project Life. The copy of logbooks of the lessor(s) shall also be provided.</td><td></td><td>35 marks</td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th rowspan="2">Main Equipment</th><th rowspan="2">Quantity (No) (Minimum)</th><th colspan="2">Marks (Score)</th></tr>
<tr><th>Owne</th><th>Hired /</th></tr>
<tr><td>Pick-ups</td><td>1</td><td>4</td><td>3</td></tr>
<tr><td>Lorries</td><td>2</td><td>5</td><td>3</td></tr>
<tr><td>Tippers</td><td>2</td><td>5</td><td>3</td></tr>
<tr><td>Excavators</td><td>1</td><td>5</td><td>3</td></tr>
<tr><td>Relevant Tools and Equipment</td><td>At least 8 No.</td><td>8</td><td>5</td></tr>
<tr><td>Poker Vibrator</td><td>3</td><td>4</td><td>4</td></tr>
<tr><td>Concrete Mixer</td><td>2</td><td>4</td><td>4</td></tr>
<tr><td colspan="2">Total</td><td>35</td><td>25</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>7</td><td>Proposed methodology</td><td>Adequacy and quality of the proposed methodology</td><td>a) Technical approach and methodology
• Provided a detailed Work Methodology:
a) Procedure on execution of activities as outlined in the BoQs</td><td>6 marks</td></tr>
</table>

			b) Allocation of machinery/labour in execution the activities c) Procedures in quality control of the activities described in BoQs • Provided a Methodology on safety during the construction period: a) Personal protective equipment b) Signages c) Delineation of construction and passage of traffic Provide a specific Quality management plan that covers the following: 1. Scope Management 2. Time Management 3. Material Quality Management 4. Financial Management 5. Risk Management 6. Health & Safety Management 7. Environmental Management 8. Communication Management 9. Procurement Management 10. Human Resource Management 11. Stakeholder Management	**3 marks** **6 marks**

			b)* Work plan*/Program of Works (PoW) • PoW Resourced with Equipment-Min. allocation pursuant to the ***Schedule E of Technical Proposal*** - – To be submitted in A3 Size Paper well legible Fonts • PoW captures Monthly outputs for each activity • PoW details BoQ Quantities, Units and Rates • PoW is superimposed with Cashflow Projections as detailed in ***Schedule A*** of the technical proposal c) **Site Organization and staffing** (Schedule B of Technical proposal)	**6 marks** **1 mk** **1 mk** **1 mk** **1 mk**
		Tenderers who score less than the required pass (75%) will be automatically disqualified. Tenderers who pass the technical evaluation will be		
	C. FINANCIAL EVALUATION: The lowest evaluated bidder shall be subjected to Financial Evaluation which include but not limited to **sensitivity analysis** of the **rates** to **detect** **Abnormally low bids or abnormally high bids or unbalanced tenders or front loaded**. **Treatment of Abnormally Low Bid/Abnormally high Bid/ Unbalanced bid**			
	The Procuring Entity may undertake an analysis of bidders' rates which are potentially lower/higher than the known prevailing market rates. The bidders shall be required to provide objective justification including supporting documents on derivation of their rates within stipulated time to the Procuring Entity (***See Schedule G, Part I&II on Derivation of Rates***). In addressing the above criteria, the following steps shall be undertaken by the Procuring Entity;			

	a. **Identify**: the Procuring Entity identifies a potential Abnormally Low/High Bid based on comparison with known prevailing market rates or with the project's total cost estimate. b. **Evaluate**: The Procuring Entity clarifies with the Bidder/proposer (hereafter the Bidder). The Bidder prepares a justification of their price based on the request from the Procuring Entity. The procuring Entity fully analyzes the Bidder's justification to verify if it is an Abnormally Low/High Bid. Due diligence may be carried out by the Procuring Entity on the bidder's documentation. c. **Determination**: The Procuring Entity fully documents the decision to accept or reject the Bid and executes appropriate action(s)/recommendation(s). In view of the above, the procuring Entity shall evaluate and analyze the Bidders' submissions against the known prevailing market rates and cost estimation guidelines. The analysis of the bidder's justification shall take into account all evidence provided in response to the request. Accordingly, the Procuring Entity's relevant committee shall make a recommendation to the Accounting Officer
	D. POST QUALIFICATION: The procuring entity may verify the documents provided by the bidder with the issuing authority.

SECTION IV - TENDERING FORMS

QUALIFICATION FORMS

1. FOREIGN TENDERERS 40%RULE

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

ITEM	Description of Work Item	Describe location of Source	COST in K. shillings	Comments, if any
A	Local Labor			
1				
2				
3				
4				
5				
B	Sub contracts from Local sources			
1				
2				
3				
4				
5				
C	Local materials			
1				
2				
3				
4				
5				
D	Use of Local Plant and Equipment			
1				
2				
3				
4				
5				
E	Add any other items			
1				
2				
3				
4				
5				
6				
	TOTAL COST LOCAL CONTENT		XXXXX	
	PERCENTAGE OF CONTRACT PRICE			

2. FORMEQU: EQUIPMENT

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

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

Omit the following information for equipment owned by the Tenderer.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

3. FORM PER -1

Contractor's Representative and Key Personnel Schedule

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

	Name of candidate	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]

4. FORM PER - 2:

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

Name of Tenderer

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

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

Project	Role	Duration of involvement	Relevant experience
[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): _____

Countersignature of authorized representative of the Tenderer:

Signature: _____

Date: (day month year): _____

5. TENDERERS QUALIFICATION WITHOUT PREQUALIFICATION

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

5.1 FORM ELI -1.1

Tenderer

InformationForm

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 1. Establishing that the Tenderer is not under the supervision of the Procuring Entity 2. Included are the organizational chart and a list of Board of Directors

5.2 FORM ELI -1.2

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

Date:_____

ITT No. andtitle:_____

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

5.3 FORM CON –2

Historical Contract Non-Performance, Pending Litigation and Litigation History

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

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
☐ Contract non-performance did not occur since 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-			

Year of dispute	**Amount in dispute (currency)**	**Contract Identification**	**Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)**
Factor 2.4. ☐ Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.			
[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)**				
	Year 1	Year 2	Year 3	Year 4	Year 5
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

*Refer to ITT 15 for the exchange rate

5.4.2 Sources of Finance

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

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

5.4.3 Financial documents

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

(a) reflect the financial situation of the Tenderer or in case of JV member, and not an affiliated entity (such as parent company or group member).

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

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

(d) correspond to accounting periods already completed and audited.

☐ Attached are copies of financial 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: _____

	Annual turnover data (construction only)		
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 FORM FIN – 3.3:

Financial Resources

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

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

5.7 FORM FIN – 3.4:

Current Contract Commitments / Works in Progress

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

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

5.8 FORM EXP - 4.1

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: _____	

5.9 FORM EXP - 4.2(a)

Specific Construction and Contract Management Experience

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

Similar Contract No.	**Information**			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			**Kenya Shilling**	
If member in a JV or sub-contractor, specify participation in total Contract amount				
Procuring Entity's Name:				
Address: Telephone/fax number E-mail:				

5.9 FORM EXP - 4.2(a)
Specific Construction and Contract Management Experience

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

Similar Contract No.	**Information**			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			**Kenya Shilling**	
If member in a JV or sub-contractor, specify participation in total Contract amount				
Procuring Entity's Name:				
Address: Telephone/fax number E-mail:				

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

Specific Construction and Contract Management Experience (cont.)

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

5.10 FORM EXP - 4.2(b)

Construction Experience in Key Activities

Tenderer's Name: _____
Date: _____
Tenderer's JV Member Name: _____
Sub-contractor's 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			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			**Kenya Shilling**	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)		Actual Quantity Performed (i) x (ii)
Year 1				
Year 2				
Year 3				
Year 4				
Procuring Entity's Name:				
Address: Telephone/fax number E-mail:				

[2] If applicable

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

2. Activity No. Two
3. ……

OTHER FORMS

6. FORM OF TENDER

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

INSTRUCTIONS TO TENDERERS

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

ii) The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address. Tenderers are reminded that this is a mandatory requirement.

iii) Tenderer must complete and sign CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION FORMS OF THE TENDERER as listed under (xxii) below.

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

To: ..... *[Insert complete name of Procuring Entity]*

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

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

Dear Sirs,

1. In accordance with the Conditions of Contract, Specifications, Drawings and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct and complete the Works and remedy any defects therein for the sum[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] _____
   _____

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

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

[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.*

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 issuedinaccordance 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, incase of one lot: Total priceis: *[insert the total price of the Tender in words and figures, indicating the various amounts and the respective currencies*]; or

Option2, in case of multiple lots:

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

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

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

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

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

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

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

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

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

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

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

Name of Recipient	Address	Reason	Amount

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

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

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

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

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

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

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

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

a) Tenderer's Eligibility; Confidential Business Questionnaire - to establish we are 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-Declarationo f 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*]

Datesigned_____dayof_____,_____

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

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

QUESTIONNAIRE Instruction to Tenderer

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

(a) Tenderer'sdetails

	ITEM	DESCRIPTION
1	Name of the Procuring Entity	
2	Reference Number of the Tender	**MNUC/T03/2022-2023**
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			

(iii) Conflict of interest disclosure

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
1	Tenderer is directly or indirectly controls, is controlled by or is under common control with another tenderer.		
2	Tenderer receives or has received any direct or indirect subsidy from another tenderer.		
3	Tenderer has the same legal representative as another tenderer		
4	Tender has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process.		
5	Any of the Tenderer's affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender.		

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
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_____

Titleor Designation_____

_____ _____

(Signature) *(Date)*

b) CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting the accompanying Letter of Tender to the **MAMA NGINA UNIVERSITY COLLEGE** 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:

Icertify, on behalf of _____ *[NameofTenderer]*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. Iamthe 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. TheTenderer 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) theTenderer 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. Inparticular, 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 intentiono r 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 pursuan tto 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 toparagraph(5)(b) above;

8. Thetermsofthe 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, whichevercomesfirst, unless otherwise required byl 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]

(c) SELF- DECLARATION FORMS

FORM SD1

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

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

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

2. THAT the aforesaid Bidder, its Directors and subcontractors have not been debarred from participating in procurement proceeding under Part IV of the Act.

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

……. …….
…… (Title) (Signature)
(Date)

Bidder Official Stamp

FORM SD2

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

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

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

2. THAT theafore said Bidder, its servants and/oragents/subcontractorswillnotengageinanycorruptorfraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ……. *(insert name of the Procuring entity)* which is the procuring entity.

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

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

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

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

Bidder's Official Stamp

DECLARATION AND COMMITMENT TO THE CODE OF ETHICS

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

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

Name of Authorized signatory.....

Sign…….....

Position.....

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

E-

mail…….....

Name of the Firm/Company…….....

Date…….....

(Company Seal/ Rubber Stamp where applicable)

Witness

Name…….....

.....

Sign…….....

Date…….....

(d) APPENDIX 1 - FRAUD AND CORRUPTION

(Appendix 1 shall not be modified)

1. Purpose

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

2. Requirements

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

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

1) A person to whom this Act applies shall not be involved in any corrupt, coercive, obstructive, collusive or fraudulent practice; or conflicts of interest in any procurement or as set disposal proceeding;

2) A person referred to under subsection (1) who contravenes the provisions of that sub-section commits an offence;

3) Without limiting the generality of the subsection (1) and (2), the person shall be: -

   a) disqualified from entering into a contract for a procurement or asset disposal proceeding; or

   b) if a contract has already been entered into with the person, the contract shall be voidable;

4) The voiding of a contract by the procuring entity under subsection (7) does not limit any legal remedy the procuring entity may have;

5) An employee or agent of the procuring entity or a member of the Board or committee of the procuring entity whohas 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 conflictofinteresttotheprocuringentity;

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 setf orth 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 for fraudulent and collusive practices as follows:

"fraudulent practice" includes a misrepresentation of fact in order to influence a procurement or disposal processorthe 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.

---

[1] *For the avoidance of doubt, a party's in eligibility to be awarded a contract shall includee, without limitation, (i) applying for pre-*

qualification, expressing interest in a consultancy, and tendering, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

[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, suc 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 copyor electronic format) deemed relevant for th einvestigation/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.*

SCHEDULE G

PART I. SCHEDULE OF MATERIALS; -BASIC PRICES

ITEM NO	DESCRIPTION	NAME OF SUPPLIER	COUNTRY OF ORIGIN	UNIT	RATE	
					KSHS	CTS
1.	200mm Machine cut masonry			Piece		
2.	Petrol, Premium/ super Grade			Litre		
3.	Automotive Diesel Fuel			Litre		
4.	Clean river sand			Tonne		
5.	Ballast -20mm aggregate			Tonne		
6.	Quarry stones			FT		
7.	Cement-50kg			Bag		
8.	Reinforcing Steel			Tonne		
9.	Ceramic Tiles			Sm		
10.	Structural steel			Kg		

I certify that the above information is correct

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

The prices inserted above shall be those prevailing 30 days before the submission of Tenders and shall be quoted in Kenya Shillings using the prevailing exchange rates by Central Bank Kenya.
Prices of imported materials to be quoted CIF Mombasa or Nairobi as appropriate depending on whether materials are imported by the tenderer directly or through a local agent.

PART II. SHEDULE OF RATES DERIVATION
(For use during Tender Evaluation)

Form for Detailed Breakdown of Cost Comparison

Bill item No.	
Description	
Units	
Quantity	

Rate build up

a) Direct cost (DC) i) Unit work Price 1) Material Cost

Description Quantity	Units		Market Price	Amount

Sub Total For Material

2) Labour Price

Personnel	No. Required	Rate /day	Amount
Sub Total For Labor			
Productivity ratio			

3) Machinery				
Machinery type	No. Required	Rate /day Hired/Owned	Amount	

Sub Total for Machinery

Productivity ratio

Sub-total of unit price
Sum (1+2+3)

~~ii) Haulage Cost~~

~~Sub-totals of DC~~

b) Indirect Cost

c) Overheads and Profits **Total**

Cost Sum
(a+b+c)

Notes:
This form has been based on the principles of Cost Estimation Manual

The form shall be filled upon request by the Procuring Entity during Tender Evaluation.

I certify that the above information is correct

……	…….	……..
(Title)	(Signature)	(Date& Official Stamp)

PART II. SHEDULE OF RATES DERIVATION

(For use during Tender Evaluation)

Form for Detailed Breakdown of Cost Comparison

Bill item No.	
Description	
Units	
Quantity	

Rate build up

a) Direct cost (DC) i) Unit work Price

1) Material Cost

Description	Units	Quantity	Market Price	Amount
Sub Total For Material				

2) Labour Price

Personnel	No. Required	Rate /day	Amount
Sub Total For Labor			
Productivity ratio			

3) Machinery

Machinery type	No. Required	Rate /day	Amount	Hired/Owned
Sub Total for Machinery				
Productivity ratio				

Sub-total of unit price	
Sum (1+2+3)	

ii) Haulage Cost

Sub-totals of DC	
b) Indirect Cost	
c) Overheads and Profits **Total**	
Cost Sum (a+b+c)	

Notes:
This form has been based on the principles of Cost Estimation Manual.

The form shall be filled upon request by the Procuring Entity during Tender Evaluation. I

certify that the above information is correct

……	…….	……..
(Title)	(Signature)	(Date& Official Stamp)

APPENDIX 1-SECURITY-[Option 1–Demand Bank Guarantee]

Beneficiary:_____

Request forTenders No:

_____

Date:_____

TENDER GUARANTEE No.:_____

Guarantor: _____

1. We have been informed that_____(here inafter called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here inafter called" the Tender") for the execution of_____ under Request for Tenders No._____("the ITT").

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

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

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

b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension there to provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance.

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) thirty days after the end of the Tender Validity Period.

5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above onor before that date.

_____

[Signature]

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

FORMAT OF TENDER SECURITY [Option 2–Insurance Guarantee]

TENDER GUARANTEE No.: _____

1. Whereas …… [*Name of the tenderer]* (hereinafter called "the tenderer") has submitted its tender dated …… [*Date of submission of tender]* for the …… *[Name and/or description of the tender]* (hereinafter called "the Tender") for the execution of___under Request for Tenders No._____("the ITT").

2. KNOW ALL PEOPLE by these presents that WE …… of …… [**Name of Insurance Company**] having our registered office at …… (hereinafter called "the Guarantor"), are bound unto …….. [*Name of Procuring Entity*] (hereinafter called "the Procuring Entity") in the sum of …… (Currency and guarantee amount) for which payment well and truly to be made to the said Procuring Entity, the Guarantor binds itself, its successors and assigns, jointly and severally, firmly by these presents.

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

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

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

   b) having been notified of the acceptance of its Tender by the Procuring Entity during the Tender Validity Period or any extension thereto provided by the Principal; (i) failed to execute the Contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to tenderers ("ITT") of the Procuring Entity's Tendering document.

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

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii)twenty-eight days after the end of the Tender Validity Period.

5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

_____	_____
[Date]	*[Signature of the Guarantor]*
_____	_____
[Witness]	*[Seal]*

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

FORM OF TENDER - SECURING DECLARATION

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

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

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

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

1. I/We understand that, according to your conditions, bids must be supported by a Tender-Securing Declaration.

2. I/We accept that I/we will automatically be suspended from being eligible for tendering in any contract with the Purchaser for the period of time of [insert number of months or years] starting on [insert date], if we are in breach of ourobligation(s) under the bid conditions, because we–(a) have withdrawn our tender during the period of tender validity specified by us in the Tendering Data Sheet; or (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the instructions to tenders.

3. I/We understand that this Tender Securing Declaration shall expire if we are not the successful Tenderer(s), upon the earlier of:
   a) Our receipt of a copy of your notification of the name of the successful Tenderer; or
   b) thirty days after the expiration of our Tender.

4. I/We understand that if Iam /we are/ in a Joint Venture, the Tender Securing Declaration must be in the name of the Joint Venture that submits the bid, and the Joint Venture has not been legally constituted at the time of bidding, the Tender Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed:……...…….. Capacity/title (director or

partner or 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 orstamp

Appendix toTender

Schedule of Currency requirements

Summary of currencies of theTender 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 - WORKS REQUIREMENTS

SECTION V - BILLS OF QUANTITIES

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

1. These Notes for Preparing a Bill of Quantities are intended only as information for the Procuring Entity or the person drafting the Tender Documents. Priced Bills of Quantities shall be part and parcel of the Contract Documents.

2. The objectives and purpose of the Bills of Quantities are to provide sufficient information on the specifications, descriptions and quantities of Works to be performed to enable tenders to be prepared efficiently and accurately and when a contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed. Inorder 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 outin 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 thef ollowing sections:

a) Preambles
b) Preliminary items
c) Work Items
c) Daywork Schedule; and
d) Provisionalitems
e) Summary.

4. NOTES TO PREPARING PREAMBLES

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

4.2 Units of Measurement - The following units of measurement and abbreviations shall be used, unless other national units are mandatory in Kenya.

Unit	Abbreviation	Unit	Abbreviation
cubic meter	m^3 *or* cm	millimetre	mm
hectare	ha	month	mon
hour	h *or* hr	number	no
kilogram	kg	square meter	m^2 *or* sq m
lump sum	sum	square millimeter	mm^2 *or* sq mm
Linear meter	lm	week	wk
metric ton	ton	pair	prs

4.3 The Bills of Quantities shall be read in conjunction with the Instructions to Tenders, General and Special Conditions of Contract, Technical Specifications, and Drawings.

4.4. The quantities given in the Bills of Quantities are estimated and partly provisional and are given to provide a common basis for tendering. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Architect and valued at the rates and prices

tender in the priced

Bills of Quantities, where applicable, and otherwise at such rates and prices as the Architect may fix within the terms of the Contract.

4.5. The rates and prices tender in the priced Bills of Quantities shall, except in so far as it is otherwise provided under the Contract, include all Constructional Plant, labour, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.

4.6. Arateorprice 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 ratesand 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 agains 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 itemor items will be executed without any additional costs or without being treated like variations.

5. NOTES ON PREPARING BILLS OF QUANTITIES

5.1 The Preliminary Items should be limited to tangible items that should be priced by the tenderer, are identifiable and can be priced separately and included in the interim valuations precisely. Such items may include such items as site office, notice boards, and other temporary works, otherwise items such as security for the Works which are primarily part of the Contractor's obligations should be included in the Contractor's rates.

5.2 The work items in the Bills of Quantities should be grouped into sections to distinguish between those parts of the Works which by nature, location, access, timing, or any other special characteristics may give rise to different methods of construction, or phasing of the Works, or considerations of cost. Such groups could be ground excavations, structures, external works, services, etc. General items common to all parts of the Works may be grouped as a separate section in the Bill of Quantities.

5.3 Quantities should be computed net from the Drawings, unless directed otherwise in the Contract, and no allowance should be made for bulking, shrinkage or waste. Quantitiesshouldberoundedupwhereappropriate.

5.4 Where the measured items a redeemed not to be exact because of the likelihood that the scope can change during the execution of the works, such items could be subject to re-measurement, the word **"provisional"** should be used to identify such cases. Where whole sections of the work items fall in this class, for example foundations, they should be labelled "Provisional Quantities" or "Provisional Items" so that the Tenderer/Contractor is advised up front that such items are subject to re-measurement to done before such work is cover-up.

5.5 All items that have not been measured and therefore not subject tot enders pricing should be listed in the Bills of Quantities as **Provisional Sums** for particular item or class of Work, which may be subject to a nominated subcontract or separate measurements at a later date during the execution of the works. For example, if it is deemed not possible to measure electrical works before going to tender because detail

designs are not ready, a provisional sum can be allowed in the Bills of Quantities for "Installation of Electrical Works" to be executed later when actual design details are completed. To the extent not covered above, there should be in the Bills of Quantities a general provision for physical and financial contingencies made as a "Provisional Sum for

Contingencies" and "Provisional Sum for Fluctuations". The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises.

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

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

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

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

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

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

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

BILLS OF QUANTITIES

(a) Preambles

1. The method of measurement of completed work for payment shall be in accordance with *[insert the name of a standard reference guide, or full details of the methods to be used]*.

2. The Site is situated in (*provide full description where the site is situated, coordinates from the nearest known landmark like a town and its size*)_____It is approximately_____Kilometers from Nairobi. Access to the site shall be through_____,

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

3. The Contractor shall obtain the Architect's approval on the siting of all temporary buildings, spoil heaps, temporary access path, and storage of materials. The Contractor shall also obtain the Architect approval and direction regarding the use of any materials found on the Site.

4. The drawings used in the preparation of these Bills of Quantities can be inspected at the offices of the Procuring Entityor Procuring Entity's Representative during normal working hours. Two sets of the Working Drawings shall be provided to the contractor but additional copies shall be provided at a cost to be determined by the Engineer.

5. The Contractor shall allow for the payment of all bank charges in connection with the procurement of Bank Guarantees and stamp charges in connection with this contract Agreement.

6. The Contractor shall carry out the various sections of the Works in such an order as the Architect May direct. The Procuring Entity reserves the right to occupy the Works by sections on completion provided that such occupation is considered to be both practical and reasonable and will not interfere with the Works. The Contractor shall allow any costs associated with such occupation.
7. The main Contractor will be fully responsible for paying his Sub-Contractor but the Procuring Entity reserves the right in very exceptional circumstances to make such payments direct in the interests of the project where the completion thereof might be jeopardized by any dispute or vicariousness between the Contractor and the Sub- Contractor involve.
8. The Contractor shall complete and deliver the Works in the period inserted in the Form of Tender as his time for completion of the Works from the date for Possession, to be agreed with the Engineer. The Contract Period is presumed to have been calculated making due allowance for seasonal inclement weather conditions. Noclaimfor extension of time due to the normal in clement weather for this area shall be entertained.

9. The Contractor shall, upon receiving instructions to proceed with the Works, draw up a Programme and Progress Chart setting out the order in which the Works are to be carried out, with the appropriate dates there of. This Chart shall be agreed with the Architect and no deviation from the order set out in it will be permitted without the written consent of the Engineer. The Contractor will be responsible for arranging the above programme with all his sub-Contractors and Specialties. The Contractor shall allow in his rates for carrying out this exercise, and for updating it as required.

10. The Contractor shall submit to the Architect on the first day of each week or such longer period as the Architect from time to time direct, a Progress Report and any information for the proceeding period, showing the progress during the period and the up-to-date cumulative progresson all important items of each section or portion of the Works.

11. The Contractor shall arrange for photographs of the Site to be taken by a professional photographer approved by the Engineer.The Photographs shall provide a record of the Site and adjacent are as prior to the commencement of the Works and shall cover such portion of the works in progress and completion as the Architect shall direct. All prints shall be full plate size, unmounted, and marked on the reverse side

with the date of exposure, identification reference and brief description. The copyright of all photographs shall be vested in the Procuring Entity. The negatives and four prints from each negative shall be delivered to the Architect within two weeks of exposure.

12. Figured dimensions are to be followed in preference to dimensions scaled from the Drawings, but whenever possible dimensions are to be taken on the Site or from the buildings. Before any work is commenced by Sub- Contractors or Specialist Firms, dimensions must be checked on the site comparable dimensions shown on the drawings. The Contractor shall be responsible for the accuracy of such dimensions.

13. Prior to commencement of any work the Contractor is to ascertain from the relevant Authorities the exact position, depth and level of all existing electric cables, waterpipes or other services in the are aand he shall make whatever provisions may be required by the Authorities concerned for the support and protection of such services. Any damage or disturbance caused to any services shall be reported immediately to the Architect and the relevant Authority and shall be made good to their satisfaction at the Contractor's expense. Where appropriate the Contractor shall open up the ground in advance of the main work by hand digging if necessary, to locate precisely the position and details of the services which are likely to affect his operations.

14. The Contractor shall include in his prices for the transport of materials, workmen, etc./, to and from the site of the proposed works, at such hours and by such route as are permitted by the Authorities.

15. The Contractor will be required to make good, at his own expense and damage he may cause to the present road surface and pavements within or beyond the boundary of the Site, during the period of the works. All existing paths, storm water channels, etc., that may be destroyed or damaged during the progress of the Works shall be reinstated by the Contractor to the satisfaction of the Engineer.

16. The Contractor is to allow for complying with all instructions and regulations of the Police Authorities.

17. All water shall be fresh, clean and pure, free from earthly, vegetable or organic matter, acid or alkaline substance in solution. The Contractor shall provide at his own risk and cost all water for use in connection with the Works, (including works of sub–contractors). If need be, he shall make arrangements with the Local Water Authority for the installation of a separate meter for all water used by him throughout the Contract and pay all cost and fees in connection therewith. He shall also provide temporary storage tanks and tubing, etc., as may be necessary, and clear away at completion.

18. The Contractor shall provide all artificial lighting and power for his own use on the Works, (including Sub – Contractor's) including all temporary connections, wiring, fittings, etc., and clearing away on completion. The Contractor shall pay all fees and obtain all permits in connection there with.

19. The Contractor shall constantly keep on the Works a Literate English-speaking Agent or Representative, competent and experienced in the kind of work involved, who shall giveh is whole time to the superintendence of the works. (Including works of sub – contractors). Such Agent or Representative shall receive on behalf of the Contractordirections and instruction from the Engineer, and such directions and instructions shall be deemed to be given to the contractor in accordance with the Conditions of Contract. The Agent shall not be replaced without the specific approval of the Engineer.

20. The Contractor shall ensure that the safety of his work people and all authorized visitors to the site are protected at all times. In particular, there shall be the proper provision of guard–rails to scaffolding, protection against falling materials, tools on site, dust, nail and other sharp objects. The site shall be kept tidy and clear of dangerous rubbish. The Architect shall be empowered to suspend work on site should it be considered this condition is not being observed and no claim arising from such suspension will be allowed.

21. The are as available to the Contractor for workyards, offices and other facilities shall be directed by the Architect and any existing features to remain shall be protected from damage throughout the Contract Period and handed back in good condition when they are vacated at the end of the Contract. If additional areas are required, the contractorshallsourcethenatowncost.

22. The Contractor shall give the Architect reasonable notice of the intention to set out or take levels for any part of the Works so that arrangements may be made for checking the work. The accuracy of setting out and leveling shall be within the tolerances specified in the Specifications or on the Drawings. The checking of setting out or leveling by the Architect shall not relieve the Contractor of his duties or responsibilities

under the Contract.

23. The Contractor must take steps necessary to safe guard and shall beheld fully responsible for any damage caused to existingand adjacent property, including buildings that are not a subject of demolition. He shall make good at his own cost damage to persons and property caused there on, and he shall indemnify the Procuring Entity against any loss or claim that may arise.

24. The Contractor shall take such steps and exercise such care and diligence as to minimize nuisance arising from dust, noise or any other cause to the occupiers of the existing and adjacent property. He must provide such temporary and special screens and tarpaulins or gummy bags, hoarding, barriers, warning signs etc. as he considers necessary and sufficient for the protection of the existing and adjacent property and or prevention of nuisance etc. as directed by Engineer.

25. The Contractors attention is drawn to the standards levy order which was amended on 15thOctober 1998.Legal notice No.154 of 1998. The Contractor is required to pay a monthly level of 0.2% of his factory price of construction works with effect from January 1999. Tenderer shall allow for this in the build-upo f his rates.

26. The Contractor shall provide temporary sheds, offices meshrooms, sanitary, accommodation and other temporary buildings for the use of the contractor and sub-contractors, including lighting furniture equipment and attendance.

27. Contractor shall provide/build labor camp sat areas to be agreed with the Engineer. Labor camps shall be complete with sanitary accommodation and fencing gates.

28. The Contractor must provide the necessary toilet facilities to the requirement and satisfaction of the Health Authorities and maintain the same in a thoroughly clean and sanitary condition and pay all conservancy fees during the period of the Works and remove when no longer required.

29. The Contractor shall provide at his own risk and cost all watching and lighting as necessary to safeguard the Works, Plant and materials against damage and theft.

30. The Contractor shall provide all necessary hoists, tackle, plant, equipment, vehicles, tools and appliances of every description for the due and satisfactory completion of the Works and shall remove the same on completion. All such plant, tools and equipment shall comply with all regulations in force throughout the period of the Contract and shall be altered or adopted during the Contract period as may be necessary to comply with any amendments in or additions to such regulations.

31. Provide, erect and maintain all necessary scaffolding, sufficiently strong and efficient for the due performance of the works, including Sub-Contract Works, provide special scaffolding as required by Sub-Contractors, alter and adopt all scaffolding as and when required during the Works, and remove on completion. No scaffolding is measured here in after and the Contractor must allow in his rates for this.

32. The Contractor shall take all necessary precautions such as temporaryf encing, hoarding fans, planked footways, guard–rails gantries screen, etc., for the safe custody of the Works, materials and public protection and adjacent properties.

33. Cover up all and protect from damage, including damage from in clement weather, all finished work and unfixed materials, including that of Sub-Contractors, etc., to the satisfaction of the Architect until the completion ofthe Contract.

34. The Contractor shall, after completion of the works, at his own expense, remove and clear away all surplus excavated demolition materials, plant, rubbish and unused materials and shall leave the whole of the Site and Works in a clean and tidy state to the satisfaction of the Engineer, sheds, camps, etc. Particular care shall be taken toleavecleanallfloors and windows and tore move all paint and cement all rubbis hand dirt as it accumulates. The Contractor is to find his own dump and shall pay all charges in connection there with.

35. Concrete test cubes shall be prepared in a set of three, as described including testing fees, labor and materials, making molds, transport, handling, etc. Allow in your rates for making at least four cubes on each occasion, from different batches; the concrete being taken from the point of deposit.

36. The Contractors hall furnish at the earliest possible opportunity before work commences, and at his own cost, any samples of materials and workmanship that may be called for by the Architect for the approval or rejection, and any further samples in the case of rejection, until such samples are approved by the Engineer. Such samples, when approved, shall be the minimum standard for the work to which they apply.

The proceduref or submitting samples of materials for testing or approval and the method of marking for identification shall be as laid down by the Engineer.The Contractor shall allow in his Tender for such samples and tests, including those in connection with his Sub-Contractors work.

37. The Contractors attention is drawn to the Finance Bill of the year 2000/2001 on withholding tax on contractual payment section 35(7)(i)(ii) which became effective on 1st July 2000. A 3% withholding tax will be applicable to all in terim payments exceeding Kshs…….....……. for work done in respect of building or civil works. The contractor shall allow for any costs arising resulting there from in the build-up of rates.

38. Blasting will only be allowed with the express permission of the Architect in writing. All blasting operations shall be carried out at the Contractor's sole risk and cost, in accordance with any Government regulations in force for the time being, and any special regulations laid down by the Architect governing the use and storage of explosives.

39. The National Construction Authority is a state corporation established under the national construction authority Act No.14 of 2011. The broad Mandate of the Authority is to over see the construction industry and coordinate its development. The National Construction Authority Regulations 2014 with an effective date of 6thJune 2014, regulation 25, - Allow 0.5% of the tender sum/contract sum for construction levy.

40. The Contractor attention is drawn to Finance Bill of 1993 where VATwas introduced in all contracts for construction services. The tenderer is also drawn to VAT Act Cap 476 clause 19(9). The tenderer must allow for VAT1.19 as instructed else where.

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

BILL NO. 1 - PRELIMINARY ITEMS

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

BILL NO. 2: WORK ITEMS

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

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

Item no.	***Description***	***Unit***	***Quantity***	***Rate***	***Amount***
Total for Bill No. 2 (carried forward to Summary, p. _)					_____

Bill No. 3: Schedule of Daywork Rates - Labor

Item no.	Description	Unit	Nominal quantity	Rate	Amount
	Subtotal				
	Allow ____ percent[a] of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above.				
	Total for Daywork (carried forward to Daywork Summary, p. _____)				

a. To be entered by the Tenderer.

Bill No. 4: Schedule of Daywork Rates - Materials

Item no.	Description	Unit	Nominal quantity	Rate	Extended amount
	Subtotal				
	Allow ____ percent a. of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 4 (b) above.				
	Total for Daywork: Materials (carried forward to Daywork Summary, p. _____)				

a. To be entered by theTenderer.

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

Item no.	***Description***	***Nominal quantity (hours)***	***Basic hourly rental rate***	***Extended amount***
	Allow _ percent [a] of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 5 above.			
Total for Daywork: Contractor's Equipment (carried forward to Daywork Summary, p. _____)				

a. To be entered by theTenderer.

Bill No. 6: Daywork Summary

	Amount[a]	*% Foreign*	*Currency*
1. Total for Daywork: Labor			
2. Total for Daywork: Materials			
3. Total for Daywork: Contractor's Equipment			
Total for Daywork (Provisional Sum) (carried forward to Summary of Bills of Quantities, p. ___)			

Bill No. 7: Provisional Sums

Bill no.	*Item no.*	*Description*	*Amount*
1			
2			
3			
4			
etc.			
Total for Specified Provisional Sums (carried forward to Grand Summary			

GRAND SUMMARY

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

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

SECTION VI - SPECIFICATIONS

Notes for preparing Specifications

1. Specifications must be drafted to present a clear and precise statement of the required standards of materials, and workmanshipfor 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. Caremust 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 possibleto the technical solutions indicated in tender documents for certain elements of the Works, taking into consideration the comparative specialized advantage of potential tenderers.

6. The Procuring Entity should provide a description of the selected parts of the Works with appropriate reference to Drawings, Specifications, Bills of Quantities, and Design or Performance criteria, stating that the alternative solutions shall be at least structurally and functionally equivalent to the basic design parameters and Specifications.

7. Such alternative solutions shall be accompanied by all information necessary for a complete evaluation by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, proposed construction methodology, and other relevant details. Technical alternatives permitted in this manner shall be considered by the Procuring Entity each on its own merits and independently of whether the tenderer has priced the item as described in the Procuring Entity's design included with the tender documents.

SECTION VII - DRAWINGS

Note A list of drawings should be inserted here. The actual drawings including Site plans should be annexed in a separate booklet. See Appendix to tender document

PART III - THE CONDITIONS OF CONTRACT AND CONTRACT

SECTION VIII - GENERAL CONDITIONS OF CONTRACT (GCC)

[Name of Procuring Entity]

[Name of Contract]

[Architect Name and Address]

General Conditions of Contract

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1. GENERALPROVISIONS

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" meansthedateofcompletionoftheWorksascertifiedbytheEngineer.

"Contract Price" means the price defined in the contract and there after as adjusted in accordance with the provisions of the Contract.

"Contract" means the agreement entered into between the Procuring Entity and the Contractor as recorded in the Agreement Form and signed by the parties including all attachments and appendices thereto and all documents incorporated by reference therein to execute, complete, and maintain the Works.

"Contractor's Documents" means the calculations, computer programs and other software, progress reports, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.

"Contractor's Equipment" means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor's Equipment excludes Temporary Works, Procuring Entity's Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.

"Contractor'sPersonnel" 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 timeby the Contractor who acts on behalf of the Contractor.

"Contractor" means the person(s) named as contractor in the Form of Tender accepted by the Procuring Entity.

"Cost" means expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.

"Day" means a calendar day and **"year"** means 365 days.

"Dayworks" means Work inputs subject to payment on a time basis for labour and the associated materials and plant.

"Defect" means any part of the Works not completed in accordance with the Contract.

"Defects Liability Certificate" means the certificate issued by Architect upon correction of defects by the Contractor.

"Defects Liability Period" means the period named in the Special Conditions of Contract and calculated from the Completion Date, within which the contractor is liable for any defects that may develop in the handed over works.

"Defects Notification Period" means the period for notifying defects in the Works oraSection(asthecasemaybe) under Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects], whichextendsoverthedaysstated intheSpecialConditionsofContract.

"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

[ApplicationforFinalPaymentCertificate]. **"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.

"Testson Completion" means the tests which are specified in the Contractor agreed by both Parties or instructed as a Variation, and which are carried out under Clause 9 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Procuring Entity.

"Time for Completion" means the time for completing the Works or a Section (as the case may be) as stated in the Special Conditions of Contract (with any extension calculated from the Commencement Date.

"Unforeseeable" means not reasonably foreseeable by an experienced contractor by the Base Date.

"Variation" means any change to the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].

"Works" means the items the Procuring Entity requires the Contractor to undertake as defined in the Appendix to Conditions of Contract. **"Works" may** also mean the Permanent Works and the Temporary Works, or either of them as appropriate.

1.2 Interpretation

In the Contract, except where the context requires otherwise:

a) Words indicating one gender include all genders;
b) words indicating the singular also include the plural and words indicating the plural also include the singular;
c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing;
d) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

1.3 Communications

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

a) In writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Special Conditions of Contract; and
b) delivered, sentor transmitted to the addressf or the recipient's communications as stated in the Special Conditions of Contract. However:

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

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

1.4 Law and Language

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

1.4.2 The ruling language ofthe Contract shall be **English.**

1.5 Priority of Documents

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

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

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

1.6 Contract Agreement

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

1.7 Assignment

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

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

1.8 Care and Supply of Documents

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

1.8.2 Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over bythe 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, theParty 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 Asagreed 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 Entityf or 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 permitor similar permission for the Permanent Works, and any other permissions described in the Specifications as having been (or to be) obtained by the Procuring Entity; and the Procuring Entity shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and

b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licenses and approvals, as required by the Laws in relation to the execution and completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Procuring Entity harmless against and from the consequences of any failure to do so, unless the Contractor is impeded to accomplish these actions and shows evidence of its diligence.

1.14 Joint and Several Liability

If the Contractor constitutes (under applicable Laws) a joint venture, consortium or other unincorporated grouping of two or more persons:

a) These persons shall be deemed to be jointly and severally liable to the Procuring Entity for the performance of the Contract;
b) these persons shall notify the Procuring Entity of their leader who shall have authority to bind the Contractor and each of these persons; and
c) the Contractor shall not alter its composition or legal status without the prior consent of the Procuring Entity.

1.15 Inspections and Audit by the Procuring Entity

Pursuant to paragraph 2.2(e). of Appendix B to the General Conditions, the Contractor shall permit and shall cause its subcontractors and sub-consultants to permit, the Public Procurement Regulatory Authority, Procuring Entity and/or persons appointed or designated by the Government of Kenya to inspect the Site and/or the accounts and records relating to the procurement process, selection and/or contract execution, and to have such accounts and records audited by auditors appointed by the Procuring Entity if requested by the Procuring Entity. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Sub-Clause 15.6 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise 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

2.1.1 The Procuring Entity shall give the Contractor right of access to, and possession of, all parts of the Site within thetime (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 ofanyfoundation, structure, plant or means of access, the Procuring Entity shall do so in the time and manner stated in the Specification. However, the Procuring Entity may withhold any such right or possession until the Performance Security has been received.

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

2.1.3 If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Procuring Entity to give any such right or possession within such time, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:
a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

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

2.1.5 However, if and to the extent that the Procuring Entity's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the

Contractor shall not be entitled to such extension of time, Cost or profit.

2.2 Permits, Licenses or Approvals

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

a) Copies of the Laws of Kenya which are relevant to the Contract but are not readily available, and
b) any permits, licenses or approvals required by the Laws of Kenya:

i) which the Contractor is required to obtain under Sub-Clause 1.13 [Compliance with Laws],
ii) for the delivery of Goods, including clearance through customs,
and
iii) for the export of Contractor's Equipment when it is removed from the Site.

2.3 Procuring Entity'sPersonnel

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

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

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

2.4 Procuring Entity's Financial Arrangements

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

3. THE ENGINEER

3.1 Architect Duties and Authority

3.1.1 The Procuring Entity shall appoint the Architect who shall carry out the duties as signed to him in the Contract. The Architect staff shall include suitably qualified Assistants and other professionals who are competent to carry out these duties. The Architect Name and Address shall be provided in the **Special Conditions of Contract.**

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

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

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

3.1.5 Except as otherwise stated in these Conditions:

a) Whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Architect shallbedeemedtoactfortheProcuring Entity;
b) the Architect has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract;
c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Architect (including absence of disapproval) shall not relieve the

Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances; and

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

3.1.6 The following provisions shall apply:

The Architect shall obtain the specific approval of the Procuring Entity before taking action under the-following Sub-Clauses of these Conditions:

a) Sub-Clause 4.12: agreeing or determining an extension of time and/or additional cost.

b) Sub-Clause 13.1: instructing a Variation, except;

i) In an emergency situation as determined by the Engineer, or

ii) If such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the **Special Conditions of Contract.**

c) Sub-Clause 13.3: Approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 13.1 or 13.2.

d) Sub-Clause13.4: Specifying the amount payable in each of the applicable three currencies.

3.1.7 Not withstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forth with comply, despite the absence of approval of the Procuring Entity, with any such instruction of the Engineer. The Architect shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 13 and shall notify the Contractor accordingly, with a copy to the Procuring Entity.

3.2 Delegation by the Engineer

3.2.1 The Architect may from time to time assign duties and delegate authority to assistants and may also revoke such assignment or delegation. These assistants may include a resident Engineer, and/or independent inspectors appointed to inspect and/ or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties. However, unless otherwise agreed by both Parties, the Architect shall not delegate the authority to determine any matter in accordance with Sub-Clause 3.5 [Determinations].

3.2.2 Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorized to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer. However:

a) Any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Architect to reject the work, Plant or Materials;

b) If the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Engineer, who shall promptly confirm, reverse or vary the determination or instruction.

3.3 Instructions of the Engineer

3.3.1 The Architect may issue to the Contractor (at anytime) instructions and additional or modified Drawings which may benecessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer, or from an assistant to whom the appropriate authority has been delegated under Clause 3.2.1.

3.3.2 The Contractor shall comply with the instructions given by the Architect or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Architec 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).

3.4 Replacement of the Engineer

IftheProcuring Entity intends to replace the Engineer, the Procuring Entity shall, in not less than 21 days before theintendeddateofreplacement, give notice to the Contractor of the name, address and relevant experience of the intended person to replace the Engineer.

3.5 Determinations

3.5.1 Whenever these Conditions provide that the Architect shall proceed in accordance with this Sub-Clause3.5 to agreeor 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

4.1.1 The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Architect instructions, ands hall remedy any defects in the Works.

4.1.2 The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

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

4.1.4 The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (i) shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract, and (ii) shall not otherwise be responsible for the designor specification of the Permanent Works.

4.1.5 The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Engineer.

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

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

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

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

d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the

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

4.2 Performance Security

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

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

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

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

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

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

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

4.3 Contractor's Representative

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

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

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

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

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

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

4.3.7 The Contractor's Representative shall be fluent in the language for communications defined in Sub-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 savailable during all working hours in a number deemed sufficient by the Engineer.

4.4 Sub-contractors

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

4.4.2 The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if theyweret heacts or defaults of the Contractor. Unless otherwise stated in the Special Conditions:

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

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

4.4.4 Wher epracticable, the Contractor shall give fair and reasonable opportunity for contractors from Kenya to be appointed as Subcontractors.

4.5 Assignment of Benefit of Subcontract

If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Engineer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Procuring Entity, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Procuring Entity for the work carried out by the Subcontractor after the assignment takes effect.

4.6 Co-operation

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

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

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

4.6.3 If, under the Contract, the Procuring Entity is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Architect in the time and manner stated in the Specification.

4.7 Setting Out of the Works

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

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

4.7.3 If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an errorin 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 thise.

4.8 Safety Procedures

The Contractor shall:
a) Comply with all applicable safety regulations,
b) Takec are 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 entitledto audit any aspect of the system.

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

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

4.10 Site Data

4.10.1 The Procuring Entity shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Procuring Entity's possession on sub-surface and hydrological conditions

at the Site, including environmental aspects. The Procuring Entity shall similarly make available to the Contractor all such data which come into the Procuring Entity's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

4.10.2 To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

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

4.11 Sufficiency of the Accepted Contract Amount

4.11.1 TheContractor 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 shal ldescribe 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 Contractorwhen submitting the Tender, which shall be made available by the Contractor, but shall not be bound by the Contractor'sinterpretationofanysuchevidence.

4.13 Rights of Way and Facilities

Unless otherwise specified in the Contract the Procuring Entity shall provide effective access to and possession of the Site including special and/or temporary rights-of-way which are necessary for the Works. The Contractor shall obtain, at his risk and cost, any additional rights of way or facilities out side the Site which he may require for the purposes of the Works.

4.14 Avoidance of Interference

4.14.1 The Contractor shall not interfere unnecessarily or improperly with:

a) The convenience of the public, or

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

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

4.15 Access Route

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

4.15.2 Except as otherwise stated in these Conditions:

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

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

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

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

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

4.16 Transport of Goods

Unless otherwise stated in the Special Conditions:

a) the Contractor shall give the Architect not less than 21 days' notice of the date on which any

Plant or a major item of other Goods will be delivered to the Site;

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

c) the Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from thetransport 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 Entitys hall 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 [NominatedSubcontractors]),
b) photographs showing the status of manufacture and of progress on the Site;
c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:
   i) commencement of manufacture,
   ii) Contractor's inspections,
   iii) tests, and
   iv) shipment and arrival at the Site;
d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];
e) copies of quality assurance documents, test results and certificates of Materials;
f) list of notices given under Sub-Clause 2.5 [Procuring Entity's Claims] and notices given under Sub- Clause 20.1 [Contractor's Claims];
g) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
h) comparison so factual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

4.22 Security of the Site

Unless otherwise stated in the Special Conditions:

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

4.23 Contractor's Operations on Site

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

4.23.2 During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works

which are no longer required.

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

4.24 Fossils

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

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

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
b) payment of any such Cost, which shall be included in the Contract Price.
After receiving this further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

5. NOMINATED SUBCONTRACTORS

5.1 Definition of "nominated Subcontractor"

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

a) Who is nominated by the Procuring Entity, or
b) Contractor has nominated as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].

5.2 Objection to Nomination

The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Procuring Entity as soon as practicable, with supporting particulars. An objection shall be deemed reasonable if it arises from (among other things) any of the following matters, unless the Procuring Entity agrees in writing to indemnify the Contractor against and from the consequences of the matter:

a) there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength;
b) the nominated Subcontractor does not accept to indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and employees; or
c) the nominated Subcontractor does not accept to enter into a subcontract which specifies that, for the subcontracted work (including design, if any), the nominated Subcontractor shall:
    i) undertake to the Contractor such obligations and liabilities as will enable the Contractor to discharge hisobligations and liabilities under the Contract;
    ii) indemnify the Contractor against and from all obligations and liabilities arising under or in connection with the Contract and from the consequences of any failure by the Subcontractor to perform these obligations or to fulfil these liabilities, and
    iii) be paid only if and when the Contractor has received from the Procuring Entity payments for sums due under the Subcontract referred to under Sub-Clause 5.3 [Payment to nominated Subcontractors].

5.3 Payments to nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts shown on the nominated Subcontractor's invoices approved by the Contractor which the Architect certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract

Price in accordance with sub-paragraph (b) of Sub-Clause 13.5 [Provisional Sums], except as stated in Sub-Clause 5.4 [Evidence of Payments].

5.4 Evidence of Payments

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

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

6. STAFF AND LABOR

6.1 Engagement of Staff and Labor

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

6.2 Rates of Wages and Conditions of Labor

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

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

6.3 Persons in the Service of Procuring Entity

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

6.4 Lab or Laws

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

6.5 Working Hours

Nowork shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the **Special Conditions of Contract**, unless:

a) Otherwise stated in the Contract,
b) The Architect gives consent, or
c) The work is unavoidable, or necessary for the protection of life or property or for the safety of the

Works, in which case the Contractor shall immediately advise the Engineer, provided that work done outside the normal working hours shall be considered and paid for as overtime.

6.6 Facilities for Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities on site for the Contractor's Personnel. The Contractor shall also provide facilities for the Procuring Entity's Personnel as stated in the Specifications. The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

6.7 Health and Safety

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

6.7.2 The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide what ever is required by this person to exercise this responsibility and authority.

6.7.3 The Contractor shall send, to the Engineer, details of any accident as soon as practicable after itsoccurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Architect may reasonably require.

6.7.4 The Contractor shall conduct an awareness programme on HIV and other sexually transmitted diseases via an approved service provider and shall undertake such other measures taken to reduce the risk of the transfer of these diseases between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

6.8 Contractor's Superintendence

6.8.1 Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary super intendence to plan, arrange, direct, manage, inspect and test the work.

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

6.9 Contractor's Personnel

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

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

6.10 Records of Contractor's Personnel and Equipment

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

6.11 Disorderly Conduct

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

6.12 Foreign Personnel

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

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

6.13 Supply of Water

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

6.14 Measures against Insect and Pest Nuisance

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

6.15 Alcoholic Liquor or Drugs

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

6.16 Prohibition of Forced or Compulsory Labour

The Contractor shall not employ forced labor, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

6.17 Prohibition of Harmful Child Labor

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

6.18 Employment Records of Workers

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

Personnel and Equipment].

6.19 Workers' Organizations

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

6.20 Non-Discrimination and Equal Opportunity

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

7. PLANT, MATERIALS AND WORKMANSHIP

7.1 Manner of Execution

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

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

7.2 Samples

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

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

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

7.3 Inspection

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

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

7.3.2 The Contractor shall give the Procuring Entity's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.

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

7.4 Testing

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

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

7.4.3 The Architect may, under Clause 13 [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, not withstanding other provisions of the Contract.

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

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

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

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

7.4.7 The Contractor shall promptly forward to the Architect duly certified reports of the tests. When thespecified tests have be enpassed, the Architect shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Architect has not attended the tests, he shall be deemed to have accepted the readings as accurate.

7.5 Rejection

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

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

7.6 Remedial Work

7.6.1 Not withstanding any previous test or certification, the Architect may instruct the Contractorto:

a) Remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,
b) remove and re-execute any other work which is not in accordance with the Contract, and
c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseen able event or otherwise.

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

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

7.6.4 If the contractor repeatedly delivers defective work, the Procuring Entity may consider termination in accordance with Clause 15.

7.7 Ownership of Plant and Materials

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

a) When it is in corporated in the Works;

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

7.8 Royalties

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

a) Natural materials obtained from outside the Site, and

b) thedisposal of material from demolitions and excavations and of other surplus material (whether natural orman-made), except to the extent that disposal are as within the Site are specified in the Contract.

8 COMMENCEMENT, DELAYS AND SUSPENSION

8.1 Commencement of Works

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

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

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

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

8.1.2 If the said Architect instruction is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract under Sub-Clause1 6.2 [Terminationby Contractor].

8.1.3 The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date and shal lthen proceed with the Works with due expedition and without delay.

8.2 Time for Completion

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

a) Achieving the passing of the Testson Completion, and

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

8.3 Programme

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

8.4 Extension of Time for Completion

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

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

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

c) exceptionally adverse climatic conditions,

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

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

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

8.5 Delays Caused by Authorities

If the following conditions apply, namely:

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

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

c) the delay or disruption was Unforeseeable, then this delay or disruption will be considered as a

cause of delay under sub-paragraph (b) of Sub-Clause 8.4 [Extension of Time for Completion].

8.6 Rate of Progress

8.6.1 If, at anytime:

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

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

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

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

8.7 Delay Damages

8.7.1 If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion], the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay delay damages to the Procuring Entity for this default. These delay damages shall be the sum stated in the **Special Conditions of Contract**, which shall be paid for everyday which shall elapse between the relevant Time for Completion and the date stated in the taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of delay damages (if any) stated in the Special Conditions of Contract.

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

8.8 Suspension of Work

8.8.1 The Architect may at anytime instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works a gainst 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 ProlongedSuspension

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 receivingf rom the Architec tan instruction to this effect under Clause 13 [Variations and Adjustments].

9. TESTS ON COMPLETION

9.1 Contractor's Obligations

9.1.1 The Contractor shall carry out the Tests on Completion in accordance with this Clause and Sub-Clause 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of Sub-Clause 4.1 [Contractor's General Obligations].

9.1.2 The Contractor shall give to the Architect not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Architect shall instruct.

9.1.3 In considering the results of the Tests on Completion, the Architect shall make allowances for the effect of any use of the Works by the Procuring Entity on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the resultsof these Tests to the Engineer.

9.2 Delayed Tests

9.2.1 If the Tests on Completion are being unduly delayed by the Procuring Entity, Sub-Clause 7.4 [Testing] (fifth paragraph) and/ or Sub-Clause 10.3 [Interference with Tests on Completion] shall be applicable.

9.2.2 If the Tests on Completion are being unduly delayed by the Contractor, the Architect may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Testson such day or days within that period as the Contractor may fix and of which he shall give notice to the Engineer.

9.2.3 If the Contractor fails to carryout 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 asaccurate.

9.3 Retesting of related works

If the Works, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.5 [Rejection] shall apply, and the Architect or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.

9.4 Failure to Pass Tests on Completion

9.4.1 If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 9.3 [Retesting], the Architect shall be entitled to:

a) Order further repetition of Tests on Completion under Sub-Clause 9.3; or

b) if the failure deprives the Procuring Entity of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Procuring Entity shall have the same remedies as are provided in sub-paragraph (c) of Sub-Clause1 1.4 [Failure to Remedy Defects].

10. PROCURING ENTITY'S TAKING OVER

10.1 Taking Over of the Works and Sections

10.1.1 Except as stated in Sub-Clause 9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Procuring Entity when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.

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

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

a) Issue the Taking-Over Certificate to the Contract or, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor out standing 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 undert his Sub-Clause.

10.1.4 If the Architect fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 30 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on thel ast day of that period.

10.2 Taking Over of Parts of the Works

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

10.2.2 The Procuring Entity shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Architect has issued a Taking-Over Certificate for this part. However, if the Procuring Entity does use any part of the Works before the Taking-Over Certificate is issued:

a) The part which is used shall be deemed to have been taken over as from the date on which it is used,

b) the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Procuring Entity, and

c) if requested by the Contractor, the Architect shall issue a Taking-Over Certificate for this part.

10.2.3 After the Architect has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be

given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.

10.2.4 If the Contractor incurs Cost as a result of the Procuring Entity taking over and/or using a part of the Works, other than such use as is specified in the 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.

10.2.5 If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages there after for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of delay damages under Sub-Clause 8.7 [Delay Damages] and shall not affect the maximum amount of these damages.

10.3 Interference with Tests on Completion

10.3.1 If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Procuring Entity is responsible, the Procuring Entity shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been completed.

10.3.2 The Architect shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Architect shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.

10.3.3 If the Contractor suffers delay and/or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

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

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

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

10.4 Surfaces Requiring Reinstatement

Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.

11. DEFECTS LIABILITY

11.1 Completion of Outstanding Work and Remedying Defects

11.1.1 In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fairwear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable there after, the Contractor shall:

a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Engineer, and

b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Procuring Entity on or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).

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

11.2 Cost of Remedying Defects

11.2.1 All work referred to in sub-paragraph (b) of Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:

a) Any design for which the Contractor is responsible,

b) Plant, Materials or workmanship not being in accordance with the Contract, or

c) Failure by the Contractor to comply with any other obligation.

11.2.2 If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Procuring Entity, and Sub-Clause 13.3 [Variation Procedure] shall apply.

11.3 Extension of Defects Notification Period

11.3.1 The Procuring Entity shall be entitled subject to Sub-Clause 2.5 [Procuring Entity's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or by reason of damage attributable to the Contractor. However, a Defects Notification Period shall not be extended by more than two years.

11.3.2 If delivery and/ or erection of Plant and/ or Materials was suspended under Sub-Clause 8.8 [Suspension of Work] or Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Clause shall not appl yto any defectsor damage occurring more than two years after the Defects Notification Period for the Plant and/ or Materials would otherwise have expired.

11.4 Failure to Remedy Defects

11.4.1 If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by the Engineer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.

11.4.2 If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause 11.2[Costo f 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) Requirethe 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 Contractas 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.

11.5 Removal of Defective Work

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

11.6 Further Tests

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

11.6.2 These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under Sub-Clause 11.2 [Cost of Remedying Defects], for the cost of the remedial work.

11.7 Right of Access

Unti lthe Completion Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Clause, except as may be inconsistent with the Procuring Entity's reasonable security restrictions.

11.8 Contractor to Search

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

11.9 Completion Certificate

11.9.1 Performance of the Contractor's obligations shall not be considered to have been completed until the Architect has issued the Completion Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.

11.9.2 The Architect shall issue the Completion Certificate within 30days after the latest of the expiry dates of the Defects Liability Period, or as soon there after 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 Completionn Certificate shall be issued to the Procuring Entity.

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

11.10 Unfulfilled Obligations

After the Completion Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.

11.11 Clearance of Site

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

11.11.2 If all these items have not been removed within 30 days after receipt by the Contractor of the Completion Certificate, the Procuring Entity may sell or otherwise dispose of any remaining items. The Procuring Entity shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site.

11.11.3 Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Procuring Entity's costs, the Contractor shall pay the outstanding balance to the Procuring Entity.

12. MEASUREMENT AN DEVALUATION

12.1 Works to be Measured

12.1.1 The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractorshall show in each application under Sub-Clauses 14.3 [Application for Interim Payment Certificates], 14.10 [Statement on Completion] and 14.11 [Application for Final Payment Certificate]

the quantities and other particulars detailing the amounts which he considers to be entitled under the Contract.

12.1.2 Whenever the Architect requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:

a) promptly either attend or send another qualified representative to assist the Architect in making the measurement, and
b) supply any particulars requested by the Engineer.

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

12.1.4 Except as otherwise stated in the Contract, wherever any Permanent Works are to be measured from records, these shall be prepared by the Engineer. The Contractor shall, as and when requested, attend to examine and agreet her ecords with the Engineer, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate.

12.1.5 If the Contractor examines and disagrees the records, and/ or does not sign them as agreed, then the Contractor shall give notice to the Architect of the respects in which the records are asserted to be inaccurate. After receiving this notice, the Architect shall review the records and either confirm or vary them and certify the paymentofthe undisputed part. If the Contractor does not so give notice to the Architect within 14 days after being requested to examine the records, they shall be accepted as accurate.

12.2 Method of Measurement

Except as otherwise stated in the Contract:

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

12.3 Evaluation

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

12.3.2 For each item of work, the appropriate rate or price for the item shall be the rate or price specified for such item in the Contractor, if there is no such item, specified for similar work.

12.3.3 Any item of work included in the Bill of Quantities for which no rate or price was specified shall be considered as included in other rates and prices in the Bill of Quantities and will not be paid for separately.

12.3.4 However, for a new item of work, a new rate or price shall be appropriate for such item of work if:

a) The work is instructed under 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.

12.3.5 Each new rate or price shall be derived from any relevant rates or prices in the Contract. If no rates or prices are relevant for the new item of work, it shall be derived from the reasonable Cost of executing such work, prevailing market rates, together with profit, taking account of any other relevant matters.

12.3.6 Until such time as an appropriate rate or price is agreed or determined, the Architect shall determine a provisional rate or price for the purposes of Interim Payment Certificates as soon as the concerned work commences.

12.3.7 Where the contract price is different from the corrected tender price, in order to ensure the contractor is not paid less or more relative to the contract price (*which would be the tender price*), payment valuation

certificates and variation orders on omissions and additions valued based on rates in the Bill of Quantities or schedule of rates in the Tender, will be adjusted by a plus or minus percentage. The percentage already worked out during tender evaluation is worked out as follows: *(corrected tender price– tender price)/ tender price X 100*.

12.4 Omissions

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

a) The Contractor will incur (or has incurred) cost which, if the work had not been omitted, wouldhavebeen deemed to be covered by a sum forming part of the Accepted Contract Amount;

b) The omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and

c) this cost is not deemed to be included in the evaluation of any substituted work; then the Contractor shall give notice to the Architect accordingly, with supporting particulars. Upon receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

13. VARIATIONS AND ADJUSTMENTS

13.1 Right to Vary

13.1.1 Variations may be initiated by the Architect at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal. No Variation instructed by the Architect under this Clause shall in any way vitiate or in validate the Contract.

13.1.2 The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Architect stating (with supporting particulars) that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Architect shall cancel, confirm or vary the instruction.

13.1.3 Each Variation may include:

a) changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),

b) changes to the quality and otherc haracteristics of any item of work,

c) changes to the levels, positions and/ or dimensions of any part of the Works,

d) omission of any work unless it is to be carried out by others,

e) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or

f) changes to the sequence or timing of the execution of the Works.

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

13.2. Variation Order Procedure

13.2.1 Priortoany Variation Order under Sub-Clause 13.1.4 the Architect shall notify the Contractor of the nature and form of such variation. As soon as possible after having received such notice, the Contractor shall submit to the Engineer:

a) A description of work, if any, to be performed and a programme for its execution, and

b) the Contractor's proposals for any necessary modifications to the Programme according to Sub-Clause 8.3 or to any of the Contractor's obligations under the Contract, and

c) the Contractor's proposals for adjustment to the Contract Price.

Following the receipt of the Contractor's submission the Architect shall, after due consultation with the Employer and the Contractor, decide as soon as possible whether or not the variation shall be carried out. If the Architect decides that the variation shall be carried out, he shall issue a Variation Order clearly identified as such in accordance with the Contractor's submission or as modified by agreement.

If the Architect and the Contractor are unable to agree the adjustment of the Contract Price, the

provisions of Sub-Clause 13.2.2 shall apply.

13.2.2 Disagreement on Adjustment of the Contract Price

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

a) The cost of any partial execution of the Work srendered useless by any such variation,
b) Thecostof 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 financec osts, 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 TheContractor may, at anytime, submit to the Architect written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Procuring Entity of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Procuring Entity of the completed Works, or
(iv) otherwise be of benefit to the Procuring Entity.

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

13.2.3 If a proposal, which is approved by the Engineer, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:

a) The Contractor shall design this part,
b) sub-paragraphs (a) to (d) of Sub-Clause 4.1 [Contractor's General Obligations] shall apply, and
c) if this change results in a reduction in the contract value of this part, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall 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 writinga s soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:

a) A description of the proposed work to be performed and a programme for its execution,
b) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 8.3 [Programme] and to the Time for Completion, and
c) the Contractor's proposal for evaluation of the Variation.

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

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

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

13.5 Payment in Applicable Currencies

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

13.6 Provisional Sums

13.6.1 Each Provisional Sum shall only be used, in whole or inpart, in accordance with the Architect instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include onlysuch 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, Materialso r 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 delive reach 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 Not withstanding the foregoing, the Contractor shall not be entitled to an extension of time if the relevant delay has already been taken into account in the determination of a previous extension of time and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of Sub-Clause 13.8 [Adjustments for Changes in Cost].

13.9 Adjustments for Changes in Cost

13.9.1 In this Sub-Clause, "table of adjustment data" means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this Sub-Clause shall not apply.

13.9.2 If this Sub-Clause applies, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labor, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in Costs is not covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included a mounts to cover the contingency of other rises and falls in costs.

13.9.3 The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following general type:

Price Adjustment Formula

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

P = A + B Im/Io
where:

P is the adjustment factor for the portion of the Contract Price payable.
A and **B** a recoefficients **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, itshall be determined by the Engineer. Forth is purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table) for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.

13.9.5 Incases where the "currency of index" is not the relevant currency of payment, each index shall be converted into the relevant currency of payment at the selling rate, established by the Central Bank of Kenya, of this relevant currency on the above date for which the index is required to be applicable.

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

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

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

14. CONTRACT PRICE AND PAYMENT

14.1 The Contract Price

14.1.1 Unless otherwise stated in the Special Conditions:

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

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

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

i) of the Works which the Contractor is required to execute, or
ii) for the purposes of 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.

14.1.2 Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts there for, imported by the Contractor for the sole purpose of executing the Contract shall not be exempt from the payment of import duties and taxes upon importation.

14.2 Advance Payment

14.2.1 The Procuring Entity shall make an advance payment, as an interest-free loan for mobilization and cashflow support, when the Contractor submits a guarantee in accordance with this Clause. The total advance payment, the number and timing of instalments (if more than one), and the applicable currencies and proportions, shall be as stated in the **Special Conditions of Contract.**

14.2.2 Unless and until the Procuring Entity receives this guarantee, or if the total advance payment is not stated in the Special Conditions of Contract, this Sub-Clause shall not apply.

14.2.3 The Architect shall deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate for the advance payment or its first instalment after receiving a Statement (under Sub-Clause 14.3 [Application for Interim Payment Certificates]) and after the Procuring Entity receives (i) the Performance Security in accordance with Sub-Clause 4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the a dvance payment. This guarantee shall be issued by a reputable bank or financial institutions elected by the Contractor and shall be in the form annexed to the Special Conditions or in another form approved by the Procuring Entity.

14.2.4 The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid, but its amount shall be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 30 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.

14.2.5 Unless stated otherwise in **the Special Conditions of Contract**, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Architect in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates], as follows:

a) Deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds 30 percent (30%) of the Accepted Contract Amount less Provisional Sums; and

b) deductions shall be made at the amortization rate stated in the **Special Conditions of Contract** of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when 90 percent (90%) of the Accepted Contract Amount less Provisional Sums has been certified for payment.

14.2.6 If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 15 [Termination by Procuring Entity], Clause 16 [Suspension and Termination by Contractor] or Clause 19 [Force Majeure] (as thec ase may be), the whole of the balance then outstanding shall immediately become due and in case of termination under Clause 15 [Termination by Procuring Entity], except for Sub-Clause 14.2.7 [Procuring Entity's Entitlement to Termination for Convenience], payable by the Contractor to the Procuring Entity.

14.3 Application for Interim Payment Certificates

14.3.1 The Contractor shall submit a Statement (in number of copies indicated in the **Special Conditions of Contract**) to the Architect after the end of each month, in aform approved by the Engineer, showing in detail the amounts to which the Contractor considers itself to be entitled, together with supporting documents which shall include there porton the progress during this month in accordance with Sub-Clause4.21 [Progress Reports].

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

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

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

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

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

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

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

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

14.4 Schedule of Payments

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

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

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

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

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

14.5 Plant and Materials intended for the Works

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

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

14.5.3 The Architect shall determine and certify each addition if the following conditions a resatisfied:

a) The Contractor has:

i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and

Materials) which are available for inspection, and

(ii) submitted statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;

and either:

b) the relevant Plant and Materials:

i) are those listed in the Schedules for payment when shipped,

ii) have been shipped to Kenya, enroute to the Site, in accordance with the Contract; and

iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Architect together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form and issued by an entity approved by the Procuring Entity in amounts and currencies equal to the amount due under this Sub-Clause: this guarantee may be in a similar form to the form referred to in Sub-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.

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

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

14.6 Issue of Interim Payment Certificates

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

14.6.2 However, prior to issuing the Taking-Over Certificate for the Works, the Architect shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) stated **in the Special Conditions of Contract**. In this event, the Architect shall give notice to the Contractor accordingly.

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

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

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

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

14.7 Payment

14.7.1 The Procuring Entity shall pay to the Contractor:

a) The advance payment shall be paid within 60 days after signing of the contract by both parties or within 60 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub- Clause 14.2 [Advance Payment], which ever is later;
b) The amount certified in each Interim Payment Certificate within 60 days after the Architect Issues Interim Payment Certificate; and
c) the amount certified in the Final Payment Certificate within 60 days after the Procuring Entity Issues Interim Payment Certificate; or after determination of any disputed amount shown in the Final Statement in accordance with Sub-Clause 16.2 [Terminationby 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 isissued.

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 Architects hall 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 be comes 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 out standing 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 theContractor 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 in demnification 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) otherpaymentsanddeductions under sub-paragraphs (a) to (d) of Sub-Clause 14.3 [Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in sub- paragraph (a) (i) above;
b) payment of the damages specified in the Special Conditions of Contract, shall be made in the currencies and proportions specified in the Schedule of Payment Currencies;
c) other payments to the Procuring Entity by the Contractor shall be made in the currency in which the sum was expended by the Procuring Entity, or in such currency as may be agreed by both Parties;
d) if any amount payable by the Contractor to the Procuring Entity in a particular currency exceeds the sum payable by the Procuring Entity to the Contractor in that currency, the Procuring Entity may recover the balance of this amount from the sums otherwise payable to the Contractor in other currencies; and
e) if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and determined by the Central Bank of Kenya.

15. TERMINATION BY PROCURING ENTITY

15.1 Notice to correct any defects or failures

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

15.2 Termination by Procuring Entity

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

a) fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],
b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,
c) without reasonable excuse fails:
   i) to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or
   ii) to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 30 days after receiving it,

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

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

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

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

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

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

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

15.3 Valuation at Date of Termination

Assoon as practicable after a notice of termination under Sub-Clause 15.2 [Termination by Procuring Entity] has taken effect, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.

15.4 Payment after Termination

After a notice of termination under Sub-Clause 15.2 [Termination by Procuring Entity] has taken effect, the Procuring Entity may:

a) Proceed in accordance with Sub-Clause 2.5 [Procurin Entity's Claims],

b) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Procuring Entity, have been established, and/ or

c) recover from the Contractor any losses and damages incurred by the Procuring Entity and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-

Clause 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the Procuring Entity shall pay any balance to the Contractor.

15.5 Procuring Entity's Entitlement to Termination for Convenience

The Procuring Entity shall be entitled to terminate the Contract, at any time at the Procuring Entity's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 30 days after the later of the dates on which the Contractor receives this notice or the Procuring Entity returns the Performance Security. The Procuring Entity shall not terminate the Contract under this Sub-Clausein order to execute the Works itself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Clause 16.2 [Termination by Contractor]. After this termination, the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment] and shall be paid in accordance with Sub-Clause 16.4 [Payment on Termination].

15.6 Fraud and Corruption

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

15.7 Corrupt gifts and payments of commission

15.7.1 The Contractor shall not;

a) Offer or give or agree to give to any person in the service of the Procuring Entity any gift or consideration of any kind as an inducement or reward for doing or for bearing to door for having done or for borne to do any act in relation to the obtaining or execution of this or any other Contract for the Procuring Entity or for showing or for bearing to show favor or disfavor to any person in relation to this or any other contract for the Procuring Entity.

b) Enter into this or any other contract with the Procuring Entity in connection with which commission has been paid or agreed to be paid by him or on his behalf or to his knowledge, unless before the Contract is made particulars of any such commission and of the terms and conditions of any agreement for the payment there of have been disclosed in writing to the Procuring Entity.

15.7.2 Any breach of this Condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) shall be an offence under the provisions of the Public Procurement and Asset Disposal Act (2015) and the Anti-Corruption and Economic Crimes Act (2003) of the Laws of Kenya.

16. SUSPENSION AND TERMINATION BY CONTRACTOR

16.1 Contractor's Entitlement to Suspend Work

16.1.1 If the Architect fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or Sub-Clause 14.7 [Payment],or not receiving instructions that would enable the contractor to proceed with the works in accordance with the program, the Contractor may, after giving not less than 30 days' notice to the Procuring Entity, suspend work (or reduce the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may bea nd as described in the notice.

16.1.2 The Contractor's action shall not prejudice his entitlements to financing charges under Sub-Clause 14.8 [Delayed Payment] and to termination under Sub-Clause 16.2 [Terminationby Contractor].

16.1.3 If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.

16.1.4 If the Contractor suffers delay and/ori ncurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

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

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

16.3 Termination by Contractor

16.3.1 The Contractor shall be entitled to terminate the Contract if:

a) the Architect fails, within 60 days after receiving a Statement and supporting documents, to issue the relevant Payment Certificate,
b) the Contractor does not receive the amount due under an Interim Payment Certificate within 90 days after the expiry of the time stated in Sub-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].

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

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

16.4 Cessation of Work and Removal of Contractor's Equipment

After a notice of termination under Sub-Clause 15.5 [Procuring Entity's Entitlement to Termination for Convenience], Sub-Clause 16.2 [Termination by Contractor] or Sub-Clause 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:

a) cease all further work, except for such work as may have been instructed by the Architect for the protection of life or property or for the safety of the Works,
b) hand over Contractor's Documents, Plant, Materials and other work, for which the Contractor has received payment, and
c) remove all other Goods from the Site, except as necessary for safety, and leave the Site.

16.5 PaymentonTermination

After a notice of termination under Sub-Clause 16.2 [Termination by Contractor] has taken effect, the Procuring Entity shall promptly:

a) Return the Performance Security to the Contractor,
b) pay the Contractor in accordance with Sub-Clause 19.6 [Optional Termination, Payment and Release], and
c) pay to the Contractor the amount of any loss or damage sustained by the Contractor as a result of this termination.

17. RISK AND RESPONSIBILITY

17.1 Indemnities

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

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

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

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

17.2 Contractor's Care of the Works

17.2.1 The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued (or is deemed to be issued under Sub-Clause 10.1 [Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Procuring Entity. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Procuring Entity.

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

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

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

17.3 Procuring Entity's Risks

The risks referred to in Sub-Clause 17.4 [Consequences of Procuring Entity's Risks] below, in so far as they directly affect the execution of the Works in Kenya, are:

a) War hostilities (whether war be declared or not),

b) rebellion, riot, commotion or disorder, terrorism, sabotage by persons other than the Contractor's Personnel,

c) explosive materials, ionizing gradiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such explosives, radiation or radio-activity,

d) pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds,

e) use or occupation by the Procuring Entity of any part of the Permanent Works, except as may be specified in the Contract,
f) design of any part of the Works by the Procuring Entity's Personnel or by others for whom the Procuring Entity is responsible, and
g) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventive precautions.

17.4 Consequences of Procuring Entity's Risks

17.4.1 If and to the extent that any of the risks listed in Sub-Clause 17.3 above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Architect and shall rectify this loss or damage to the extent required by the Engineer.

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

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

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

17.5 Intellectual and Industrial Property Rights

17.5.1 In this Sub-Clause, "infringement" shall refer to an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and "claim" shall refer to a claim (or proceedings pursuing a claim) alleging an infringement.

17.5.2 Whenever a Party does not give notice to the other Party of any claim within 30 days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.

17.5.3 The Procuring Entity shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:
a) An un avoidable result of the Contractor's compliance with the Contract, or
b) A result of any Works be ingused by the Procuring Entity:
   i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or
   ii) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.

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

17.5.5 IfaPartyisentitledtobeindemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

17.5.6 For operation and maintenance of any plan to requipment installed, the contractor shall grant a non-exclusive and non-transferable license to the Procuring Entity under the patent, utility models ,or other intellectual rights owned by the contractor or a third party from whom the contract or has received the rights to grant sub-licenses and shall also grant to the Procuring Entity a non-exclusive and non-transferable rights (without the rights to sub-license) to use the know how and other technical

information disclosed to the contract or under the contract. Nothing contained here-in shall be construed as transferring ownership of any patent, utility model, trademark, design, copy right, know-how or other intellectual rights from the contractor or any other third party to the Procuring Entity.

17.6 Limitation of Liability

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

17.6.2 The total liability of the Contractor to the Procuring Entity, under or in connection with the Contract other than under Sub-Clause 4.19 [Electricity, Water and Gas], Sub-Clause 4.20 [Procuring Entity's Equipment and Free- Issue Materials], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum resulting from the application of a multiplier (less or greater than one) to the Accepted Contract Amount, as stated in **the Special Conditions of Contract**, or (if such multiplier or other sum is not so stated) the Accepted Contract Amount.

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

17.7 Use of Procuring Entity's Accommodation/Facilities

17.7.1 The Contractor shall take full responsibility for the care of the Procuring Entity provided accommodation and facilities, if any, as detailed in the Specification, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works).

17.7.2 If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Procuring Entity is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Engineer.

18. INSURANCE

18.1 General Requirements for Insurances

18.1.1 In this Clause, "insuring Party" means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.

18.1.2 Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Procuring Entity. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

18.1.3 Wherever the Procuring Entity is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

18.1.4 If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Procuring Entity shall act for Procuring Entity's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.

18.1.5 Each policy insuring against loss or damage shall provide for payments to be made in the currencies

required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.

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

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

18.1.7 When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Engineer.

18.1.8 Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.

18.1.9 Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or at tempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.

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

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

18.1.12 Procuring Entity in accordance with these obligations, liabilitieso r responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.

18.1.13 Payments by one Party to the other Party shall be subject to Sub-Clause 2.5 [Procuring Entity's Claims] or Sub- Clause 20.1 [Contractor's Claims], as applicable.

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

18.2 Insurance for Works and Contractor's Equipment

18.2.1 The insuring Party shall insure the Works, Plant, Material 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.

18.2.2 The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under Clause 11 [Defects Liability]).

18.2.3 The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value,

including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.

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

a) 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,t his 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 inorder to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship,

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

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

18.2.5 If, more than one year after the Base Date, the cover described in sub-paragraph (d) above ceases to be available at commercially reasonable terms, the Contractor shall (as insuring Party) give notice to the Procuring Entity, with supporting particulars. The Procuring Entity shall then (i) be entitled subject to Sub-Clause 2.5 [Procuring Entity's Claims] to payment of an amount equivalent to such commercially reasonable terms asthe Contractor should have expected to have paid for such cover, and (ii) be deemed, unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause 18.1 [General Requirements for Insurances].

18.3 Insurance against Injury to Persons and Damage to Property

18.3.1 The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 18.4 [Insurance for Contractor's Personnel]), which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.

18.3.2 This insurance shall be for a limit per occurrence of not less than the amount stated in **the Special Conditions of Contract**, with no limit on the number of occurrences. If an amount is not stated in the **Special Conditions of Contract**, this Sub-Clause shall not apply.

18.3.3 Unless otherwise stated in the Special Conditions, the insurances specified in this Sub-Clause:

a) Shall be effected and maintained by the Contractor as insuring Party,

b) shall be in the joint names of the Parties,

c) shall be extended to cover liability for all loss and damage to the Procuring Entity's property (except things insured under Sub-Clause 18.2) arising out of the Contractor's performance of the Contract, and

d) may however exclude liability to the extent that it arises from:

i) the Procuring Entity's right to have the Permanent Works executed on, over, under, in or

ii) through any land, and to occupy this land for the Permanent Works,

iii) damage which is an unavoidable result of the Contractor's obligations to execute the
iv) Works and remedy any defects, and
v) a cause listed in Sub-Clause 17.3 [Procuring Entity's Risks], except to the extent that cover is available at commercially reasonable terms.

18.4 Insurance for Contractor's Personnel

18.4.1 The Contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.

18.4.2 The insurance shall cover the Procuring Entity and the Architect against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractoror any othe rof the Contractor's Personnel, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Procuring Entity or of the Procuring Entity's Personnel.

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

19. FORCE MAJEURE

19.1 Definition of Force Majeure

19.1.1 In this Clause, "Force Majeure" means an exceptional event or circumstance:
a) Which is beyond a Party's control,
b) Which such Party could not reasonably have provided against before entering into the Contract,
c) which, having arisen, such Party could not reasonably have avoided or over come, and
d) which is not substantially attributable to the other Party.

19.1.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, s olong as conditions (a) to (d) above are satisfied:
a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
c) riot, commotion, disorder, strike or lock out by persons other than the Contractor's Personnel,
d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as maybeattributabletotheContractor'suseofsuchmunitions, explosives, radiation or radio-activity, and
e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

19.2 Notice of Force Majeure

19.2.1 If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

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

19.2.3 Not withstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

19.3 Duty to Minimize Delay

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

19.4 Consequences of Force Majeure

19.4.1 If the Contractor is prevented from performing his substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], and suffers delay and/ or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

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

b) if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of Sub-Clause 19.1 [Definition of Force Majeure] and, in sub-paragraphs (ii) to (iv), occurs in Kenya, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub- Clause18.2 [Insurance for Works and Contractor's Equipment].

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

19.5 Force Majeure Affecting Subcontractor

If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.

19.6 Optional Termination, Payment and Release

19.6.1 If the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment].

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

a) 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'sdisposal;

c) other Cost or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;

d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost); and

e) the Cost of repatriation of the Contractor's staff and lab or employed wholly in connection with the Works at the date of termination.

19.7 Release from Performance

Not withstanding 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 Partyofsucheventorcircumstance:

a) The Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and

b) The sum payable by the Procuring Entity to the Contractor shall be the same as would have been payable under Sub-Clause 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub-Clause 19.6.

20. SETTLEMENT OF CLAIMS AND DISPUTES

20.1 Contractor's Claims

20.1.1 If the Contractor considers itself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give Notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 30 days after the Contractor became aware, or should have become aware, of the event or circumstance.

20.1.2 If the Contractor fails to give notice of a claim within such period of 30 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

20.1.3 The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

20.1.4 TheContractorshallkeepsuch contemporary records as may be necessary to substantiate any claim, either on the Site or at an other location acceptable to the Engineer. Without admitting the Procuring Entity's liability, the Architect may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/ or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Architect to inspect all these records and shall (if instructed) submit copies to the Engineer.

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

a) This fully detailed claim shall be considered as interim;
b) The Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/ or amount claimed, and such further particulars as the Architect may reasonably require; and
c) The Contractor shall send a final claim within 30 days after the end of the effects resulting from the eventor circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.

20.1.6 Within 42 days after receiving a Notice of a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Architect and approved by the Contractor, the Architect shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars but shall nevertheless give his response on the principles of the claim within the above defined time period.

20.1.7 Within the above defined period of 42 days, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

20.1.8 Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract.Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

20.1.9 If the Architect does not respond within the time frame defined in this Clause, either Party may consider that the claim is rejected by the Architect and any of the Parties may refer the dispute for amicable settlement in accordance with Clause 20.3.

20.1.10 The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/ or additional payment shall take account of the extent (if any) to which the

failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause 20.3.

20.2 Procuring Entity's Claims

20.2.1 If the Procuring Entity considers itself to be entitled to any payment under any Clause of these Conditionsor otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the Procuring Entity or the Architect shall give notice and particulars to the Contractor. However, notice is not required for payments due under Sub-Clause 4.19 [Electricity, Water and Gas], under Sub-Clause 4.20 [Procuring Entity's Equipment and Free-Issue Materials], or for other services requested by the Contractor.

20.2.2 The notice shall be given as soon as practicable and no longer than 30 days afte rthe Procuring Entity became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given before the expiry of such period.

20.2.3 The particulars shall specify the Clause or other basis of the claim and shall include substantiation of the amount and/or extension to which the Procuring Entity considers itself to be entitled in connection with the Contract. The Architect shall then proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the amount (if any) which the Procuring Entity is entitled to be paid by the Contractor, and/ or (ii) the extension (if any) of the Defects Notification Period in accordance with Sub-Clause 11.3 [Extension of Defects Notification Period].

20.2.4 This amount may be included as a deduction in the Contract Price and Payment Certificates. The Procuring Entity shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.

20.3 Amicable Settlement

Where a notice of a claim has been given, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, the Party giving a notice of a claim in accordance with Sub-Clause 20.1 above should move to commence arbitrationa fter 60 days from the day on which a notice of a claim was given, even if no attempt at an amicable settlement has been made.

20.4 Matters that may be referred to arbitration

Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the Works or abandonment of the Works or termination of the Contract by either party:

a) Whether or not the issue of an instruction by the Architect is empowered by these Conditions.
b) Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.
c) Any dispute arising in respect risks arising from matters referred to in Clause 17.3 and Clause 19.
e) All other matters shall only be referred to arbitration after the completion or alleged completion of the Works or termination or alleged termination of the Contract, unless the Procuring Entity and the Contractor agree otherwise in writing.

20.5 Arbitration

20.5.1 Any claim or dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 20.3 shall be finally settled by arbitration.

20.5.2 No arbitration proceedings shall be commenced on any claim or dispute where notice of a claim or dispute has not been given by the applying party within ninety days of the occurrence or discovery of the matter or issue giving rise to the dispute.

20.5.3 Not withstanding the issue of a notice as stated above, the arbitration of such a claim or dispute shall not commence unless an attempt has in the first instance been made by the parties to settle such claim or dispute amicably with or without the assistance of third parties. Proof of such attempt shall be

required.

20.5.4 The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and a ward any sums which ought to have been the subject of or included in any certificate.

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

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

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

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

20.5.8 Thetermsofthere muneration 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 Contractis with national contractors, arbitration proceedings will be conducted in accordance with the Arbitration Laws ofKenya. 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 tthat a Party fails to comply with a final and binding Arbitrator's decision, then the other

Party may, without prejudice to any other rights it may have, refer the matter to a competent court of law.

20.10 Contract operations to continue

Notwithstanding any reference to arbitration herein,

1.1.1 the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and

1.1.2 the Procuring Entity shall pay the Contractor any monies due the Contractor.

Section IX - Special Conditions of Contract

The following Special Conditions shall supplement the GCC. Whenever there is a conflict, the provisions here in shall prevail over those in the GCC.

Conditions	Sub-Clause	Data
Part A - Contract Data		
Procuring Entity's name and address	Heading	**Mama Ngina University College** **P.O BOX 444-01030** **Gatundu**
Name and Reference No. of the Contract	Heading and 1.1	**MNUC/TO3/2022-2023**
Engineers Name and address	Heading and 3.1.1	**Mama Ngina UniversityCollege** **P.O BOX 444-01030** **Gatundu**
Contractor's Representative's name	4.3.1	*[insert the name of the Contractor's Representative agreed by the Procuring Entity prior to Contract signature]*
Key Personnel names	16.9.1	*[insert the name of each Key Personnel agreed by the Procuring Entity prior to Contract signature]*
Time for Completion	1.1.	**20 weeks** *If Sections are to be used, refer to Table: Summary of Sections below*
Defects Notification Period	1.1	_____days
Sections	1.1	*If Sections are to be used, refer to Table: Summary of Sections below*
Electronic transmission systems	1.3	
Time for the Parties entering into a Contract Agreement	1.6	Within 30days
Commencement Date	8.1.1	
Time for access to the Site	2.1.1	No later than the Commencement Date, and not later than _____days after Commencement Date
Architect Duties and Authority	3.1.6 (b) (ii)	Variations resulting in an increase of the Accepted Contract Amount in excess of____% shall require approval of the Procuring Entity.
Performance Security	4.2.1	The performance security will be in the form of a ____ *[insert either one of "demand guarantee" or "performance bond"]* in the amount(s) of *[insert related figure(s)]* percent of the Accepted Contract Amount and in the same currency(ies) of the Accepted Contract Amount.
Normal working hours	6.5	Specify
Delay damages for the Works	8.7 & 14.15(b)	_____ % of the Contract Price per day. *If Sections are to be used, refer to Table: Summary of Sections below*

Conditions	Sub-Clause	Data
Maximum amount of delay damages	8.7.1	_____% of the final Contract Price.
Provisional Sums	13.6. (b)(ii)	*[If there are Provisional Sums, insert a percentage for adjustment of Provisional Sums]* _____%
Adjustments for Changes in Cost	13.9	Period "n" applicable to the adjustment multiplier "Pn": _____ *[Insert the period if different from one (1) month; if period "n" is one (1) month, insert "not applicable"]*
Total advance payment	14.2.1	___% Percentage of the Accepted Contract Amount payable in the currencies and proportions in which the Accepted Contract Amount is payable *[Insert number and timing of installments if applicable]*
Repayment amortization rate of advance payment	14.2.5 (b)	_____%
Percentage of Retention	14.3.2 (c)	_____%
Limit of Retention Money	14.3.2 (c)	_____% of the Accepted Contract Amount
Plant and Materials	14.5.3(b)(i)	If Sub-Clause 14.5 applies: Plant and Materials for payment Free on Board _____ *[list].*
	14.5.3(c)(i)	Plant and Materials for payment when delivered to the Site _____ *[list].*
Minimum Amount of Interim Payment Certificates	14.6.2	_____ % of the Accepted Contract Amount.
Publishing source of commercial interest rates for financial charges in case of delayed payment	14.8	Specify _____% rate per month of delayed payment.
Maximum total liability of the Contractor to the Procuring Entity	17.6.2	*[Select one of the two options below as appropriate]* The product of_____ *[insert a multiplier less or greater than one]* times the Accepted Contract Amount, *or* _____ *[insert amount of the maximum total liability]*
Periods for submission of insurance: a. evidence of insurance. b. relevant policies	18.1.6	*[Insert period for submission of evidence of insurance and policy. Period may be from 14 days to 30days.]* _____days _____days
Maximum amount of deductibles for insurance of the Procuring Entity's risks	18.2.4 (d)	*[Insert maximum amount of deductibles]*
Minimum amount of third-party insurance	18.3.2	*[Insert amount of third-party insurance]*
The place of arbitration	20.7.2	*Insert city and Country*

SECTION X - CONTRACT FORMS

FORM No. 1 - NOTIFICATION OF INTENTION TO AWARD

FORM NO. 2 – REQUEST FOR REVIEW

FORM No. 3-LETTER OF AWARD

FORM No. 4 - CONTRACT AGREEMENT

FORM No. 5 - PERFORMANCE SECURITY [Option 1 - Unconditional Demand Bank Guarantee]

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

FORM No. 7 - ADVANCE PAYMENT SECURITY

FORM No. 8 - RETENTION MONEY SECURITY

FORM No 1: NOTIFICATION OF INTENTION TOAWARD OF CONTRACT

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

FORMAT

1. For the attention of Tenderer's Authorized Representative

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

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

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

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

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

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

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

3. Notification of Award

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

   ii) Project: *[insert name ofproject]*

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

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

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

4. Request a debriefing in relation to the evaluation of your tender by submitting a Procurement-related Complaint in relation to the decision to award the contracts.

   a) The successful tenderers

   i) Name of successful Tender_____

   ii) Address of the successful Tender _____

   _____

   iii) Contract price of the successful Tender Kenya Shillings _____

   (in words_____)

   b) The reasons for your tender being unsuccessful are as follows:

   c) OtherTenderers

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 receip tof 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 a vailable 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- REQUEST FOR REVIEW

FORM FOR REVIEW (r.203(1))

PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD

APPLICATION NO……OF……..…20……..

BETWEEN

……...…….APPLICANT

AND

……RESPONDENT (Procuring Entity)

Request for review of the decision of the…… (Name of the Procuring Entity of ……dated the…day of …….20…….in the matter of Tender No……..…of ……..20….. for ..... (Tender description).

REQUEST FOR REVIEW

I/We……,the above named Applicant(s), of address: Physical address…….P. O. Box No……. Tel. No……..Email ……, hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds , namely:

1.

2.

By this memorandum, the Applicant requests the Board for an order/orders that:

1.

2.

SIGNED …….(Applicant) Dated on…….day of ……/…20……

FOR OFFICIAL USE ONLY Lodged with the Secretary Public Procurement Administrative Review Board on……day of ……....20…..……

SIGNED

Board Secretary

FORM NO 3: LETTER OF AWARD

letterhead paper of the Procuring Entity]

[date]

To: *[name and address of the Contractor]*

This is to notify you that your Tender dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Accepted Contract Amount *[amoun tin numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Tenderers, is here by accepted by…… *(name of Procuring Entity).*

You are requested to furnish the Performance Security within in accordance with the Conditions of Contract, using, for that purpose, one of the Performance Security Forms included in Section VIII, Contract Forms, of the Tender Document.

Authorized Signature: .....

Name and Title of Signatory: .....

Name of Procuring Entity: .....

Attachment: *Contract Agreement:* .....

FORM NO 4: CONTRACT AGREEMENT

THIS AGREEMENT made the day of……. 20……., between…….
……...of……. (hereinafter "the Procuring
Entity"), of the one part, and_____of _____(hereinafter "the Contractor"), of the other part:

WHEREAS the Procuring Entity desires that the Worksknownas_____should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Worksand the remedying of any defects there in,

The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

   a) theNotification of Award
   b) the Form of Tender
   c) the addenda Nos_____(if any)
   d) the Special Conditions of Contract
   e) the General Conditions of Contract;
   f) the Specifications
   g) the Drawings*;* and
   h) the completed Schedules and any other documents forming part of the contract.

3. In consideration of the payments to be made by the Procuring Entity to the Contractor as specified in this Agreement, the Contractor here by covenants with the Procuring Entity to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring Entity here by covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects there in, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

   INWITNESS where of the parties here to have caused this Agreement to be executed in accordance with the Laws of Kenya on the day, month and year specified above.

   Signeda nd sealed by_____(for the Procuring Entity)

   Signed and sealed by_____(for the Contractor).

FORM NO. 5 - PERFORMANCE SECURITY

[Option 1 - Unconditional Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary: *[insert name and Address of Procuring Entity]*

Date: _____*[Insert date of issue]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informedthat_____(hereinafter called "the Contractor") has entered into Contract No._____dated_____with (*name of Procuring Entity*)_____(the Procuring Entity as the Beneficiary), for the execution of _____(hereinafter called "the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

3. Atthe 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],* inresponse tot he Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee." .....

[Name of Authorized Official, signature(s) and seals/ stamps]

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

[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. 6- PERFORMANCE SECURITY

[Option 2– Performance Bond]

*[**Note:** Procuring Entities a readvised to use Performance Security – Unconditiona lDemand Bank Guarantee in stead of Performance Bond due to difficulties involved in calling Bond holder to action]*

[Guarantor letterhead or SWIFT identifier code] **Beneficiary:**

*[insertnameandAddressof*ProcuringEntity*]* **Date:**

_____*[Insert date of issue]* **PERFORMANCE**

BONDNo.:__

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. By this Bond_____ as Principal (hereinafter called "the Contractor") and_____] as Surety (hereinafter called "the Surety"),are held and firmly bound unto_____] as Obligee (hereinafter called "the Procuring Entity") in the amount of_____for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS the Contractor has entered into a written Agreement with the Procuring Entity dated the day of_____,20_____, for_____in accordance with the documents, plans, specifications, and amendments there to, which to the extent here in provided for, are by reference made part here of and are here in after referred to as the Contract.

3. NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Procuring Entity to be, in default under the Contract, the Procuring Entity having performed the Procuring Entity's obligations there under, the Surety may promptly remedy the default, or shall promptly:
   a) Complete the Contract in accordance with its terms and conditions; or
   b) Obtain a tender or tenders from qualified tenderers for submission to the Procuring Entity for completing the Contract in accordance with its terms and conditions, and upon determination by the Procuring Entity and the Surety of the lowest responsive Tenderers, arrange for a Contract between such Tenderer, and Procuring Entity and make a vailable as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "Balance of the Contract Price," as used in this paragraph, shall mean the total amount payable by Procuring Entity to Contractor under the Contract, less the amount properly paid by Procuring Entity to Contractor; or
   c) Pay the Procuring Entity the amount required by Procuring Entity to complete the Contract in accordance with its terms and conditions upto a total not exceeding the amount of this Bond.

4. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

5. Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Procuring Entity named here in or the heirs, executors, administrators, successors, and assigns of the Procuring Entity.

6. In testimony whereof, the Contractor has here unto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly at tested by the signature of his legal representative, this day _____of_____20_____.

SIGNED ON_____on behalf of_____

By_____in the capacity of_____

Inthepresenceof_____

SIGNED ON_____on behalf of_____

By_____in the capacity of_____

Inthepresence of_____

FORM NO. 7 - ADVANCE PAYMENT SECURITY

[Demand Bank Guarantee]
[Guarantor letterhead]

Beneficiary:_____*[Insert name and Address of* ProcuringEntity*]*

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, oronthe__dayof_____,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. 8 – RETENTION MONEY SECURITY

[Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary:_____*[Insert name and Address of* Procuring Entity*]*

Date:_____*[Insert date of issue]*

Advance payment guarantee no. *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that_____*[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Contractor") has entered into Contract No. _____*[insert reference number of the contract]* dated_____with the Beneficiary, for the executionof_____*[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 upported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifyingthedemand, 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 ofApplicant'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 actua lcompletion date of the contract. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

FORM NO. 9 BENEFICIAL OWNERSHIP DISCLOSURE FORM

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

INSTRUCTIONS TO TENDERERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM

This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful tenderer pursuant to Regulation 13 (2A) and 13 (6) of the Companies (Beneficial Ownership Information) Regulations, 2020. In case of joint venture, the tenderer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.

For the purposes of this Form, a Beneficial Owner of a Tenderer is any natural person who ultimately owns or controls the legal person (tenderer) or arrangements or a natural person on whose behalf a transaction is conducted, and includes those persons who exercise ultimate effective control over a legal person (Tenderer) or arrangement.

Tender Reference No.:_____[*insert identification no*]

Name of the Tender Title/Description:_____*[insert name of the assignment]* to:_____*[insert complete name of Procuring Entity]*

In response to the requirement in your notification of award dated___*[insert date of notification of award]* to furnish additional information on beneficial ownership:_____*[select one option as applicable and delete the options that are not applicable]*

I) We here by provide the following beneficial ownership information.

Details of Beneficial ownership

	Details of all Beneficial Owners		**% of shares a person holds in the company Directly or indirectly**	**% of voting rights a person holds in the company**	**Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer** (Yes / No)	**Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)**
	Full Name		Directly----	Directly……		

	Details of all Beneficial Owners		**% of shares a person holds in the company Directly or indirectly**	**% of voting rights a person holds in the company**	**Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer** (Yes / No)	**Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)**
1.	National identity card number or Passport number		------- % of shares Indirectly---------- % of shares	…….% of voting rights Indirectly----------% of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes -------No---- 2. Is this right held directly or indirectly?: Direct…… Indirect…….....	1. Exercises significant influence or control over the Company body of the Company (tenderer**)** Yes -----No---- 2. Is this influence or control exercised directly or indirectly? Direct…….. Indirect……
	Personal Identification Number (where applicable)					
	Nationality					
	Date of birth *[dd/mm/yyyy]*					
	Postal address					
	Residential address					
	Telephone number					
	Email address					
	Occupation or profession					
2.	Full Name		Directly---------- % of shares Indirectly---------- % of shares	Directly…… …….% of voting rights Indirectly----------% of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes -------No---- 2. Is this right held directly or indirectly?:	1. Exercises significant influence or control over the Company body of the Company (tenderer**)** Yes -----No---- 2. Is this influence or control
	National identity card number or Passport number					
	Personal Identification Number (where applicable)					

	Details of all Beneficial Owners		**% of shares a person holds in the company Directly or indirectly**	**% of voting rights a person holds in the company**	**Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer** (Yes / No)	**Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)**
	Nationality(ies)				Direct……	exercised directly or indirectly?
	Date of birth *[dd/mm/yyyy]*				……	Direct……..
	Postal address				Indirect……	Indirect……
	Residential address				……...	
	Telephone number					
	Email address					
	Occupation or profession					
3.						
e.						
t.						
c						

II) Am fully aware that beneficial ownership information above shall be reported to the Public Procurement Regulatory Authority together with other details in relation to contract awards and shall be maintained in the Government Portal, published and made publicly available pursuant to Regulation 13(5) of the Companies (Beneficial Ownership Information) Regulations, 2020.(Notwithstanding this paragraph Personally Identifiable Information in line with the Data Protection Act shall not be published or made public). *Note that Personally Identifiable Information (PII) is defined as any information that can be used to distinguish one person from another and can be used to deanonymize previously anonymous data. This information includes National identity card number or Passport number, Personal Identification Number, Date of birth, Residential address, email address and Telephone number.*

III) In determining who meets the threshold of who a beneficial owner is, the Tenderer must consider a natural person who in relation to the company:

(a) holds at least ten percent of the issued shares in the company either directly or indirectly;

(b) exercises at least ten percent of the voting rights in the company either directly or indirectly;

(c) holds a right, directly or indirectly, to appoint or remove a director of the company; or

(d) exercises significant influence or control, directly or indirectly, over the company.

IV) What is stated to herein above is true to the best of my knowledge, information and belief.

Name of the Tenderer: .....[insert complete name of the Tenderer]*_____

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

Designation of the person signing the Tender: ..... [insert complete title of the person signing the Tender]

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

Date this ..... [insert date of signing] day of..... [Insert month], [insert year]

Bidder Official Stamp

VOLUME 1

GENERAL BUILDER'S WORK

TENDER SPECIFICATIONS & BILLS OF QUANTITIES FORSUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF BUILDER'S WORKS

PROPOSED TUITION BLOCK (PHASE 1) AT MAMA NGINA UNIVERSITY COLLEGE ON LR No. NGENDA/MUTOMO/T.316 IN KIAMBU COUNTY

INDEX VOLUME ONE

TENDER DOCUMENT - PRICED ESTIMATES

PROPOSED TUITION BLOCKS ON LR No. NGENDA/MUTOMO/T.316 IN KIAMBU COUNTY

FOR

MAMA NGINA UNIVERSITY COLLEGE
P. O. BOX 444 - 01030, GATUNDU

ISSUED BY:- **MAMA NGINA UNIVERSITY COLLEGE**
P. O. BOX 444 - 01030,
GATUNDU

TENDER DOCUMENT - VOLUME ONE - BUILDER'S WORK

The Contract for the above-mentioned Works, entered into on the

_____day of_____2023

by the undersigned parties refers to these Bills of Quantities which shall be read and construed as part of the said Contract.

…… ……..
EMPLOYER **CONTRACTOR**

……2023 ……..2023
Date **Date**

SPECIAL NOTES

1 The Contractor is required to check the numbers of the pages and should any be found to be missing or in duplicate or the figures or writing indistinct, they must inform the Quantity Surveyors at once and have the same rectified. 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 they must inform the Quantity Surveyor in order that the correct meaning may be decided upon before the date for the submission of the Tender.

2 No liability whatever 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 Any doubt or obscurity as to the meaning or intention of any part of the tender documents, or any question arising, shall be taken up in writing, before submission of the tender so that the same can be clarified.

4 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.

5 The Contractor shall be deemed to have made allowance in their prices generally to cover items of Preliminaries or additions to Prime Cost Sums or other items, if these have not been priced against the respective items.

6 All items of measured work shall be priced in detail and tenders containing lump sums to cover trades 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.

7 In no case will any expenses incurred by Contractors in preparation of this Tender be reimbursed.

8 The copyright of these Bills of Quantities is vested in the Quantity Surveyors and no part thereof may be reproduced without their express permission given in writing.

9 The Contractor is solely responsible for the accurate ordering of materials in accordance with the Drawings and Architect's instructions and no claims for any loss or expense will be entertained for orders for materials based upon the Bills of Quantities.

The Bills of Quantities must be priced in Kenya currency, i.e. Shillings and Cents.

The tender documents must be priced in ink.

SPECIFICATIONS AND PREAMBLES

GENERALLY

MATERIALS GENERALLY

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

KENYA STANDARDS AND BRITISH STANDARDS

All materials used in the works for which a Kenya Standard Specification is published shall conform to latest Edition thereof in every way. Materials for which no Kenya Standard exists but which are covered by a British Standard shall conform to the latest Edition of that Standard.

Where materials are covered by both a Kenya Standard and British Standard the Kenya Standard will override the British Standard where inconsistencies occur.

The Architect reserves the right to demand that the Contractor obtain at his own expense a certificate in respect of any material to state that it is in accordance with a Kenya or British Standard Specification.

MATERIALS FOR WHICH THERE IS NO STANDARD

All materials used in the work for which no Kenya or British Standard Specification has been published shall be the best of their respective kinds and of a standard to the satisfaction of the Architect. The quality of such materials shall be generally of a standard equal to those for which there is a Kenya or British Standard Specification.

ALTERNATIVES TO PROPRIETARY BRANDS

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

MEASURING AND TESTING EQUIPMENT

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

1. Straight edges 2 metres and 4 metres long for testing the accuracy of the finished concrete.
2. A glass graduated cylinder for use in the silt test for organic impurities in the sand.
3. Slump test apparatus.
4. 150mm Steel cube moulds with base plates and tamping rods to B.S. 1881. Two 30 metre steel tapes.
5. One dumpy or quickest level and staff.

PRICING NOTES GENERALLY

The rates set down by the Contractor against each item shall unless otherwise expressly provided to the contrary, or unless there is a separate item for extra labour, cutting or waste, be held to include for waste on materials, carriage, and cartage, carrying in and return of empties, hoisting, setting, fitting and fixing in position, marking all other labours and everything else necessary for the proper completion of each item and or establishment charges and profit.

Throughout the Bills of Quantities generally no mention is made of heights for hoisting and all prices must include for hoisting and fixing at any level within the limit shown on the drawings or include in the general description unless a specific level stated.

The Contractor shall be deemed to have made allowance in his rates generally to cover items of Preliminaries, expenses in connection with Prime Cost Sums or other items if these have not been priced against the respective items.

INSPECTION OF SITE

The Contractor is deemed to have visited the site and to have ascertained the nature of the soil and sub-soils to be excavated. No claim will be allowed on account of these being of a different nature from that for which he has allowed in his prices.

PROCEDURE

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

EXISTING TREES AND SHRUBS

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

SITE CLEARANCE

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

WHITE ANT – INSPECTION TREATMENT

The Contractor must destroy any white ants' nest 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 insecticide and back-fill with hard material well rammed and consolidated.

EXCAVATION

The excavations are to be executed to the widths shown on the Drawings, and to the depths below existing ground level as directed by the Architect in order to obtain satisfactory foundation. 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 as specified by the Architect.

- Level and ram bottoms of all excavations to receive concrete form stepping if necessary or directed to allow for sloping ground and well water excavations before pouring concrete.

- The Contractor shall report to the Architect when secure bottoms to the excavations have been obtained. Any concrete or other work executed before the excavations have been inspected and approved shall, if so directed, be removed and new work substituted after the excavations have been approved all at the contractor's expense.

ROCK

Rock is defined as any material met with in the excavation which is of such size or position that it can only be removed by means of wedges, compressed air plant, other special plant or explosives and the Architect's opinion shall be final. Excavation in any material such as soft rock, hard murram, stiff clay or similar materials which in the opinion of the Architect can reasonably be removed by pick, traxcavator or similar means will be deemed to be included in the prices for normal excavation.

All materials classified as rock may, if approved by the Architects be used as hardcore filling and the measured quantities of imported filling will be adjusted accordingly. All rock so used must be broken to the required size as hereafter described before being so used.

BLASTING

Blasting will only be allowed with the written permission of the Architect. All blasting operations shall be carried

out at the sole risk and cost of the contractor and in accordance with any Government regulations in force for the time being, and any special regulations laid down by the Architect governing the use and storage of explosives.

BURROW PITS

Burrow pits will only be allowed to be opened up on site at the written permission of the Architect.

HARDCORE FILLING (OTHER THAN ROCK OBTAINED FROM EXCAVATIONS)

Hard-core for filling under floors, etc., shall be good hard stone of rock, ballast or quarry waste (not soft rock) to the approval of the Architect broken to pass not greater than 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 in layers each of a consolidated thickness not exceeding 225mm and well watered and compacted by hand or mechanical tampers. The top surface of the hardcore shall be levelled or graded to falls as required and blinded with a 75m layer of similar material finely crushed and well rolled and watered immediately before concrete is laid.

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 225mm finished thickness. Each layer to be well watered and consolidated before the subsequent layer is filled in.

MATERIALS FOUND IN THE EXCAVATIONS

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

DAMP PROOF MEMBRANE

Where the joints occur there is to be a minimum of 300mm welted lap or joint made with approved tapes.

The Contractor shall ensure that the membrane will not be pierced during the laying and concreting of sub-floors

INSECTICIDE TREATMENT

Insecticide treatment shall be "Aldrex" 48 or "Dieldrex" 18 (to be obtained from Kenya Shell Limited. P.O. Box 43561, Nairobi.) Applied in accordance with the Manufacturer's printed instructions or other equal and approved treatment.

After the hardcore filling has been prepared the whole surface including the top surface of foundation walling shall be similarly treated before concrete slabs are poured. The treatment shall extend 1.5 metres beyond the external wall faces of the building.

PRICING NOTES: FOR EXCAVATIONS

Prices shall include for excavating in any material encountered unless specifically measured.
Excavation and disposal of soil are measured net before excavation, filling is measured net after consolidation.

Prices shall include for 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 and for well watering bottoms before laying concrete unless specifically measured.

Prices for returning, filling and ramming or carting away are to include for removing the excavated materials to temporary heaps or dumps, etc., as required or made necessary by the progress of the works, site conditions, etc., and for any re-excavating, re-handling and transporting from such heaps or dumps. All excavated material has been either returned, filled in and rammed or carted away and therefore the rates for these items must include for all costs involved in getting this material to its final position.

The thickness of all soil, hardcore etc., beds given herein is thickness after Consolidation.

The term formation level used in descriptions of work means the level after general excavation to reduce levels of Site or where there is no such bulk excavation the level after removal of surface soil.

CONCRETE

DESIGNATION OF CONCRETE MIXES

The various mixes of concrete are designated in the subsequent measured items by the following criteria:-
Nominal mixes: By the weight proportions of whole bags of ordinary Portland cement to fine and coarse aggregate and by the maximum size of coarse aggregate. The Contractor shall regularly submit details giving specific
Gravity and moisture content of aggregates.

TAMPING

The term "tamping" as used herein in conjunction with the phrase treating surfaces of unset concrete" shall mean the final compaction and surface finish to be applied to unset concrete beds, or the like, with steel shod beam tamper, either manually or mechanically operated unless otherwise stated. The resulting surface finish shall have a slightly ribbed appearance.

KEYING

The term"Keying" as used herein in conjunction with the phrase "treating surfaces of unset concrete" shall mean the preparation of beds, or the like, to receive insitu pavings by raking with a standard horticultural rake whilst the

concrete is still green and when the concrete is set and cured, protecting the raked surfaces with a layer of clean sand and removing the sand immediately before the insitu paving is laid.

PRECAST CONCRETE UNITS

Unless otherwise described in the measured items, precast concrete units are deemed to be basically rectangular in cross section and rough on exposed faces. Reinforcement bars shall have hooked ends. Bedding and pointing mortar shall be either cement or cement lime mortar, as appropriate, and units shall be deemed to be fixed by hoisting, bedding and building in unless otherwise described.

GENERALLY

STANDARDS

The whole of the concrete work and testing thereof shall comply with British Standard Code of Practice No. 114 and with the subsequent clauses of this Document and shall be carried out in strict accordance with the working drawings and instructions of the Architect and the Structural Engineer.

A competent person shall be employed whose first duty will be to supervise all stages in the preparation and placing of the concrete. All cubes should be made and site tests carried out under his direct supervision. This person shall also be responsible for keeping an accurate record of the dates on which concrete is poured.

BAR BENDING SCHEDULES

The Structural Engineer will prepare and provide all necessary bar bending schedules and explanatory details.

The Contractor shall check these bending schedules against the corresponding drawings before any cutting or bending. Any discrepancies shall be reported to the Engineer. The Contractor shall be responsible for any delays or additional work caused by his failure to check the schedules.

MATERIALS:-

SAMPLES

Samples of all materials are to be submitted for approval of the Architect at least one week before it is desired to commence deliveries. All condemned materials are to be removed from the site within 24 hours.

CEMENT

Cement shall comply with Kenya Standard as follows:-

Portland cement	- K.S. 02-21
Rapid setting cement	- K.S. 02-21

Sulphate resisting Portland cement shall comply with - B.S. 4027

Rapid setting cement may be used in lieu of ordinary Portland cement only with the prior approval of the Architect or Engineer, provided that all conditions applying to its use are strictly observed. Any additional expense in connection with the use of such cement shall be borne by the Contractor.

The use of high alumina cement will not be permitted. All cement shall be delivered to the site in sealed bags bearing the mark of the manufacturer. Rebagged cement, cement in plain bags and cement in torn bags will not be allowed on the site.

Each consignment of cement shall be accompanied by the manufacturer's certificate showing that a representative sample of the consignment has been tested and compiles with the appropriate specification.

From time to time as requested by the Architect, copies of the cement manufacturer's test certificate shall be delivered to the Architect or his representative on the site promptly, but such documents shall not preclude the Architect from rejecting any cement which does not in every way comply with the specification. Any cement, which has failed to pass the tests or has been damaged by water or contaminated in any way on site, shall immediately be removed from the site.

AGGREGATES

Aggregates shall comply with British Standards as follows:-

Fine 1 to 3 only.	- B.S. 882 table 2 Zone
Coarse	- B.S. 882 graded
"All in" ballast	- B.S. 882 graded
Granite	- B.S. 1201 graded

Each type aggregate shall be obtained from one approved source, capable of maintaining adequate supplies of consistently graded material throughout the contract. Aggregates for exposed concrete shall be free from all impurities likely to cause discolouration and shall be of consistent colour throughout the work.

Fine aggregates and sand shall be clean, sharp, coarse, hard material and equal at all times to the samples which shall be deposited with and approved by the engineer. The caustic soda test for organic impurities shall show a colour not deeper than that of the standard solution. The setting test for natural sand shall be made after being allowed to settle for three hours the layer of silt deposit on the coarse material shall not exceed 10%.

The contractor shall supply necessary equipment for the testing of fine aggregate and sand for the use of the

Engineer.

Coarse aggregates shall be hard, clean gravel or broken stone from approved quarries and shall be free from earth, decomposed stone, and extraneous matter.

They shall conform to B.S. 882 and shall be "Graded Aggregate" 20mm to 5mm. Thin, elongated, friable, flaky or laminated pieces, mica or shale shall only be present in such small quantities as not to affect adversely the strength and durability of the concrete. The amount of fine particles occurring in a free state or as loose adherent shall not exceed 1% when determined by the laboratory sedimentation test. After twenty-four hours in water, a previously fried sample shall not gain more than 10% in weight.

Each grade of aggregate shall be stored in the works in separate heaps so that there shall be no possibility of any inter-mixing. Any materials which have become inter-mixed shall be removed from the site forthwith by the Contractor.

If, in the opinion of the Engineer, the aggregate is dirty or adulterated in any manner, it shall be wasted and or/ screened by the Contractor.

Graded samples of all types of aggregate each weighing 10Kg. Shall after approval, be kept on site behind glass for visual checking of subsequent deliveries for grading, shape, and where applicable, colour.

REINFORCEMENT

Reinforcement shall comply with the following standards: -

(a) Mild steel rod reinforcement shall be – K.S. 02-22

(b) High tensile steel reinforcement shall either be cold worked deformed steel bars of circular octagonal section complying with B.S. 4461 or hot rolled deformed high tensile bars having a guarantee minimum yield stress of 4200 kg/sq. cm (60,000 p.s.i) and other physical qualities in accordance with B.S. 4449.

(c) Welded steel fabric reinforcement shall comply with B.S. 4483.

All reinforcement shall be in the "diameter" and metric range and the substitution of "square twisted" or imperial range shall be allowed but only at no extra cost to the Employer.

The Contractor will be required to submit at his own expense certified test data of the following characteristics; ultimate tensile stress, yield point stress, elongation, cold bend test. Should such certificates not be submitted by the manufacturer, the Contractor shall have the requisite tests made at his own expense at an independent testing laboratory.

WATER

Water shall be from the mains and kept free of any impurities and acid or alkaline substances in suspension or in solution, and shall be stored in proper storage tanks to the approval of the Architect.

STORAGE OF MATERIALS

Cement shall be kept dry and used in rotation of deliveries. If delivered in bags these shall be stored off the ground in a well-ventilated and weather-proof shed used exclusively for this purpose.
The shed is to be sufficiently large to contain a working stock and provided with partitions or such other means as may be necessary to ensure the effectual separation of the various consignments and type of cement. Stacking of cement in bags over a height of ten bags will not be permitted. Cement may be delivered in bulk containers provided additional suitable arrangements are made for bulk storage on the approval of the Architect.

Aggregate shall be stored at mixer positions on drained concrete paved areas, with stout dividing walls between different sizes and types of aggregates.

Reinforcement shall be stored by type, size and length either off the ground or on clean surfaced areas, and shall be kept free from rust.

PROPORTIONS OF CONCRETE MIX

The quantity of cement shall be measured by weight and each batch of concrete is to use one or more whole bags. The quantity of fine aggregate and coarse aggregate shall be measured separately by weight-batching plant. Volume mixing will not be permitted. For grading test the Contractor shall supply and deliver at his own cost to the Approved Testing Authority, samples of the aggregates which the Contractor proposes to use, consisting of not less than 50 Kilograms weight in fine aggregate. It is the Contractor's responsibility to ensure that the subsequent deliveries of aggregate conform to the grading analysis of the approved samples.

The proportions of materials to be used for the preliminary cube tests and subsequent batching, shall be ascertained by calculation from the results of the aggregate grading tests carried out by the Approved Testing Authority.

Preliminary concrete cubes shall be made by the Contractor on site as required by the Engineer and tested by the Approved Testing Authority. As a result of these tests definite weights of each material for batching shall be ascertained and agreed with the Engineer. Thereafter these proportions shall be adhered to throughout the works and may be varied only by the instructions given by the Engineer.

The weights of damp aggregate must be adjusted to take into account the weight of water in the aggregates, and this in turn will affect the amount of water to be added into the mix.

Throughout the carrying out of the Contract, "works Cube Tests" are to be made from concrete drawn from newly laid concrete or concrete about to be placed in position, such cubes being made when directed by the

Engineer and in his presence. Such cubes shall be made in 150mm cube steel or cast iron moulds and shall be marked and cured strictly in accordance with the Appendices of the Code of Practice, and shall be forwarded carriage paid in time for testing at the required age to the testing laboratory approved by the Engineer.

Three cubes shall be made on each occasion, concrete for each cube being from a different batch. Two cubes shall be forwarded in time for testing in twenty-eight days. Each cube shall be marked with the date of casting and a distinctive reference number in accordance with a system agreed by the Engineer.

A record shall be kept of the position from which the concrete for each set of cubes was drawn, or to which it was about to be placed.

At least three sets of three cubes shall be cast during each week concrete is being cast including sets of cubes for each quality of concrete used during the period, or at frequency agreed by the Engineer.

Concrete is required to have the properties and give the strength Newtons per square millimetres as follows:-

Class of Cubes in N/mm	Mix	Max. – size of coarse aggregate	Max. water cement ratio by weight	Min. crushing strength of works Test	
7 days	28 days				
30	1:1:2	20mm	0.50	21	81.50
25	1:1 ½:3	20mm	0.55	17.5	26.25
20	1:2:4	20mm	0.60	14	21
20	1:2:4	15mm	0.60	14	21
15	1:3:6	25mm	0.60	9	13.5
10	1:4:8	40mm	0.60	-	-

The above properties and crushing strength are to be considered as the minimum standard that will be accepted in the finished works.

If the strengths required in the table are not attained and maintained throughout the carrying out the contract, the contractor will be required to increase the proportion of cement or substitute aggregates at his own cost so as to

give concrete which does comply with the requirements of this clause.

The Contractor may be required to remove and replace at his own cost any concrete which fails to attain the required strength as ascertained by the Works Cube Tests.

TESTING OF MATERIALS GENERALLY:-

The Contractor shall include in his tender prices for the execution of his part of operations specified for testing herein and for supply of the requisite equipment.

After initial testing and approval of materials, it is the Contractor's responsibility to ensure and to demonstrate by the submission of further similar samples when so required that subsequent deliveries conform to the quality, grading and (where applicable), colour of the approved samples.

TESTING OF CEMENT

Before work commences and when subsequently directed, the Contractor shall take 6 kg samples, in accordance with B.S. 12 procedure, of cement and deliver these in tins approved by the Engineer to an approved testing Laboratory for testing.

Each consignment of cement to the site, which shall be accompanied by the manufacturer's advice note and forwarded without delay to the Engineer, shall be delivered to the site at least 7 days before it is intended to be used in the works so that the required tests may be carried out without retarding the progress of the works.

TESTING OF AGGREGATES

Before work commences and when subsequently instructed, the Contractor shall take the site samples, by methods given in B.S. 812, and deliver to the approved Testing Authority for testing.
Such samples shall be submitted for approval at least 7 days before they are intended to be used in the works.

TESTING OF REINFORCEMENT

Should the Engineer require reinforcement to be tested, it shall be tested at the Contractor's expenses and representative test pieces of such reinforcement to be used in the works are to be sent to an approved laboratory for testing.

TESTING OF CONCRETE IN THE FIELD

Trial mixture

Prior to the commencement of the actual concrete work, the Contractor shall make, or have made, Preliminary Test Cubes in accordance with B.S. 1881, using the aggregate from which samples were taken for grading analyses. Six cubes are to be made on each occasion, 3 for testing at 7 days and 3 for testing at 28 days. The cube strengths obtained in the preliminary tests should show crushing strengths of at least $1^1/_3$ times the specified works cube test strengths.

The Preliminary Test Cubes will be submitted to an approved Testing Authority for crushing, and from the results of these tests, definite weights of each material for batching will be ascertained, and agreed with the Engineer.

Thereafter these proportions shall be adhered to throughout the works, and may be varied only by instructions form the Engineer.

If any of the concrete materials are to be varied or obtained from a different source, a further set of Preliminary Cube Tests, using the proposed new materials, will be required.

Workability

The total water content in the mixture determines its consistency and once a consistency of a trial mix has been approved it must remain constant throughout the contract.

In order to help the concrete maintain the desired consistency the slump of an approved trial mix shall be measured thereafter all mixes must give the slump as the approved trial mix. The slump shall be determined by the test as described in B.S. 1881 Part 2. In general, the approved slump shall be in the order of 75mm for hand compacted concrete and 35mm for vibrated concrete. The slump test shall be made on concrete actually being placed in the works at the commencement of each period of concrete placing and at such other times as instructed.

Test specimens

The moulds for tests cubes shall be of metal and true to shape to give a 150mm cube and shall be well oiled before filling. The mould shall be filled with concrete taken from that actually placed in the works, the concrete being selected by the Engineer from a point as near as possible to the position of placing. The filling of the moulds shall be done immediately after the selection of the sample concrete and in such a way that the concrete in the moulds be truly representative that in the works.

The concrete shall be placed in the moulds in three layers of equal thickness, each layer being rammed with 25 strokes of a steel bar 40mm diameter, (or equivalent) weighing 2kg. If the concrete in the works is to be consolidated by mechanical vibration, the test cube moulds shall be likewise vibrated after filling. Each cube shall be inscribed with the date of manufacture and identification mark,

A record shall be kept for each batch of cubes showing the position in the works, which the concrete represents, the date of manufacture, the mixture and slump of the concrete, particulars of the cement and aggregate used, a statement of whether or not the cubes were vibrated and other information relating to the subsequent history of the cubes.

The moulds containing the test cubes shall be stored for 24 hours on the site in a damp place free from vibration. At the end of this period the cubes shall be taken from the moulds and stored in damp sand for 20 days if they are to be tested at 28 days, or for 4 days if they are to be tested at 7 days.
The Contractor shall be instructed about the dispatch of the cubes to an approved laboratory and will pay all costs relating to the tests. A set of three cubes will be required for not more than every 60 cubic metres of concrete placed in the works.

Quality of specimens

The test specimens shall have the compressive strength specified for each quality of concrete at the appropriate age as given herein.
If the required strength is not obtained at 28 days, the Contractor will be required to cut out and reconstruct all work represented by the test specimens at his own expense with all dispatch, always provided that the Engineer may first permit further tests, at the contractor's expense, to prove the quality of the deposited concrete.
In the case of seven day Works Cube Tests providing unsatisfactory, the works may be stopped, but shall not be liable to rejection until the result of the twenty eight day test is known.
In the event of the results of the twenty eight day works Cube Tests proving unsatisfactory, the work represented shall be immediately liable to rejection. The contractor may, however, be given the option of cutting three specimens from the completed work subject to the direction of the Engineer, and preparing therefrom test cubes or cores which shall be sent to the Test Laboratory for testing as for Works Cubes Tests.
Should the average strength of these specimens attain the specified minimum twenty eight day strength, the work will, subject to the Engineer's discretion, be accepted. Alternatively, the Engineer may instruct the Contractor to make a loading test as described hereinafter. The cost of all cutting, preparation of specimens, testing and making good the portions of the structure affected, shall be borne by the Contractor. The cost of all delays on site investigation of defects, cutting away and making good, shall be entirely the Contractor's responsibility.

DAMAGED OR UNSATISFACTORY MATERIALS

All materials, which have been damaged, contaminated or have deteriorated, or which do not comply in any way with the requirement of the specification, shall be rejected and shall be immediately removed from site.
No materials shall be stored or stacked on suspended floors without the Architect's prior approval.
Should any of the samples tested be found, in the opinion of the Engineer, in any respect unsatisfactory or likely to produce unsound work, the whole consignment or load from which samples were taken will be rejected, and the Contractor shall forthwith remove it from site. Notwithstanding that any sample of the material may have passed the test, the Engineer may later reject such consignment or loads if he shall decide that the quality has deteriorated.
The Contractor at his own expense shall remove from the site, without delay, all rejected material. Any delay

caused by such rejection will not in any way relieve the Contractor from his responsibility with regard to the completion within the time limit (s) specified. Any bag of cement that is opened shall be used on the same day or be discarded from the work.

PLANT AND METHOD

Before the commencement of any work, the Contractor shall submit the following for the Engineer's written approval:

(i) The concreting method, including the size and type of machines for weighing and mixing concrete and the methods of transporting, placing and compacting.

(ii) Details of formwork proposals, clearly indicating the general method of construction and assembly, the method of achieving surface finishes required herein, including lining, fixing of linings together with positions of joints and the make and type of mould oil proposed.

(iii) The proposed position and type of every construction joint not already shown of the Engineer's drawings.

Such approval by the Engineer shall not be deemed to relieve the contractor of his obligations to comply-with any of the provisions herein.

Concrete mixing and discharge from mixers shall be under permanent cover to the Engineer's approval.

MEASUREMENT AND MIXING

All cement is to be measured by weight, the 50kg bag of cement being used as a unit.
The amount of water shall be the minimum required to produce dense cohesive concrete of adequate workability to be determined by trial mixes. This amount shall be accurately gauged and adjusted from time to time to compensate for variations in moisture content to the aggregates by an approved method

All concrete shall be mixed in a batch type mechanical mixer of approved type having a drum rotating about a horizontal or inclined axis. The speed of the drum is to be not more that twenty and not less than fourteen revolutions per minute.
Each mixer is to be fitted with a water measuring device capable of accurate measurement to one gallon for one cubic yard mixers and prorata for smaller sizes and so arranged that the accuracy is not affected by variations in the pressure of the water supply line. The fine and coarse aggregate and the cement shall be mixed for at least

four turns, after which the required amount of water shall be added gradually while the mixer is in motion and the concrete mixed for not less than one half minutes to a uniform colour and consistency.
The volume of concrete mixed in any one batch is not to exceed the rated capacity of the mixer.
The whole of the mixed batch is to be removed before materials for fresh batch enter the drum.
Concrete as mixed in accordance with the foregoing shall not be modified by the addition of further water or in any other manner on the cessation of work, including all stoppages exceeding twenty minutes or any change of cement used in the mix, the mixer, and all handling plant shall be washed out with clean water. At least one slump test shall be made each day concreting is in progress under the supervision of the Engineer.

REINFORCEMENT

Reinforcement shall be free from all loose scale, loose rust, oil grease or similar defects, immediately before placing the concrete. It shall be bent cold exactly to detail using an approved bending machine. Hooks, bends, etc., where not specifically detailed, are to be in accordance with B.S. 4461. Each bundle of bent bars shall be clearly tagged with the bar list number.
Reinforcement shall be placed in the exact position shown on drawings with all inter- sections tacked welded or securely tied with 16 gauge soft steel tying wire.
The designated cover shall be maintained by approved spacers, stools, bolsters or ties fixed to the reinforcement. There shall be dense concrete left with a wire brushed surface or be dipped in grout before fixing. These blocks are particularly important where the surface of the concrete is exposed to weather or dampness.
The Contractor must ensure that bars are securely fixed so as to maintain their indicated positions during progress of pouring, tamping or vibration of concrete. Six tools are to be provided around each column to hold top steel in position and are to be made up of mild steel bars of adequate diameter. The cost of providing and fixing these steel stools must be allowed for by the Contractor in his rates for reinforcement generally. No laps or splices in bars shall be made without prior approval of the Engineer except those detailed on the drawings. The size and position of the reinforcement bars or mesh shall be approved by the Engineer before concreting commences.
The insertion of reinforcement into concrete already placed, the lengthening of bars by welding and the rebending of incorrectly bent bars will not be permitted.
For concrete having exposed surfaces, reinforcement shall be assembled and placed in such a manner as to avoid any damage to formwork faces.
Where reinforced concrete slabs or walls are constructed against tanking, care shall be taken in positioning reinforcement to avoid damage to tanking.
Unless otherwise shown upon the Engineer's drawings, or specified in B.S. CP114, the reinforcement bars shall be given the following cover of concrete:-

In floor slabs, walls and similar thin panelling, a cover of 13mm or the size of the bar, whichever is the greater. In beams and other such members, a cover of concrete of 25mm to the main reinforcement or the size of the bar

whichever is greater.

In columns a cover of concrete of 40mm to main reinforcement the size of the bar, whichever is greater.
In foundations and column bases, a cover of 50mm to main reinforcement, or the size of the bar, whichever is greater.

INSPECTION OF REINFORCEMENT

When the placing of reinforcement for a particular section of the works is completed and before concreting commences, the reinforcement will be inspected by the Engineer and no concrete shall be placed until the Engineer's approval has been given. The Contractor shall give the Engineer 48 hours notice of the time when the reinforcement will be ready for inspection. Where the distance of the site of the Works is more than 100 kilometres from the nearest office of the Engineer, this time shall be increased to 96 hours.

FORMWORK

Formwork shall be true to line, level face and profile and be of robust construction adequately framed, braced, strutted, cramped, tied and propped to restrict deformation due to construction loads to not more that 3mm, and to entirely eliminate deformation of the form faces by warping or buckling. Wire ties will not be permitted.
Formwork shall be grout-tight under all conditions including vibration when specified or used.
Formwork shall be designed to allow prefabrication of conveniently sized elements to facilitate ease of handling and assembly, to permit striking without force, shock or any damage whatsoever to the concrete member or formwork face and permit the removal of sides without disturbing soffits.
Propping shall be carried down to an approved bearing, shall not be supported by timber floors and shall be arranged that formwork may be lowered smoothly.
Re-propping will not be permitted. Provision shall be made for cleaning out and draining.
Formwork shall be constructed of material or lined with material as may be necessary to achieve the finishes specified herein and in such a manner as to eliminate screw or nail head imperfections.
Before each use, Formwork faces shall be treated with the minimum amount of approved mould oil necessary to obtain a clean release. Mould oil shall not come into contact with the reinforcement.
The use of cement retarders will not be permitted except where a key for or other finishes is required.
Before placing of the concrete, bolts and fixing shall be in position and cores and other devices used for forming openings, holes, pockets, recesses, ducts or other cavities shall be fixed to the shuttering.
Immediately prior to concreting, formwork shall be thoroughly cleaned out and formwork and given his consent for concreting to proceed but such consent shall not relieve the Contractor of his responsibility for its sufficiency.
After striking, formwork shall be cleaned, stacked and protected and before re-use, shall be serviced, made good or replaced with new as may be necessary to maintain the finish and the standard specified.

TOLERANCES

The maximum tolerances within which concrete work shall be constructed are as follows:-

1.	All setting out dimensions, and dimensions horizontally and Vertically.	± 5 mm
2.	Section of concrete member	± 15mm
3.	Levels of floor slabs, beams, lintels etc.	± 5 mm
4.	Plumb of columns and walls in storey height	± 5 mm
5.	Plumb of columns and wall in full building height	± 20 mm
6.	Inside faces of life shafts in storey height	± 5 mm
7.	Inside faces of lift shafts in full building height	± 15 mm
8.	Concrete cover to reinforcement	± 3 mm

No surfaces intended to be horizontal or vertical shall slope more than 2mm in l metre.

Any rectification of work not constructed within the tolerances set out above shall be entirely at the responsibility and expense of the Contractor.

PLACING AND COMPACTION

No traffic whatsoever, wheeled or foot, shall take place over reinforcement placed concrete and the Contractor shall provide all necessary stools, walkways, platforms and barrow runs. Concrete shall be placed in its final position as rapidly as practicable by methods which preclude segregation or loss of ingredients and in any case, within 30 minutes from the time that water is added to the mix; compaction shall be completed before initial set commences. Partially set concrete shall not be re-worked or used. Flowing in formwork shall be avoided by placing and compacting in shallow layers in quick succession.

The workability of the concrete must never be altered by the use of additional water or sand alone.

Foundations shall be placed their full depth in one operation and the top surface carefully levelled. Concrete placed in timbered excavations shall be well rammed close against the excavation face as the timber is withdrawn.

Where the design of the work demands the placing of reinforced concrete against the sides of excavation without the use of formwork, the earth face in such locations shall be prevented from crumbling or washing into concrete

during placing and compaction by any efficient means, and care shall be taken to maintain the correct cover to the reinforcement.

All concreting shall be continuous to completion or to an approved construction joint.

Methods of placing and vibrating generally are to comply with the specifications for vibrated concrete as laid down by the manufacturer of the vibrators used on the works.

During placing of all concrete a workman shall be in constant attendance with a hose pipe to wash off any cement slurry which appears on the face of any previously poured concrete immediately it occurs.

Concrete shall be placed into the forms from as less a height as possible and shall in no case be dropped from a height of more than 1500mm except with the approval of the Engineer.

When chuting is used, the inclination of the chute must be such as to allow the concrete to flow without the use of excessive water and without segregation or loss of the ingredients. Details of any proposed chuting plant must be approved by the Engineer before the plant is delivered to the site.

If the Contractor wishes to distribute concrete by means of pumps, full details of the system must be made available to the Engineer for approval.

Concrete shall be thoroughly compacted and carefully worked with suitable tools, into formwork and around reinforcement and fixtures so as to avoid displacement. A competent steel fixer shall attend throughout concreting to correct any unavoidable displacement. Compaction shall be by means of vibrators; these shall be of an approved pattern, of the immersion type; clamp on external vibrators, in adequate numbers shall be used only where the density o reinforcement precludes immersion.

Attachments to reinforcement are expressly forbidden and accidental contact with reinforcement shall be avoided.

Vibration shall be executed by a competent operative and shall not be carried out to the detriment of adjacent partly hardened concrete.

An accurate schedule is to be kept by the contractor showing dates and times when various portions of the work were concreted. The concreting foreman must not vary the approved mix or water content without the permission of the representative of the Engineer. It may occasionally be found that in concreted members or where the proportion of reinforcement in concrete is high, the workability of the concrete must be increased especially in order to effect full compaction. Such increase in workability shall be achieved by an increase in the mortar content of not more than 10% of the concrete by weight in any single batch and must be made only with the approval of the representative of the Engineer.

COLUMN PLINTHS

Column kicker plinths not cast monolithically with the beam or slab will be allowed only at the discretion of the Engineer and special precautions must be taken if permission is granted especially in regard to the quality of the mix used, and the curing of the concrete.

BLINDING CONCRETE

No casting of any concrete on the ground shall take place until the ground has been passed as satisfactory by the

Engineer. All ground to carry reinforced concrete shall be covered with a blinding layer of a specified quality of concrete of the thickness shown on the drawings or if not so shown a minimum of 50mm.

WATERPROOF CONCRETE

Whenever waterproof concrete is shown on the drawing it shall be mix 1:1 ½ : 3 nominal and it shall be compacted by mechanical vibration so that a dense and homogenous mass of concrete is obtained throughout every pour of the structure, all in accordance with C.P. 2007.

The Contractor shall be allowed at his own cost to add an approved waterproofing additive to the mix using it strictly in accordance with the maker's printed instructions.

All permanent and construction joints shall be constructed in accordance with the drawings and specifications to achieve complete water tightness.

It shall be the Contractor's responsibility to ensure that all structures required to be constructed in waterproof concrete are completely watertight and any work found to be defective shall be made good to the Engineer's satisfaction at the Contractor's expense.

Where waterproof concrete forms a water retaining structure it is to be tested by filling with water for a period of not less than four days. Any percolation or porous concrete or leaking joint is to be made good at the Contractor's expense. Tanks and pools constructed below ground level are not to be backfield prior to the satisfactory completion of this test.

CONSTRUCTION JOINTS

All construction joints shall be straight, truly vertical or level, as the case may be, of profile shown and formed in the exact positions shown on drawings or if not shown on the drawings, with prior approval of the Engineer. Vertical joints shall be formed against adequately secured rigid stop boards having splayed fillets, designed to pass the continuous steel reinforcement without temporary bending or displacement.

The rate and method of placing concrete and the arrangement of joint bulkheads shall be such that the concrete between construction joints shall be placed in a continuous operation.

Joints in reinforced slabs and beams, shall be perpendicular to the axis or surface of the member jointed and at one third of the span. If an intersecting member occurs at that point, the joint shall be located at a point of minimum shear.

Construction joint in columns shall be as shown on the drawings. Wherever it becomes necessary to stop work, such stops shall be located at one third span of slab and beams or as directed by the Engineer.

An adequate and acceptable key of a succeeding work shall be formed by using stop boards, which shall be constructed tightly to prevent any grout leak. As early as possible boards shall be removed and the surface thoroughly hacked and brushed to remove all laitence. Any leakage past stop boards shall be hacked off as soon as the concrete has set. The surface shall be left clean and dry. Immediately prior to further concreting the joint face shall be soaked with water and covered with sand cement mortar of proportions identical to that in the concrete to be placed, punned into the body of the set concrete.

For exposed finishes, care shall be exercised to preserve an unbroken line at the exposed edge of the joint.
In no circumstances shall the concrete be allowed to finish at a break running down a rough slope. Such cases, if found, will be treated as contrary to the specification and the Contractor will be required to cut out the member and re-cast. In the case of horizontal joints, any excess water and laitance shall be removed from the surface after the concrete is deposited and before it has set.
Before casting slabs the hauchings or seatings for the slab shall be thoroughly hacked, scored and washed and covered with at least 5mm of mortar immediately before the slab is cast.
Any necessary construction joints in foundations shall be stepped and lapped 600mm joint faces shall be prepared and treated as described above.

STRIKING TIMES

It shall be the Contractor's responsibility that no distortion, damage, overloading or undue deflection is caused to the structure by the striking of formwork, but the Engineer reserves the right to delay the time of striking in the interest of the work. Formwork shall not be struck until the concrete has sufficiently hardened. Approval of the Engineer shall not relieve the Contractor of his liability to make good any concrete damaged by premature removal or collapse of forms. In no circumstances shall forms be struck until concrete reaches a cube strength of at least twice the stress to which the concrete may be subjected at the time of striking. The following striking times given in days (24 hours) are the absolute minimum that will be permitted:-

Forms Portland Cement	Ordinary Hardening Cement	Rapid
Walls Columns (Unloaded) Beam sides	2	2
Slabs – props left under	7	2
Beam soffits – props Left under	14	5

Slab – props	14	5
Beams – props	21	8

The time for removal of forms as cut shall not apply to slabs and beams spanning more than 10 metres. For such spans appropriate times shall be recommended or advised by the Engineer.

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 be at least 2 storey heights below the floor being cast unless otherwise stated.

CURING

The curing of the concrete must receive particular careful attention. The concrete shall be covered with a layer of sacking, canvas, hessian or suitable absorbent material, and concrete, formwork and covering kept constantly wet for the first seven days after casting.

MIXES, CHASES AND CASTING IN

No holes or chases are to be cut in reinforced concrete works. The contractor shall ensure that all necessary holes and chases, including fixing holes for railings and balustrades etc., are carefully formed in the correct position by requisite measures prior to the placing of concrete.

All conduits, pipes, tubes and the like shall unless otherwise detailed, be run on top of the bottom reinforcement of the concrete work. It shall be the Contractor's responsibility to ensure full co-ordination with Sub-Contractors in the setting out for this purpose.

Generally, conduits, pipes and special fixtures shall be concreted in where required and in the exact positions demanded.

Details of the positions of all holes, chases and fixing blocks shall be submitted to the Engineer for his approval prior to putting the work in hand.

TESTS OF COMPLETE STRUCTURAL MEMBERS

The Engineer shall instruct that a loading test be made on the Works, or any part thereof, if in his opinion such a test be deemed necessary for one or more of the following reasons:-

(a) The site-made concrete tube cubes failing to attain the specified strength.

(b) The shuttering being prematurely removed.

(c) Overloading during construction of works, or part thereof.

(d) Concrete improperly cured.

(e) Any other circumstances attributable to negligence on the past of the contractor which, in the opinion of the Engineer, may result in the works, or part thereof, being less than the required strength.

If the loading test be instructed to be made solely, or in part, for one or more of the reasons mentioned above, the tests shall be made at the Contractor's own cost. If a test be instructed to be made for any other reason than specifically stated above, the Contractor shall make the test and shall be reimbursed for all costs relating thereto.
Loading tests are to be conformity with Clause 605 of British Standard Code of Practice CP 114.
If the result of the loading test be not satisfactory, the Engineer shall instruct that the part of the works concerned shall be taken down or removed and reconstructed to comply with this specification, or that such other remedial measures shall be taken as to make the work secure.
If the tests be instructed to be made for one or more of the reasons (a) to (e) inclusive as herein before specified, the Contractor shall take down or remove and reconstruct the defective work, or shall take the remedial measures instructed all at his own cost.

PROTECTION

All insitu and precast concrete shall be protected from rain and during hot, dry and windy weather approved hessian covering kept constantly damp shall be used to prevent premature drying out.
All insitu and precast concrete shall be protected from damage by disturbance, shock vibrations, early loading or overloading. In addition, all exposed finishes shall be constantly protected from mechanical damage to arises or faces and damage due to dropping, splashing and staining from any source including rusty scaffolding or reinforcement.
No materials or equipment of any kind shall be stored or stacked on suspended floors without the Engineer's prior approval.

PRECAST CONCRETE

Precast concrete lintels shall comply with B.S. 1239.
Precast concrete kerbs shall comply with B.S. 340, figure 5
Concrete shall all be cast in properly made strong moulds to form shapes required. Formwork described as "finished fair" the mould shall be lined with sheet or other approved material to give the required surface finishes.
The coarse aggregate for precast concrete shall be 10mm gauge for mix specified.
The concrete shall be of the mixes described and shall be thoroughly tamped in the moulds and shall not be removed from them until seven days after placing the concrete, but the sides may be removed after three days providing the moulds are such that the sides are easily removable without damaging the concrete.
The precast work shall be cast under sheds and shall remain under same for seven days in the moulds and a further seven days after removal the moulds. During the whole of this period the concrete shall be shielded by

sacking or other approved material kept wet. It shall then be removed from the sheds and stacked in the open for at least seven days to season.

Precast concrete units shall be true and smooth on all faces (except where a key is required for applied finishes). All arises shall be true and clean with no broken edges.

All units shall be marked during manufacture to indicate

(a) The date of casting

(b) Identification lettering in accordance with the drawings

(c) Where necessary, the way up for building in.

Ends of bar reinforcement shall be 25mm from internal faces and 40mm from external faces. Nominally non reinforced units may contain reinforcement at the Contractor's option for handling purposes, the cost of which shall be deemed to be included in the pricing.

SURFACE FINISHES

After removal of shuttering, unless instructed to the contrary, the face of exposed concrete is to be rubbed down immediately to remove fins or other irregularities. In the event of parts of the concrete being honeycombed, such portions are to be cut to depth and shape required b the Engineer and made up with fine concrete of equal quality in such a manner as shall be directed. The face of concrete for which shuttering is not provided, other than slabs, is to be smoothed with a wooded float to give a finish equal to that of the rubbed-down surface where shuttering is provided.

The top face of slab which is not intended to cover with other material is to be levelled and floated before setting to a smooth finish at the levels or falls shown on the drawings or elsewhere.

The floating must be carried out in such a way as will prevent an excess of mortar being brought to the surface of the concrete. The top face of a slab intended to be surfaces with mortar, granolithic or similar material is to be brushed with a stiff broom while still green to remove any laitance and provide a roughened surface.

(a) Samples Before the execution of any specified finish, the Contractor shall prepare 1200mm square samples for the Architect's approval.

No concreting in finish work shall be attempted until after the approval of a sample. Approved samples shall be retained till the completion of all such work and closely adhered to throughout the work. Rejected samples shall be demolished and removed.

(b) Rendered or plastered surfaces Concrete surfaces to be rendered or plastered shall be thoroughly hacked to form a good key.

(c) Fair faced surfaces Fair faced surfaces shall be free from honeycombing, stains, fins, lippings, nails holes or excessive air holes and shall be of a uniform colour and texture. This surface shall be obtained by the use of.

(i) Wrot forms, i.e. timber forms planed smooth on the surfaces in contact with concrete

(ii) Forms lined with hardwood or plywood or other approved material,

or

(iii) Smooth steel forms.

PRICING NOTES

The Contractor must allow for all costs incurred during the progress of the Contract for complying with the provisions concerning the preparation of graded mixes.

Prices for concrete slabs shall include for all temporary formwork to form construction joints at bay edges.

Prices for reinforced concrete shall include for filling into, between or on formwork and thoroughly compacting between and around rods or fabric reinforcement and for forming all additional construction joints between varying mixes.

Formwork is measured net to the actual face of the concrete to be supported and the prices for formwork shall include for the extra material at joints, extra labour and waste for narrow widths small quantities, overlaps, passings at angles, straight cutting and waste splayed edges, notchings, etc., and for fixing at the various levels including battens, struts, and supports and for bolting, wedging, easing, striking and removal Prices for lineal items such as bocing shall include for angles and ends.

Prices for fabric reinforcement shall include for all straight cutting and waste, and temporary support and all extra material in laps.

Prices of all precast concrete shall include for all moulds, finishing as described, hoisting and fixing at the required levels, bedding, jointing and pointing in cement and sand mortar, also for casting or cutting to the exact lengths required and any waste resulting from such cutting. The sizes of weathered or moulded items stated are extreme sizes.

Prices for hollow block suspended slabs shall include for concrete filling run into the open ends of blocks or blind end blocks.

Prices for expansion joints shall include for cutting to size and all temporary supports and prices for expansion joint sealers shall include for all temporary battens or fillets required to form the necessary grooves.

WALLING

MATERIALS

CEMENT

Cement used for making mortar shall be as described in "Concrete Work".

LIME

The lime for making mortar shall comply with B.S. 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 run 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.

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 substance, passed through by the Architect sieve and washed with clean water if directed by the Architect.

WATER

Shall be as described in "Concrete work."

STONE

Stone shall be sound and hard and free from all defects and shall be as approved by the Architect.

All stone required for walling (unless otherwise described) shall be chisel dressed into true rectangular blocks with each surface even and at right angles to all adjoining surfaces. Ordinary walling shall be built 190mm courses, and of the thickness given herein with all dimensions having a tolerance of plus or minus 6mm. At least 80% of all stone blocks shall be not less than 500mm in length and no block will be allowed to be cut or redressed after it is built into the work.

WALL REINFORCEMENT

Walls less than 200mm shall be reinforced with a 25mm wide strip of 16 gauge thick 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.

DAMP PROOF COURSE

To be asbestos base fully bitumen impregnated in accordance with B.S. 743 weighing not less than 3.80 kgs. Per square metre. The sheeting is to be lapped 150mm at running joints and the full width of walls at angles.

WORKMANSHIP

CEMENT MORTAR

Mortar described as cement mortar 1:5 shall be composed of 1 cubic metre (1442kgs.) of Portland cement to 5 cubic metres of sand. Other mixes such as 1:3, 1:4, shall be similarly construed.

CEMENT LIME MORTAR

Mortar described as cement lime mortar 1:1:4 shall be composed of 1 cubic metre (1442 kgs.) of cement and 1 cubic metres of lime and 4 cubic metres of sand. Other mixes shall be similarly construed.

MIXING OF MORTARS

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 constituency. 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.

GENERAL CONSTRUCTION

(a) Setting Out. The Contractor shall provide proper setting out rods and set out all work on same for courses, openings, heights, etc., and shall build the wall, 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 ventilator, etc., are to be set out and left unbuilt until the wooded frames have been fixed in position.

(c) Building in Metal Windows and Doors openings. For metal frames are 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 in the space between the walling and frame with cement mortar 1:5 well tamped into the channel of the frames and point all round externally.

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

(d) Walls to receive Plaster and similar finishes. All faces of walls to be plastered, etc., to have all projections dressed off and joints raked out as key.

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 recommencing building. 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.

Blocks shall be bedded and jointed in cement mortar (1:5) as described with beds and joints 10mm thick, all flushed up and grouted solid as the work proceeds.
All walling shall be properly protected and kept wet for three days after building.

(b) Bonding The blocks shall be properly bonded together and in such manner that no vertical joint in any one course shall be within 115mm of a similar joint 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 intersection 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.

Alternate courses in attached piers, etc., to be of single blocks and the vertical joints in alternate courses to midway between back and front faces.

FAIR FACE

All concrete and hollow clay blockwork described as finish with a fair face is to be built to a true and even face with the joints finished as specified hereinafter.

BRICK AND TILE FACING

All brick and tile facework shall be set out and built to the respective dimensions, thickness and heights shown on the drawings. The bricks or tiles shall be well laid with 6mm joints and pointed with neat weathered joints as the work proceeds.

A sample panel about 1 metre square of each of the facings is to be constructed on the site and when approved by the Architect shall be retained as the Standard for the Works and cleared away on completion all at the expense of the contractor.

HOLES CUTTING AND CHASING

(a) All putlog holes shall be not less than one course deep and carefully filled with a block cut to fit size of opening with beds and joints filled in with mortar well tamped in after scaffolding is removed, and if in faced walls, to match facings.

(b) Where walling is cut, holed or chased for conduits' pipes and the like all such cuttings, etc., shall be filled in with cement mortar (1:4) prior to the application of finishes.

PRICING NOTES

Price for all walling shall include for normal rough and straight cutting, plumbing angles, all cutting and waste and split courses necessary for bond, bonding at angles intersections and junctions of all thicknesses, split courses, cutting and pinning up to columns beams slabs, etc., cutting and pinning in ends of cills, lintels, beams etc. Forming all openings and reveals to same and all cutting and waste to walling in short lengths such as mullions unless specifically measured.

Prices for all walling shall include for hoisting and building off beams and slabs at any level and work built over-hand.

Prices for hollow block walling must further include for all necessary solid blocks or fine concrete filing to open ends of blocks at intersections, ends and angles of walling.

ROOFING

GENERALLY

All roof materials shall be as specified in the Bills of Quantities and laid in accordance with the manufacturer's instructions.

GALVANISED MILD STEEL ROOFING

Sheeting

Sheeting shall be hot-dip galvanised best quality mild steel sheeting to specified gauge to comply with B.S. 3083.

Laps

Sheeting shall be laid with end laps to comply with C.P. 143201 and side laps of 1½ corrugation on the side away from prevailing winds.

Fixing to Timber

The sheets shall be fixed to timber with 6mm diameter galvanised mild steel roof screws 65mm long, each with one plastic "Selawasher" or a Bituminous washer with one galvanised steel diamond shaped washer.

Holes

Holes for bolts or screws shall be punched from the inside of the sheet and through the ridges of corrugations not the valleys.

Ridges and valleys etc

The ridges and valleys etc., shall be formed of galvanised mild steel sheeting of a quality equal to that of the roofing sheets. Ridges shall be seam bolted to the sheeting on each side at 450mm centres maximum with 12mm diameter seam bolts 20mm long each with one plastic washer or a bituminous diamond shaped washer with galvanised diamond shaped steel washer and one galvanised steel nut. Ridges and valleys shall be not less than 380mm girth.

Bolts and Screws

All fixing bolts and screws shall comply with B.S. 1494.

Square Abutments

At square abutments the last two corrugations of the corrugated iron sheets next to walls shall be flattened and turned up against wall and covered with 18 gauge galvanised sheet iron apron flashing.

APPLIED ROOFING GENERALLY

Protection

The Contractor will take all necessary precautions to ensure that no damage is caused to the roofing after completion of laying, by further building operations, storage of heavy objects, traffic or any cause whatsoever.

Examination on Completion

Before delivering up the works, the Contractor shall examine the roof coverings, clear away all rubbish, clean out gutters and rain water pipes and leave a sound watertight finish.

Aluminium - alloy sheeting

To be (24, 22) s.w.g. (0.56, 0.71) aluminium-manganese alloy NS3 sheeting, either:

(a) Corrugated or mansard profile to comply with B.S. 2855, or

(b) Troughed profile to comply with B.S. 3428 (type A or B)

Fittings are to be (22, 20) s.w.g. (0.71, 0.91mm) and are to include roll-top or angular socketted one end ridge members, hip cappings, eaves fillers, plain and corrugated side-wall flashings, etc.

Translucent corrugated plastic sheeting

To be 'Unilux" or other approved glass fibre reinforced translucent corrugated plastic sheeting to comply with B.S. 476. The sizes and corrugations of sheets are to suit main roof sheeting.

Fixing sheeting and fittings

Fixing to be by means of 6mm or 8mm diameter galvanised mild steel hook bolts (to steel purlins) and/or drive screws (to wood purlins) together with nuts and soft plastic washers with dome-shaped caps all to comply with B.S. 1494.

The hook bolts and/or drive screws are to be spaced two per sheet per purlin and holes are to be drilled in the crown of the corrugations for this purpose.

End laps of sheetings to be 150mm and side laps to be 1 $^{1}/_{2}$ corrugation or otherwise as instructed by the manufacturer.

Fittings are to be fixed in the same manner as the general sheeting if the joint lies on a purlin. If the joint does not lie on a purlin seam bolts of the same diameter as the hook bolts and/or drive screws are to be used together with nuts and plastic washers as before described. To be spaced two per sheet.

Valley gutters

To be (375mm, 450mm, 525mm or larger) heavy, pressed steel valley gutters to comply with B.S. 1091 (Alternatively, for corrugated asbestos-cement sheet roofs, asbestos cement valley gutters to B.S. 569 may be specified).

Joints to be bedded in mastic and bolted with countersunk headed galvanised mild steel screw bolts, with bolt heads set inside gutter. To be fixed by means of heavy galvanised pressed steel brackets bolted to the lowest purlins and spaced one per 1M. length of gutter.

Roof surfaces generally

Provide and lay over the whole areas shown on roof plan, roof sheeting to purlins as specified.

Ridge

Provide and fix ridge capping complete with gable finials all as specified and as the work proceeds.

Eaves

Allow sheets to project at least 600mm at eaves and joint to beam filling in cement mortar (1:3) to fill underside of

corrugations for the entire thickness of the beam filling.
Provide and fix eaves fillers fixed to both roof sheeting and wall cladding to provide eaves enclosure as the work proceeds

Verges

(a) Allow roof sheeting to overlap gable walls 75mm minimum and bed point sheeting to wall in cement mortar (1:3) as the work proceeds.

(b) (To similar sheet gable cladding). Provide verge trims as specified and fix to roof sheeting only to overlap gable cladding. Make good to gable finial and ridge capping and at eaves.

Valleys

Provide and fix valley gutter as specified between adjacent roof slopes and to falls to discharge into rainwater heads.

Roof lights

In the positions indicated on the roof plan, provide and fix single sheeting as specified in place of the general roof sheeting to form roof lights.

Roofing generally

To be laid in three layers as specified with 50mm side laps and 75mm end laps, staggered, the layers bonded together with hot bitumen bending compound as described in C.P. 144.

Abutments

Felt to be carried up abutment over fillet (concrete or wood) and each layer tapered to a height of 150mm above roof surface as skirting to be covered by metal flashing.

Verges

Felt to be carried over roll (concrete or wood) and over verge to a depth of 150mm and bonded to edges of verge with hot bitumen bonding compound.

Parapet gutters

Felt to be carried into gutter and up parapet wall as abutment. Felt to be laid to lap with, and not against, the fall in the gutter.

Eaves gutter

Felt to be laid over edge of roof and dressed into gutter with edge welted.

Rainwater outlets

Felt to be carried through outlets in parapet walls with skirtings to both sides of outlets and dressed over edge of parapet wall and into rainwater head.

Roof surfaces generally

Provide and fix insulation and vapour barrier, lay surface dressing and form junction and joints at abutments, verges, eaves and parapet gutters and rainwater outlets, all as previously specified.

SAMPLES

The Contractor shall as and when required by the Architect, submit and deliver samples of any materials for testing.

STATEMENT AS TO SCREED AND UNDERBED

The Contractor is to obtain from Sub-Contractor a statement in writing to the effect that the screed and/or underbed is laid to the correct falls and is clean and otherwise satisfactory before the covering of felt is laid. A copy of the statement is to be forwarded to the Architect.

GUARANTEE

The Contractor is to obtain from the specialist firm a written guarantee and undertaking to the effect that during a period of two years from and after the certified date of completion of the works, such sub-Contractor shall at his own expense make good to the satisfaction of the Architect, all and any defects in the felt roofing work which shall be attributable to improper materials or faulty workmanship and shall bear the cost of any consequential damage as is provided for in such guarantee.

CARPENTRY AND JOINERY

MATERIALS

QUALITIES AND GRADES OF TIMBER

All timber used for permanent work in the building shall conform in all respects to K.S. 02-17.

The qualities and grades of timber stated hereinafter conform to Table 1 of Section 4 of K.S. 02-17 which is reproduced hereunder.

GRADE	APPLICATION
F	Furniture and high class joinery
S75 value of 75% of basic stress	Structural grade having grade stress
S50 value of 50% of basic stress	Structural grade having grade stress
C stressed construction	General construction grade for non-
GJ	General Joinery

(iii) All timber for permanent work in the building shall before use be approved by the Architect 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.

INSECT DAMAGE

All timbers whether graded or ungraded, and including shuttering scaffolding and the like shall be free of live borer, beetle or other insect attack 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.

SEASONING OF TIMBER

All carpentry timbers are to be seasoned to an average moisture content of not more than 20%. The Contractor is

to make available on site a meter for testing moisture content of all timber delivered.

PREPARATION AND PROTECTION OF TIMBER

All timber necessary for the works is to be purchased immediately and when delivered, is to be openstacked for such further seasoning as may be necessary. Preparation of timber is to be commenced as early as possible.

(i) 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.

SPECIES OF TIMBER

Only those timbers specified in these Bills of Quantities are to be used for the Works, unless alternatives are authorised by the Architect in writing.

PRESSURE IMPREGNATED TIMBER

(i) All timber described as pressure impregnated shall be impregnated under vacuum and pressure with the "Celcure" wood preservative with an average absorption of not less that 6.7kgs. of dry Celcure 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 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 surface shall be thoroughly brushed or soaked with "Celcure" salts applied in accordance with the manufacturer's instructions.

(ii) Any other method of timber impregnation will only be allowed at the Architect's approval.

TIMBER BUILT INTO MASONRY

Ends of timber built into walls shall be thoroughly brush treated with creosote or other approved preservative and clear space maintained around timbers where they adjoin the walls.

DIMENSIONS

Before putting in hand any joinery work, whether built-in or fixed later, the joiner is to ascertain and check on site all dimensions, which affect or govern the joinery work.

BLOCKBOARD

Blockboard shall be of approved local or imported manufacture, to B.S. 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.

PLYWOOD

Plywood to be of approved manufacture according in all respects with B.S. 1455; interior type to be Grade I and exterior type Grade II weather-resistant (not less than B.R. Bonding).

FIBREBOARD

Shall be insulating board to comply with B.S. 1142 of the types specified and of approved manufacture.

TEMPERED HARDWOOD

To be of approved manufacture in accordance with B.S. 1142, suitable for painting, prepared and fixed in accordance with the maker's instruction.

FLUSH DOOR

Shall comply in all respects other than the following modifications with B.S. 459 part 2:-

(a) To be 45mm thick and of the size stated in the Bills of Quantities.

(b) Core shall be seasoned softwood grade GJ.

(c) Hardwood lipping to be Graded thick tongued on back face into styles and rails of core mitred at angles and glued in.

(d) Semi-Solid Core to consist of 75mm wide style, top and bottom rails all framed together with two 500mm x 150mm look blocks framed in and 20mm intermediate horizontal rails at 50mm centres stub tenoned in each end to styles. Each horizontal rail and top and bottom lipping to have 12mm diameter hole bored through to ensure air circulation through core. Plywood facing to be 4mm thick.

(e) Solid Core (and half-hour type fire check doors) to consist of 75mm styles top and bottom rails with solid core of 12mm horizontal strips glued together under pressure. The strips to be put together with the grain alternating and to be tongued on edge and let into vertical grooves in styles. Plywood facing to be 6mm thick.

(f) A sample must be approved by the Architect before an order is placed and all doors must be equal

to the standard of the approved sample.

NAILS, SPIKES AND BOLTS

Nails, spikes and bolts shall be the best quality mild steel and of lengths and weights approved by the Architect. Nails shall comply with B.S. 1202, wood screws with B.S. 1210, and bolts with B.S. 916.

WORKMANSHIP

JOINTING

(i) All joints must be made as specified or detailed and the execution of all jointing shall be to the satisfaction of the Architect.

(ii) Jointing surfaces of all connections exposed to the weather are to be thickly primed except where glueing is specified. Surfaces are to be in good contact over the whole area of the joint before fastings are applied.

(iii) No nails, screws or bolts are to bolts are to be placed in any end split. If splitting is likely or is encountered in the course of the work, holes for nails are to be pre-bored at diameters not exceeding 4/5ths of the diameter of the nails. Clenched nails must be bent at right angles to the grain. Lead holes are to be bored for all screws.

(iv) Where the use of bolts and washers is specified the holes are to be bored from both sides of the timber and to be a diameter D + D/16 where D is the diameter of the bolts. Nuts must be brought up tight but care is to be taken to avoid crushing of the timber under the washers.

(v) Joints in joinery must be as specified or detailed and so designed and secured so to resist or compensate for any stresses to which they may be subjected. All nails, springs, etc., are to be punched and puttied.

(vi) Loose joints are to be made where provision must be made for shrinkage, glued joints where shrinking need not be considered and where sealed joints are required. All glued joints shall be crosstongued or otherwise reinforced.

(vii) Glues for load-bearing joints or where conditions may be damp must be of the resin type. For non-load-bearing joints, or where dry conditions can be guaranteed, resin or organic glues may be

used.

FRAMES WORK

The word framed shall mean and include all the best known methods of jointing woodwork together by mortice, tenon, dovetail or other methods, and for forming all necessary stops, mitres or mason's mitres in members which are moulded, rebated, etc.

PLUGGING

Plugging and fixing to walls in all trades shall be executed by "Rawlplugging" or similar approved proprietary methods all in accordance with the manufacturer's printed directions. Hacking of holes and filling with timber plugs will not be permitted under any circumstances.

CARPENTRY

(i) All carpentry shall be executed with workmanship of the best quality. Scantlings and boards 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.

(ii) All work shall be left with a sawn surface except where specified to be wrot.

(iii) 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 brads, nails, screws, etc., as necessary and as directed and approved.

(iv) Actual dimensions of scantlings for carpentry shall not vary from specified dimensions by more than +3mm – 1.5mm. Sizes and thicknesses of wrot carpentry timbers 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.

JOINERY

GENERALLY

All joinery work shall be wrot unless otherwise described.

(i) 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.

(ii) 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.

(iii) All joinery shall be executed with workmanship of the best quality in strict accordance with the detailed drawings, mouldings shall be accurately and truly run on the solid and all work planed, sand-papered 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 doors 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 edged to pinned, etc., as directed.

(iv) All bends, fillets and small members shall be fixed with round or oval brads or nails well punched in and stopped. All larger members shall be fixed with screws, the screws let in and pelleted over with wood pellets to match the grain.

(v) Cups and screws for fixing beads and fillets shall be spaced 150mm apart and 25mm from angles.

(vi) All joinery immediately upon delivery to the site is to be stored and protected from the weather.

(vii) All joinery is to be primed before fixing but no work is to be primed until it has been approved by the Architect.

(viii) All fixed joinery, which is liable to become bruised or damaged in any way, shall be properly cased and protected by the Contractor until the completion of the Works.

(ix) When natural finish is specified, the timber in adjacent pieces shall be matched and uniform or symmetrical in colour and grain.

SEASONING OF TIMBER

All joinery timbers are to be seasoned to an average moisture content of not more that 15%. The Contractor is to make available on site a meter for testing moisture content of all timber delivered.

PREPARATION AND PROTECTION OF TIMBER

(i) All timber necessary for the Works is to be purchased immediately and when delivered is to be openstacked for such further seasoning as may be necessary. Preparation of the timber is to be commenced as early as possible.

(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.

SPECIES OF TIMBER

Only those timbers specified in these Bills of Quantities are to be used for the Works, unless alternatives are authorised by the Architect in writing.

PRESSURE IMPREGNATED TIMBER

(i) All timber described as pressure impregnated shall be impregnated under vacuum and pressure with 'Celcure" wood preservative with an average absorption of not less than 6.7kgs of dry Celcure 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 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 surface shall be thoroughly brushed or soaked with "Celcure B" salts applied in accordance with the manufacture's instructions.

(ii) Any other method of timber impregnation will only be allowed at the Architect's approval.

TIMBER BUILT INTO MASONRY

Ends of timber built into walls shall be thoroughly brush treated with creosote or other approved preservative and clear air space maintained around the timber where they adjoin the walls.

DIMENSIONS

Before putting in hand any joinery work, whether built-in or fixed later, the joiner is to ascertain and check on site all dimensions, which affect or govern the joinery work.

BLOCKBOARD

Blockboard shall be of approved local or imported manufacture, to B.S. 3444, glued throughout and softwood or hardwood faced as herein after 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.

GUMPOLES

Shall be to the species eucalyptus saligna or eucalyptus maisenii, shall be of the minimum diameters stated and shall be stripped of bark before incorporation in the works.

The Contractors attention is drawn to the length of the poles, each of which must be in a single length; splicing will not be allowed.

PRICING NOTES

Prices for joinery work shall include for slightly rounding all arrises of timber members.

Prices for hanging doors must include for any type either folding, swinging or sliding.

Prices shall also include for all necessary glueing, spiking, nailing, and screwing whether specification mentioned or not.

Prices for items described as plugged shall include for fixing with screws.

IRONMONGERY

IRONMONGERY GENERALLY

(i) Ironmongery shall be fixed with suitable screws to match and prices shall include for this.

(ii) 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.

(iii) All locks, springs and other items of ironmongery with movable 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.

(iv) The keys of all locks shall have labels attached with door references marked on before handing to the Architect.

PRICING NOTES

Prices for fixing ironmongery shall include for fixing before woodwork is decorated and for removing lock handles, finger plates and the like and re-fixing and oiling after decorating is completed.

METALWORK

MATERIALS GENERALLY

All materials shall be the best of their respective kinds, free from defects and all works is to be carried out in the most workmanlike manner and strictly as directed by the Architect. The materials in all stages of transportation, handling and stacking shall be kept clean and protected from injury by breaking, bending or distortion and weather action.

MILD STEEL

Mild steel shall comply with KS. 02-18 and B.S. 15.

BOLTS, NUTS AND WASHERS

These shall be fabricated from materials which comply with K.S. 02-18 and B.S. 15, and each manufactured item shall comply with the appropriate standard.

TUBULAR RAILS, ETC.

Shall be galvanised mild steel "medium" duty to B.S. 1387.

HOLLOW SECTION TUBING

Square and rectangular hollow section tubing shall be hot rolled mild steel in accordance with Grade 43 C of B.S. 4360.

FABRICATED WORK

All screwed work shall have full threads conforming to B.S. 21. Welded work is to comply with the provisions of B.S. 538 and shall be carried out so that no distortion to the members occurs and upon.

GALVANISED SHEET STEEL

To be the thickness specified and of approved manufacture to K.S. 06-02 best quality mild steel sheets cold rolled close annealed patent flattened and hot dip galvanised.

ALUMINIUM

Wrought aluminium shall be of the alloys described and shall comply with B.S. 1474 – extruded round tube and hollow sections B.S. 1476 – extruded tube and hollow sections B.S. 1476 extruded bars, rods and sections B.S. 1477 – plate.

FORGING

All straps, bolts and similar work shall be forged neat and clean from the anvil.

WELDING

All welding shall be neatly and cleanly executed and no excess weld metal at joints will be accepted. All welds are to be ground smooth on completion and prices are to include for this.

WORKMANSHIP

All structural steel work is to be erected in accordance with B.S. 449. "The use of structural steel in Buildings".

PLUMBING INSTALLATIONS

RAINWATER OUTLETS

PVC rainwater outlets shall be manufactured to the sizes and profiles measured herein from heavy grade PVC, with a minimum 75mm wide flange all round the top for fixing to roof surfaces, fully bedded in hot bitumen and jointed to the PVC rainwater pipes.

Fulbora type coated cast iron outlets, with grating, hook bolt and clamping device shall be cast into concrete or built into concrete or built into blockwork in the positions and to the elevation shown on the drawings, and jointed with caulked lead to rainwater pipes.

TESTING

Rainwater installations shall be subjected to a water test and proved capable of withstanding a pressure of 1.05m head of water to the satisfaction of the Architect. Any defects are to be made good by the Contractor and the whole system left sound and perfect.

ROOF FINISHES

PAVINGS AND PLASTER WORK

QUALIFICATIONS TO THE RULES OF THE S.M.M.

Notwithstanding the provisions of S.M.M. Clause S2 (a) preparatory work such as hacking concrete, racking out joints for key etc., shall be deemed to be included.

Prices for paving shall include for any extra thickness consequent upon the floor not being finished to the true levels and also for all temporary rules and for all formwork to stop pavings at openings or edges as required. Prices for tile and similar paving shall include for any pointing to exposed edges.

Plastering to walls has been measured over concrete columns lintols, etc., flush with wall face, and prices for

plastering shall include for any necessary dubbing out consequent upon surfaces not being finished to true levels.

MATERIALS

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 respective approved sample.

CEMENT

Shall be as described in "Concrete Works"

LIME

Shall be as described in "Walling"

SAND

The sand shall be as described for fine aggregate in "Concrete Wrk" and shall be well graded to a suitable fineness in accordance with the nature of the plaster or paving in order to obtain the finish directed.

WATER

Shall be as described in "Concrete Work".

WATERPROOFING, COLOURING AND HARDENING COMPOUNDS

All waterproofing, colouring and hardening compounds are to be used strictly in accordance with the manufacturer's printed directions.

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.

EXPANDED METAL LATHING

Expanded metal lathing shall be 22 gauge 9mm mesh ribbed lathing as B.S. 1369 dipped in asphaltum paint. The edges of sheets to be lapped 50mm and joints staggered and sheets to be fixed at 500mm centres to all supports with heavy galvanised staples, or wired with galvanised steel wire.

WORKMANSHIP

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 hole and chases filled with mortar before paving and plasterwork is commenced. In no circumstances will the Contractor be permitted to cut chases, holes and the like in finished pavings or plasterwork.

PROPORTIONS OF MIXES

A mix referred to a 1:4 shall mean 1 cubic metre (1498Kgs) of cement to 4 cubic metres of sand and other mixes shall be construed in like manner.

MIXING

All materials for pavings and plastering must be measured in proper gauge boxes in the proportions specified and mixed in an approved power driven mixer for not less than two minutes per batch. The mixer shall be used as close as practicable to the works and no partial set materials shall be used or remixed.

PREPARATION FOR AND FINISH TO IN-SITU PAVING

(i) Where practicable in-situ paving and screeds are to be laid while the concrete is still green. When this is not practicable the concrete is to be well washed and brushed perfectly clean with a steel wire brush, to remove all laitance and to give a roughened face as a key and then kept wet for at least seven days before the paving is laid and on the day of laying the surface is to be only damp with all surplus water removed and painted with cement and sand (1:1) grout immediately before commencing the paving. The grout is to be applied continuously in front of the paving and not in large areas that will dry out before the paving is applied. All paved surfaces shall be finished hard and smooth with a steel trowel unless otherwise specified.

(ii) Paving shall be protected during the first stage of hardening from the harmful effects of sunshine, dry winds, rain or water. In exposed positions they are to be covered with well wetted layer of saw dust, hessian or other approved material and this layer is to be kept damp for at least seven days, during which period no traffic is to be allowed over the paving. When floor tiles or similar finishes are to be applied, care shall be taken to protect the screeds to receive them. When no longer required as protection to the surface the material is to be removed and the paving left clean and perfect.

ROOF SCREEDS GENERALLY

Roof screeds are to be laid to falls and currents of 1:80 with a minimum thickness of 20mm at rainwater outlets, and are to be finished to the entire satisfaction of the specialist executing the waterproofing to roof.

CEMENT AND SAND ROOF SCREEDS

Roof screeds are to be of cement and sand mixed in the proportions of 1 cubic metre of cement to 5 cubic metres of sand. The surfaces of the screed is to be trowelled perfectly smooth to receive other roofing finishes.

SCREEDS TO RECEIVE FLOOR AND WALL FINISHES

These are to be finished with a steel trowel to a hard smooth, true and level surface. Screeds to receive tiles, etc. which are to be bedded in mortar are to be well scratched to form a key.

CEMENT AND SAND PAVING

To be of cement and sand (1:4) laid in one operation and finished hard and smooth with a steel trowel.

WATER PROOF CEMENT SCREEDS

To be as last waterproofed with "Sealocrete Double Strength Pre-mix Solution" mixed at the rate of 2.25 litres to each 50Kgs. of cement.

PRECAST CONCRETE PAVING SLABS

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).

Tiles shall be laid by an approved flooring Specialist to patterns as directed by the Architect using adhesives recommended by the manufacturer in writing. The tiles shall be laid with straight joints in each direction. Upon completion the floors shall be thoroughly cleaned and twice machine polished using a polish recommended by the tile manufacturer.

CERAMIC TILE PAVING

Ceramic tile pavings and matching skirtings and nosings are to be laid on prepared screeds. The tiles are to be soaked in clean water for at least six hours before use and bedded in cement and sand (1:4) approximately 3mm thick with straight joints in each direction. Upon completion grout in matching cement to match tiles and wash and clean down. Tiles are to be cut with an electric tile cutting saw.

TERRAZZO TILE PAVING

To be hard, dense, pressed tiles manufactured from terrazzo as specified hereafter and in colours to be selected by the Architect. The tiles are to be laid on a prepared screed and soaked in clean water for at least six hours before use and bedded in cement and sand (1:4) approximately 2mm thick with straight joints in both directions. Upon completion grout joints in matching coloured cement and machine grind and polish.

GRANOLITHC AND TERRAZZO PAVING AND WALL FINISHES

Generally

Construction joints between bays of pavings are to be straight and vertical and are to coincide, as far as possible with those in the concrete under.

After spreading and before finally striking to screed levels the pavings, etc., are to be lightly tamped, each stage of the laying operation is to be properly carried out at the optimum degree of stiffness of the mix so that the aggregate remains correctly distributed throughout the pavings, etc. and so finished that the surface is true to level, dense smooth and free of laitance and other defects and blemishes. The use of dry cement or sand to absorb surplus moisture will not be allowed.

The thickness of the pavings, etc., in these Bills of Quantities include for the combined screed or backing and the Granolithic or terrazzo finish.

Screed and Backing

To be in cement and sand (1:4) and of appropriate thickness.

GRANOLOTHIC

(1) To be composed of 900Kgs. of cement to cubic metre 1:21/2 by Volume of 6mm to 3mm with not more than 15% to pass No. 50 B.S. sieve clean blacktrap chippings free of dust, laid or applied to screed or backing whilst they are still green.

Paving to be 20mm minimum thickness granolithic laid on a screed to make up full thickness specified and finished hard and smooth with a steel trowel.

(2) Dadoes to be 9mm minimum thickness granolithic applied to a backing to make up full thickness specified.

Polished granolithic to be finished with a metal roller and all surplus Cement lightly brushed off when surface is sufficiently hard to resist dislodgement of aggregate. When the surface is hard enough it shall be wet ground using a machine until the aggregate is uniformly revealed and then well washed with clean water. Any small voids or holes left in the surface are to be filled with cement grout and rubbed down by hand. Mouldings etc., not accessible to machines are to be hand rubbed and polished with carborundum. After an interval of 1 to 3 days the surface is to be finally machine ground using a fine abrasive.

TERRAZZO

(1) To be composed of one part of Snowcrete, Colourcrete or other equal and approved white or coloured cement to two parts (1:2) by volume clean marble chippings well washed and free from dust. The marble chippings may vary in colour and from 3mm to 20mm dependant on the effect required and sample areas must be prepared for the Architects approval.

(2) Pavings to be 20mm minimum thickness terrazzo laid on screed to make up the full thickness specified

(3) Dadoes to be minimum thickness 9mm terrazzo applied to a backing to make up the full thickness specifies.

(4) Polished terrazzo to be finishes as granolithic (4) preceding.

(5) Washed terrazzo to be washed and lightly bruches before final setting so as not to dislodge any agrregate but to leave textured a surface.

DIVISION STRIPS

To be set in position before paving is commenced and embedded straight and true.

PREPARATION FOR AND PROTECTION OF PLASTER FINISHES

All surfaces to be plastered or rendered must be brushed clean with a wire brush and well wetted before plaster is applied. Concrete surface are to be well hacked and stone or block walls and hollow tile soffits are to have joints well raked out clean at least 10mm deep to form a key before plastering or rendering. All plaster and rendering shall be kept continuously damp for seven days after application.

Where plasterwork is specified in more than one coat the undercoat shall be well scored with undercut scratches and shall be allowed to thoroughly dry and set before application of the subsequent coat.

The plaster work shall be protected during the first stage of hardening from the harmful effects of sunshine, dry winds, rain or water and shall be kept damp for at least seven days.

CEMENT PLASTER

(i) Where applied in one coat to be cement sand (1:4) not less than 12mm thick finished

with a steel trowel or wood float as hereinafter specified.

(ii) Where applied in two coats, the first coat to be cement and sand (1:5) not less that 8mm thick and the second coat to be cement and sand (1:3) not less that 4mm thick finished with a steel trowel or wood float as hereinafter specified.

TEXTURED EXTERNAL CEMENT PLASTER

To be minimum 15mm thick applied in one coat and finished with a wood float to an uneven surface. The texture must be consistent with a sample panel prepared under the Architect supervision.

INTERNAL LIME PLASTER

(i) To be applied in two coats of finish not less 12mm total thickness. The rendering coat shall be in the proportion of cement, lime and sand (1:2:9) and the finishing coat not less than 1.50mm thick shall consist of fine sieved lime putty with 10% of cement thoroughly incorporated immediately before use, trowelled hard and smooth with a steel trowel and sprinkled with water during the process.

(ii) The first coat must be must be well scored to form a key and at least fourteen days elapse between the completion of any portion of the rendering coat and application of the finishing coat.

WALL TILING

(i) Glazed wall tiles shall be of sizes specified herein and in colours to be selected by the Architect. For exposed edges and angles tiles with one or two edges glazed shall be used.

(ii) Screed to receive tiles to be 10mm thick of cement and sand (1:4) well scratched to form a key.

(iii) The tiles are to be soaked in clean water for at lease six hours before use and fixed by bedding in cement and sand (1:3) with 1.5mm straight joints in each direction.

(iv) Alternatively tiles may be in bedded in "Richafix" or other equal and approved tile fixing compound applied strictly in accordance with the manufacturer's printed instructions. Walls are to be dry before tiles are fixed and tiles are to be soaked in water before use. Tiling is to be set and closely straight jointed with 1.5mm joints. If non-plug tiles are used cardboard or

plastic spacer pieces are to be used to obtain constant joint width.

SAMPLE

(i) The Contractor shall prepare samples 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.

(ii) Samples shall be prepared at least four weeks before the work is commenced.

MAKING GOOD

The Contractor shall cut out and make good all cracks, blisters and other defects and leave the whole of the plaster work perfect at completion. When making good defects the plaster shall be cut out to a rectangular shape with edges undercut to form dovetailed key all finished flush with face of surrounding plaster, all at the Contractor's expense.

GENERAL

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.

CLEAR SHEET GLASS

The clear sheet glass shall be ordinary glazing quality.

PLATE GLASS

Polished plate and Georgian wire polished plate glass to be selected glazing quality.

FLOAT GLASS

To be "Pilkingtons" float glass or other equal and approved.

OBSCURED GLASS

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

MIRROR

To be selected glazing quality plate glass mirror s of approved manufacture and fixed at all corners to walls with rawplugs and brass screws with removable chromium plated dome heads.

PUTTY

(i) The putty for glazing to wood sashes is to be linseed oil and powdered whiting free from grittness putty all as B.S. 544 (Type 1 putty).

(ii) The putty for glazing to metal windows is to be gold size metal window putty specially designed for tropical use, all as B.S. 544 (Type 2) putty or patent mastic putty if approved by the Architect.

(iii) 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.

GLAZING

(i) Glass panes shall be cut to sizes to fit the openings with not more than 1.5mm play all round.

(ii) The rebates of all windows shall be painted one coat before puttying.

(iii) All glazing to wood frames shall be sprigged and glazing to metal frames shall be clipped.

(iv) All glass fixed to aluminium windows to be fixed in accordance with the manufacturer's instructions.

(v) All glass, where fixed with putty is to be back and front puttied and care must be taken to ensure that it does not project beyond the sight lines of panes and is to be neatly mitred at angles.

(vi) Putty which has not set hard within seven days must be removed and the glass re-puttied at the Contractor's expense.

BEDDING STRIPS

Washleather, velvet, etc. bedding strip to edges of glass is to be of sufficient width to be turned over 6mm to each side of pane and shall be trimmed to the sight lines of the pane.

GENERALLY

Allow for removing all cracked or broken panes of glass, cleaning rebating and re-glazing with new glass throughout the progress of the works and for cleaning all glass on both sides and leaving perfect upon completion.

PRICING NOTES

Each pane of glass has been measured to the nearest 25mm above both with in width and height. Louvre blades have been similarly measured in regard to length.

Prices for glazing shall include for painting rebates of frames before fixing.

PAINTING AND DECORATING

MATERIALS

(i) The primers, paints, plastic emulsion coating, are to be approved by the Architect and the manufacturer must guarantee to give all times any necessary technical advice called for by the Architect.

(ii) The materials for other finishes be of best quality available of approved manufacture.

(iii) Before commencing painting, the Contractor shall submit to the Architect for approval a list of all the brands of paints and finishing including the necessary primers and undercoats he intends to use and immediately upon being so approved orders shall be placed and total requirements obtained for the works.

(iv) Once approved no other brand of material shall be used without the express permission of the Architect in writing.

MORDANT SOLUTION

All galvanized metalwork to be painted shall first receive a coat of a proprietary mordant solution.

KNOTTING

To be shellac knotting to B.S. 1336.

STOPPING

To be composed of linseed oil putty, white lead, and gold size suitably proportioned and mixed.

WAX POLISH

Wax polish is to be furniture polish of an approved proprietary brand.

SUPPLY AND PREPARATION

(i) All paints, distempers, etc, shall be delivered on site intact in the original drums or tins and shall be mixed and applied strictly in accordance with the manufacturer's printed directions. The only additions which will be allowed to be made will be liquid thinners, driers, etc, supplied by the makers for the purpose. No paint, distemper, etc shall be thinned more than approved by the Architect.

(ii) Paint for external work shall be of the special quality recommended by the manufacturers for external use.

GENERAL WORKMANSHIP

(i) The priming and undercoats shall be the correct brands and tints to suit the respective finishings coats all in accordance with the manufacturer's directions.

(ii) All surfaces must be thoroughly cleaned down prior to painting and decorating work, and no external painting may be done in rainy weather. All paint must be thoroughly well worked on and excess of paint in any coat must be avoided.

(iii) All brushes, tools and receptacles are to be kept clean and free from dirt or old paint and are to be thoroughly cleaned each time after use.

(iv) Each coat is to be well brushed into the surface so that every part, including joints, angles, etc, is adequately covered, but care is to be taken to avoid excessive or uneven thickness of paint film, particularly at edges and in angles, etc.

(v) Each coat of paint, etc shall be properly dry and shall be well rubbed down with fine sand paper and be brushed clean before the next coat is applied. The paint work shall be finished smooth and free from brush marks.

(vi) Where so required or directed, painting shall be in part colours and picked out and cut in and prices shall include for this.

(vii) All ironmongery, metal or plastic plates and electrical outlets and fittings and the like shall be removed before painting is commenced, and re-fixed on the completion of the work.

(viii) No spray or roller painting will be allowed unless permission is given by the Architect.

(ix) The contractor shall so arrange his programme of work that all other trades are completed and away from the area to be painted when painting begins.

SAMPLE COLOURS

All colours will be selected by the Architect from the B.S. Range of colours. Samples and colour cards of all paints, distempers, and materials shall be submitted for approval of the Architect before the same are applied and sample panels shall be executed for the Architect's approval where and when directed. Such samples when approved shall become the standard for the work.

PREPARATION AND PRIMING OF PAINTED SURFACES

(a) Plastered surfaces

(i)Plaster surfaces are to be perfectly smooth, free from defects and ready for decoration. All such surfaces shall be allowed to dry for a minimum period of four weeks and rubbed down with No.2 grade sand paper to remove trowel marks stains, etc., after the priming coat all cracks and imperfections are to be made good with "Polyfilla" (or similar approved hard filler) well rubbed down and then touched up with the priming coat.

(ii)Priming for plastic emulsion paint shall be the paint thinned with 25% water.

(iii)Priming for oil paint shall be with an alkali-resistant primer

(b) Cement plastered, Concrete and Block wall surfaces

(i) Surfaces shall be brushed so as to be entirely free of dust, dirt, loose material, etc., immediately prior to decorating.

(ii) Priming for plastic emulsion paint shall be the paint thinned with 25% water

(iii)Priming for oil paint shall be with an alkali-resistant primer.

(c) Ferrous Metalwork

All surfaces shall be thoroughly brushed down with wire brushes to remove all scale, rust, etc., and rubbed down

with No. 2 grade sand paper and brushed and left perfectly clean immediately prior to decorating.

(Shop-primed Surfaces to receive oil paint shall have all bare places touched up with approved metal zinc chromate primer.

Unprimed surfaces shall be given one coat primer as last.

Galvanised surfaces shall be treated before painting with mordant solution. The surfaces shall then be thoroughly washed down with clean water, allowed to dry and primed as last.

Coated surfaces already treated with bituminous solution shall receive an insulating coat of anti-bitumen primer or shellac knotting.

(e) Fibreboard Surfaces

Surfaces shall be lightly brushed to remove all dirt, dust and loose –particles and have all nail holes or other defect stopped with an approved stopping compound, rubbed down smooth and left with a texture to match surrounding material. Nail heads shall be treated with zinc chromate primer prior to stopping.

(i) Priming for plastic emulsion paint shall be the paint thinned with 25% water.

(ii) Priming for oil paint shall be with an alkali-resistant primer.

(f) Hardboard surfaces

Priming for plastic emulsion shall be the paint thinned with 25% water.

Priming for oil paint shall be with a thin oil primer.

(g) Wood surfaces to receive paint

The woodwork shall have all knots or resinous parts carefully treated with self knotting aluminium primer. All cracks, nails or other holes shall be thoroughly cleaned out and after priming, all such cracks etc., are to be filled with matching hard stopping which is to be rubbed down flush with the adjoining surface. Priming for oil paint shall be with self knotting aluminium Primer. The bottom edges of all joinery work is to be primed before fixing. The back of all joinery work is to be primed before fixing.

PREPARATION, PRIMING ETC. FOR WOOD SURFACES TO

RECEIVE CLEAR TREATMENT

All wood surfaces to receive clear treatment such as varnish, polyurethane etc., shall be rubbed down to a satin finish with fine sandpaper immediately prior to application.

The first coat of polyurethane or similar clear treatment is to be well rubbed in with a cloth pad and the successive coat applied by brush. Each successive coat (except final coat) to be lightly rubbed with fine steel wool.

COVERING UP AND PROTECTING

Cover up all floors, etc. as far as is practicable with dust sheets when executing all painting and decorating work.

LEAVE CLEAN

Paint splashes, spots and stains shall be removed from floors, woodwork, etc. and damaged surfaces touched up and the whole of the woodwork left clean and perfect upon completion to the satisfaction of the Architect.

REPAINTING EXISTING PAINTED SURFACES

GENERAL PREPARATION

The Contractor is to carefully examine all surfaces to be redecorated for sign of any defects in the underlying structure. Signs of any dampness, alkali action and loose or unsound plasterwork, loose putty etc., are to be reported to the Architect before any further work on that area is put in hand.

PREPARATION OF PLASTERED SURFACES

a) To be repainted with plastic emulsion or distemper

After general examination of surfaces for defects as above, the surfaces are to be washed and brushed down with a stiff fibre brush to remove dust or dirt preparatory to applying paint and all small cracks are to made good with hard stopping.

b) To be painted with oil paint

After general examination for surfaces of defects as above, the surfaces are to be washed and brushed down with stiff fibre brush to remove dust or dirt preparatory to applying paint and all small cracks are to be made good with hard stopping.

Rub down paint which, in the opinion of the Architect, is sound, firmly adhering and without sign of underlying defect, with waterproof glass paper as required to form a good key, rub down crazed, flaked, peeling blistered, loose and rough local patches as required to produce a fair and even surface throughout, remove all defective paint and wash down with clean water.

Bring forward local areas from which paint has been removed and other slight irregularities with alkali-resistant primer, filler and one undercoat, all as previously described.

Touch up filling to cracks, etc., with alkali-resistant primer and an undercoat, all as previously described.

PREPARATION OF METAL SURFACES

To be repainted with Oil Paint

Wire brush or scrub as required to remove all rust and all crazed, flaked, peeling, blistered, loose and perished paint. The metal under such areas is to be left bare and clean.

Paint which, in the opinion of the Architect, is soundly adhering and without sign of underlying rust, may be left on but is to be well rubbed down to form a sound key for the new paint.

All bare surface exposed by the above preparation are to be primed and painted one undercoat before the main first coat is applied.

PREPARATION OF WOOD SURFACES

To be repainted with Oil Paint

Thoroughly clean all paint which, in the opinion of the Architect is sound, firmly adhering and without sign of underlying defects and afterwards rub down with pumice stone or waterproof glass paper and rinse down with clean water. Cleaning is effected by washing down with suitable detergents (of such dilution that the paint is not adversely affected) followed by thoroughly rinsing with clean water. The cleaning agent is to be applied from the bottom upwards and the rinsing is to be from top downwards.

(i) Thoroughly examine for defects in the woodwork and sterilize areas on which there is mould, and re-putty sashes, etc. as necessary.

(ii) Except as provided in (iv) hereafter, remove all which is crazed, laked, peeling, blistered, loose and decayed or otherwise defective by carefully burning off or removing with an approved paint stripper well rub down as required to produce a fair and even surface throughout and rinse down with clean water.

(iii) Rub down with pumice alone or waterproof glass paper all paint which is sound apart from uniform chalking of the surface and rinse down with clean water.

(iv) Thoroughly clean out all cracks, crevices, open joints, holes, etc. coat with appropriate priming paint and fill in with hard stopping. When stopping has set rub down until flush with the adjoining surfaces.

(v) Cut out all loose knots and stop as described in (v) above and thoroughly coat all exposed sound knots with knotting.

(vi) Touch up with priming paint and undercoat all surfaces which on completion of the foregoing preparations are bare of paints and bring forward local areas from which defective paint has been removed and other slight irregularities with prime, filler and undercoat as previously described.

(b) To be redecorated with Polyurethane

Thoroughly clean all existing surfaces and rub down with pumice stone or waterproof glass paper and rinse with clean water.

PRICING NOTES

Prices must include for rubbing down with glass paper between successive coats and all cuttings in connection therewith. Prices shall include for all work in parti-colours and for all picking out and cutting in connection therewith.

EXTERNAL WORKS

GENERALLY

The specification of works and materials in this section which repeat similar work in preceeding bills shall be deemed to be the full specification of work and materials contained in the preceding bills.

MURRAM

To be clean hard murram free from loam, top soil or clay.

HARD FILLING

To be crushed rock, broken brick, broken concrete or other approved hard granular materials broken to pass not greater than a 150mm ring or to 75% of the finished thickness of the layers being compacted whichever is less and graded so that it can be easily and thoroughly compacted by rolling. The filling is to be laid in layers each of a consolidated thickness of not exceeding 225mm.

ROAD AND PARKING AREA CONSTRUCTION

(a) Preparation of Formation

(i) Properly shape formation surface and consolidate and regulate to an even and uniform gradient parallel to the ultimate finished surface.

(ii) All soft spots are to be excavated and filled with hard filling thoroughly consolidated.

(b) Compaction of Filling

Each layer of hard filling is to be compacted with a smooth faced three wheel or tandem roller of a weight to be specified by the Architect. Rolling will continue until the Architect is satisfied that no further compaction can be achieved but in no case to be less that eight passess of the roller.

(c) Surface finish to filling

The surface of filling shall be blinded with graded quarry chips sufficient to fill all interstices and rolled as above to proper falls, gradients and cambers.

PREMIX SURFACE TREATMENT

(i) Stone

The stone shall be hard, dense stone of a uniform blue/grey colour and shall be free from dust impurities, overburden or admixture of softer stone. It shall withstand when wet a crushing stress of 4,000 Lbs. Per sq. in. and its aggregate value shall not exceed 20%. It shall be crushed so as to provide a material of generally cubical shape, and shall be screened to produce to sizes specified below.

The grading of the road stone for the surface course shall be within the following limits:-

		% passing	
(a)	39mm (nominal) chippings		
	Min. Max.		
65m square mesh		85%	95%
38mm " "		40%	60%
21mm " "		0%	5%
(b)	19mm (nominal) chippings		
	19mm square mesh	90%	100%
	9mm " "	0%	5%
(c)	13mm (nominal) chippings		
	13mm square mesh	90%	100%
	6mm " "	0%	5%
(d)	Screenings		
	9mm square mesh	90%	100%
	6mm " "	0%	5%

(ii) Bitumen Binders and Bituminous Products Generally

The grades of bitumen binders and bituminous products referred to below are usually described, for the sake of convenience, in terms of the nomenclature used by "The Shell Company of East Africa." Equivalent grades by other manufacturers will be approved by the Architect provided that in his opinion, the product is of high quality an equivalent specification.

Prime and lack Coats Shelmac M.C.O. or M.C.I.

First (seal coat) and Second (wearing surface) Coats

Maxphalte 80/100 or Shelmae 500/700

First (seal coat) and Second (wearing surface) coats

Maxphalte 80/100 or Shelmac 500/700

(iii) Priming Coat

Immediately on completion of rolling, the surface of the base course shall first be well watered and then primed with Shelmac M.C.O. or equal approved at a maximum of 6.50 S.M. per 4 litre in the full width of the base course. The work may then be left and surfaced at the Contractor's convinience.

(iv) Bituminous Cold Aggregate Premix surface Treatment

(a) Bituminous cold aggregate premix shall be applied in two courses, a 38mm compacted blinder course and 13m compacted topping carpet. Mixing shall be carried out at 200/225^{0}F in approved power operated plant which shall incorporate a twin-shaft, paddle mixer. If stored the premix shall not be permitted to have its temperature reduced below 180^{0}F. Premix shall be spread within 3 hours of removal from the mixing plant.

(b) 38mm Binder course shall consist of

Percentage

of weight

38mm nominal chippings 93%

Filler 3mm to dust $3^1/_2$%

Shelmac $3^1/_2$%

(c) 13mm Topping Carpet shall consist of:-

13mm nominal chippings)
two thirds)

Screening one third 92.25%

Shelmac 4.75%

(d) Laying

The Premix shall be laid to the required thickness using an approved machine, and immediately rolled one pass 4/5 ton roller. After leaving the surface from 4 to 6 hours, the final compaction shall be applied in two passes of a 10/12 ton roller.

PRECAST CONCRETE KERBS CHANNELS AND QUADRANTS

(i) Precast concrete kerbs channels and quadrants shall conform in all respects with B.S. 340.

(ii) They shall be set on 100mm thick concrete base 200mm wider than their thickness and haunched up back face 100mm high with similar concrete.

(iii) Kerbs and channels to curves are to be accurately, set out with radiating heading joints.

PRECAST CONCRETE PAVING SLABS

To be precast concrete slabs of the sizes specified in accordance with B.S. 368, bedded, jointed and flush pointed

in cement lime mortar (1:2:9).

DRAINAGE

DRAIN TRENCH EXCAVATIONS

Generally

(i) Trenches to be in straight lines and falls as shown on Drawings or as directed

(ii) The Contractor shall report to the Architect and obtain his approval when secure bottoms have been reached and are ready to receive concrete.

Any such work put in hand before receiving his approval shall, if so required, be removed and new work substituted, after the Architect's approval to the excavations has been obtained, all at the Contractor's expense.

(iii) The Contractor shall keep all excavations free from water by pumping, temporary drains or other means as necessary or directed. Any work damaged by water shall be replaced at the Contractor's expense.

(iv) Where rock is used for back filling it is not to exceed 150mm gauge and all interstices shall be properly filled in with small pieces and fine binder.

(v) The first back filling in pipe trenches is to be of approved materials, imported if necessary, free from rock or stone and to be watered and carefully tamped over around the pipes until they are covered to a depth of 300mm subsequent filling is to be in 150mm layers, watered and rammed.

(vi) Mechanical rammers may not be used until the pipes have been covered to a depth of 1 metre.

(vii) Any disturbances of or damage to the pipes during backfilling must be made good by the contractor at his own expense.

(viii) Surplus materials is to be laid over the trench to allow for settlement of filling and may depressions or subsidence below the level of the adjacent ground shall be filled up, as and when

necessary, until the end of the Defects Liability period.

LAYING AND JOINTING CONCRETE BASE DRAIN PIPES

(i) Laying is to be commenced at points of junction with existing drains or at points of discharge.

(ii) Each line of drain is to be laid in a perfectly straight line to even gradient.

(iii) Before each pipe is laid, it shall be examined to ensure that the bore is clean and any foreign material removed. Each pipe shall be stuck with a wooden mallet to test for soundness, and any cracked or damaged pipes rejected. Ends of all pipes must be clean before jointing.

(iv) Immediately after jointing as before described, a tight fitting wad or scraper shall be drawn several times through the bore of the pipe joints are to be protected from injury by rain, soil, water, etc., until they have set hard.

(v) Plug open pipes and junctions, whenever work is suspended, to prevent the entrance of rubbish during construction.

CONCRETE BEDS AND SURROUND, ETC, TO PIPES

(i) When pipes are bedded on concrete the bed shall be first laid to correct falls and levels with recess formed in same for the pipe socket so that the whole of the soffite of the pipe barrel bears evenly on the bed.

(ii) When the concrete has set, a thin layer of mortar (1:2) shall be spread on the bed to receive the pipe's barrel, sufficient to ensure that surplus is squeezed out when the pipe is laid and finally adjusted to level. After jointing the recesses around sockets shall be filled with concrete of the same mix as the bed and the haunching or surrounding completed.

TESTING DRAINS

The contractor will be required to inspect and test each length of drain before any refilling of the trench takes place.

FENCING GENERALLY

The level of the top of fencing is to be as directed by the Architect but is generally to follow the mean level of the ground on the line of the fencing. Any minor excavations on the line of the fencing to enable this to be achieved to be allowed for in the rates.

CHAIN LINK FENCING WITH CONCRETE POSTS

Fence posts to be concrete Class "D" finishes fair on all exposed surfaces.

Intermediate fence posts shall be paced at 3.00 metres intervals, to be of 125mm x 125mm section tapering to 75mm x 75mm at top and 2800mm long overall.
The post to be reinforced with four 8mm diameter mild steel bars with No. 12 S.W.G. wire binders at 600mm centres and six times holed for wires or fixing bolts.
Raking struts to be of 200mm diameter section and 3000mm long overall with one end splayed to suit notch in main post. The strut to be reinforced with four 20mm diameter mild steel bars with No. 12 S.W.G. wire binders at 500mm centres and four times holed for wires or fixing bolts. At the junction with the main or gate post the strut is to be bolted on with one 20mm diameter wrot bolt with head, nut and two washers.
Main posts, spaced at 9.00 metres centres, and corner posts to be of 150mm x 150mm section and 2800mm long overall. The post to be reinforced with four 10mm diameter mild steel bars with No. 12 S.W.G. wire binders at 600mm centres, ten times holed for wires or fixing bolts and twice notched as required to receive end of raking struts. Two side faces of post to have set of angle cleats and vertical clamp bars as last described bolted on.

Concrete filling around post bases to be in plain concrete Class "E".

Intermediate and main post bases to be excavated to allow posts to be let into the ground for a vertical depth of 750mm and filled with 600mm diameter x 400mm deep concrete well packed around post, the excavated material to be part returned, filled and rammed and the surplus removed.

Raking strut bases to be as last but let into the ground for a vertical depth of 600mm and filled with 450 x 450 x 300mm deep concrete.

Barbed wires to be No. 8 S.W.G. galvanized mild steel fixed complete with all galvanized staples strainers winding brackets and other necessary fittings. Fasten to intermediate concrete posts with No. 16 S.W.G. galvanized annealed mild steel wire.

Tying wire for securing chain-link fencing to line wire to be No. 16 S.W.G. galvanized annealed mild steel wire.

Chain-link fencing to be manufactured from No. 16 S.W.G. galvanized annealed mild steel wire woven into 50mm mesh with barbed top and 2000mm high or as specified. The fencing is to be supported by three single and one double (at top) lines of line wire and fastened to each line at 900mm horizontal intervals with tying wire.

LANDSCAPING AND SITE DEVELOPMENT

BUSH CLEARING

All trees, stumps, shrubs, undergrowth and other vegetation shall be completely cut down and all roots entirely grubbed up and burned at a central point. All arising will be left on the site for use in the garden development. Where roots are grubbed up in areas which are to remain at existing ground level the resulting holes shall be filled up with approved material rammed in 150mm layers up to the existing ground level.

GRASSED AREAS

(i) Areas to be grassed shall be cleared of all debris and roots and dug up to a depth of 300mm.

(ii) Where outcrops of rock or murram occur, these will be covered with suitable soil to a depth of 150mm.

MAINTENANCE

The trees, grass and flowers shall be watered and maintained until well established. The contractor is advised to include all this in his rates.

GRASS PLANTING IN THE WORKS

Grass planting over rock or compacted fill material

Where grass is to be established in areas where decomposed or solid rock or other fill material exists closer to the finished surface than 200mm, the following grass planting procedure shall apply.

The rock shall be removed to a depth of 200mm below the finishes surface. The rock shall then be ripped or otherwise broken up to a further depth of 150mm and lightly compacted; 200mm of selected red soil shall then be

spread over the surface. The whole shall then be lightly rotavated to obtain a homogenous mixture to a depth of 150mm. Prior to planting, the soil shall be raked and 50 gm each per square metre of bonemeal and hoof horn meal shall be spread on the surface.

The grass shall be cuttings of approximately 200mm long and shall be planted at 150mm intervals, 150mm bured in the soil. Planting shall be carried out with the aid of a wooden peg and the soil well rammed around the cuttings.

The grass shall be systematically watered, cut and weeded to maintain it in a healthy state throughout the maintenance period.

The rate for grass planting over rock shall include for the ripping of the rock, provision of grass and all subsequent materials, tools, etc.

TREES AND PALMS PLANTING

Pits shall be 0.9 metre diameter x 0.9 metre deep. The sides shall be undercut and the soil mixture shall be as follows:-

4	parts approved red soil
1	part sewage sludge.

These shall be thoroughly mixed together on the mixing ground and specifically set a side for the purpose. The mixture shall be filled into the pits in 300mm layers, firming with hard earth rammers at each layer. The surface is to be shaped into a bowl-depression 200mm deep to assist in watering.

The tree plants are to be at least 0.9 metre high when brought to the works for planting.

In the two days before planting takes place, each pit is to be thoroughly soaked with 100 litres of water. The trees or palms shall be planted and sticked in an approved manner, well watered and maintained throughout the maintenance period.

The rates for tree planting shall include for provision of plants and materials described in this clause.

PLANTING SHRUBS

Pits for shrubs shall be 750mm diameter x 750mm deep. They shall be excavated, refilled, planted, maintained and paid for identical manner to trees and palms. All shrubs are grouped together and the tenderer is to give a uniform rate that covers the cost of any of the shrubs.

HERBACEOUS BORDERS, PLANT BOXES AND SIMILAR AREAS

Plant boxes, herbaceous borders and similar areas shall be excavated, refilled, planted, maintained and paid for in an identical manner to trees and palms, excepting that four parts of forest soil shall be used in place of red soil and 50 gm each per square metre of bonemeal and hood and horn meal shall be spread on the surface of the soil mixture before planting.

BOUGANVILLEA HEDGES AND TABLES

Bouganvillea hedges and tables formed on fencing and fencing tables shall be planted between 100mm diameter cedar fence posts in a pit 0.75 metre deep and 0.75 metre diameter filled as described above.
For tables, one plant is to be planted every 10 square metres as directed by the Architect.
Bouganvillea hedge plants are to be planted at 2.0 metres intervals. The cedar posts are 600mm high and placed at 2.0 metres centres with barbed wire stacked at the top.
Bouganivillea plants are to be attached to the fence wires and strained into a hedge or table in the course of the maintenance period to the approval of the Architect. The plant pits are to be excavated, refilled, planted, maintained and paid for in accordance with the requirements laid down for shrubs.
The rates for bouganivillea plants and hedges and tables shall also include for all the materials and operations described in this clause. Fence for bouganvillea hedges are measured lineally and fence tables are measured superficially over the area formed by the outermost wires of the table.

PARTICULAR PRELIMINARIES

ITE	DESCRIPTIONS	AMOUNT

BILL NO. 1
PRELIMINARY PARTICULARS

A. PARTIES

The "Employer" is	Mama Ngina University College P. O. BOX 444 - 10301, Gatundu Email:
The "Architect" is	Mama Ngina University College P. O. BOX 444 - 10301, Gatundu Email: mwangi.michael@mnu.ac.ke
The " Quantity Surveyor" is	Mama Ngina University College P. O. BOX 444 - 10301, Gatundu Email: qs.harrietkariuki@gmail.com
The " Civil Engineer" is	Mama Ngina University College P. O. BOX 444 - 10301, Gatundu Email: miriti67@gmail.com
The " Electrical Engineer" is	Mama Ngina University College P. O. BOX 444 - 10301, Gatundu Email:
The " Mechanical Engineer" is	Mama Ngina University College P. O. BOX 444 - 10301, Gatundu Email: kimanisn2001@yahoo.com

For the purpose of the works which are under the control of the consultant above, the respective consultant shall be deemed to be invested with the duties and be representatives of the Architect.

B. SITE

The site of the works shall be used solely for the purpose of executing and completing the Contract to the satisfaction of the Architect.

The Contractor shall obtain the Architect's. approval for the siting of all temporary storage areas for materials. Site storage shall be the responsibility of the main contractor and his pricing shall cater for the same

NOTE

The Contractor shall visit the site to acquaint themselves with its nature and position, works, the nature of the ground, sub- strata and other local conditions, position of power and water supplies, access roads or any other limitations, and no claims for extras will be considered on account of lack of knowledge in this respect.

The Contractor's attention is drawn to the fact that they shall confine themselves to the area necessary for executing the works as instructed by the Architect.

The contractor must obtain the Architect's approval and directions regarding the use of any material found on the Site. Any such material utilized in the execution of the Contract shall be measured and value assessed by the Quantity Surveyor and the amount credited to the Employer.

ITE	DESCRIPTIONS		AMOUNT
	Total to Collection	**Kshs**	

ITE	DESCRIPTIONS	AMOUNT
A.	**PHASING OF THE WORKS** The works SHALL be undertaken in phases. The client retains the authority to omit part of the scope,undertake part of the scope or supply materials materials as he wish to	
B.	**WORKING AND STORAGE SPACE** Working and storage space will be confined to the area designated by the Architect within the plot boundary.	
C.	**DESCRIPTION OF THE MAIN CONTRACT WORKS** The Contract covers the construction of a Tuition Block and external works and all associated electrical and mechanical installations Construction shall involve vibrated reinforced concrete column bases, columns, beams, masonry walling, pitched and flat roofs Finishes shall be mainly ceramic tiles to floors; render and paint to external walls and ceramic tiles, plaster and paint to internal walls External & internal doors and windows shall mainly be in standard steel casement with clear sheet glass; all to specialist specifications. External works shall involve construction of landscaping, storm and foul drainage. The works to be executed shall be as indicated in BoQ	
D.	**DRAWINGS** The Drawings used in preparing the Bills of Quantities are scheduled in Appendix "A" at the end of these Bills. Drawings may be inspected at the offices of the Architect or Quantity Surveyor by prior appointment	
	Total to Collection **Kshs**	

ITE	DESCRIPTIONS		AMOUNT
	CONTRACT PARTICULARS		
A.	**FORM OF CONTRACT**		
	Refer to Provisions by the Public Procurement Oversight Authority		
B.	**APPENDIX TO THE CONDITIONS OF CONTRACT**		
	The General Appendix to the Conditions of Contract will be filled in as follows:		
	Percentage to cover Professional Fees	N/A	
	Amount of Contractor's Surety	Refer to Tender Document	
	Amount of Employer's Surety	Refer to Tender Document	
	Period for Submission of Programme	2 weeks from the date of possession.	
	Period for Possession of Site	Within 14 days of receipt of notice accepting tender.	
	Contract Period	20 Weeks	
	Date for Commencement of Works	Within 14 days of receipt of notice accepting tender.	
	Date for Practical Completion	To be determined	
	Name of the bank for purposes of interest calculation	CBK	
	Intervals for application of Payment Certificates	Refer to Tender Document	
	Minimum amount of Payment Certificates	N/A	
	Percentage of Certified Value Retained	10% of the project cost	
	Limit of Retention Fund	10% of the project cost	
	Periods for Release of Interest on Retention Money to Contractor	N/A	
	Period of Final Measurement and Valuation	Refer to Tender Document	
	Defects Liability Period	Refer to Tender Document	
	Liquidated and Ascertained Damages	Refer to Tender Document	
	Total to Collection	**Kshs**	

ITE	DESCRIPTIONS	AMOUNT

ITE	DESCRIPTIONS				AMOUNT
	COLLECTION				
	From	Page	1		
	From	Page	2		
	From	Page	3		
	From	Page	4		
	Total to summary			**Kshs**	**-**

GENERAL PRELIMINARIES

ITEMS	DESCRIPTIONS	AMOUNT
	GENERAL PRELIMINARIES	
A.	**SUFFICIENCY OF TENDER**	
	The Contractor shall be deemed to have satisfied themselves before tendering as to the correctness and sufficiency of their Tender for the Works and of the rates and prices stated in the priced Bills of Quantities, which rates and prices shall cover all their obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the Works.	
B.	**STAMP CHARGES**	
	The Contractor shall allow for the payment of all Stamp Charges in connection with the Surety Bond and Contract Agreement.	
C.	**DEFINITIONS AND ABBREVIATIONS**	
	Terms used in these Bills of Quantities shall be interpreted as follows:	
	Approved — shall mean approved by the Architect.	
	"as directed" — shall mean as directed by the Architect.	
	"B.S." — Shall mean the current British Standard Specification published by the British Standards Institution, 2 Park Street, London W.1., England.	
	"C.M." — shall mean Cubic Metres.	
	"S.M." — shall mean Square Metres.	
	"L.M." — shall mean Linear Metres.	
	"mm" — shall mean Millimetres.	
	"Kg." — shall mean Kilogrammes.	
	"No." — shall mean Number.	
	"Take delivery." — shall mean collecting the client supply items from a store located within Nairobi, loading and trasporting the same to the site at no cost to the employer.	
	"Omitted works" — shall mean works completely removed from the scope and not to be done at all within the contract. This shall not apply to works removed from the main/builders works and instead executed by a specialist subcontractor within the current contract. Where this arises, the main contractor shall be paid for profit and attendance in the prime cost section of the bills of quantities. No claim for loss of profit and or expense shall arise	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS	AMOUNT
A.	**PROGRESS SCHEDULE** The Contractor shall, upon receiving instructions to proceed with the work, draw up a Time and Progress Schedule setting out the order in which the Works are to be carried out with the appropriate dates thereof. This Time and Progress Schedule is to be agreed with the Architect and no deviation from the order set out in this Schedule will be permitted without the written consent of the Architect. The Main Contractor will be responsible for arranging the above programme with all Sub-Contractors including the Nominated Sub-Contractors and Nominated Suppliers.	
B.	**FIGURED DIMENSIONS** Figured dimensions are to be followed in preference to dimensions scaled from the Drawings; but whenever possible dimensions are to be taken on the Site or from the Buildings. Before any work is commenced by Sub-Contractors or Specialist Firms, dimensions must be checked on the Site and/or buildings and agreed with the Contractor, irrespective of the comparable dimensions shown on the Drawings. The Contractor shall be responsible for the accuracy of such dimensions.	
C.	**PROVISIONAL WORK** All "provisional" and other work liable to adjustment under this Contract shall be left uncovered for a reasonable time to allow all measurements needed for such adjustment to be taken by the Quantity Surveyor. Immediately the work is ready for measurement, the Contractor shall give notice to the Quantity Surveyor. If the Contractor makes default in these respects he shall, if the Architect so directs, uncover the work at his own expense to enable the measurements to be taken.	
D.	**EXISTING SERVICES** Prior to commencement of any work the Contractor is to ascertain from the relevant Authorities the exact position, depth and level of all existing electric cables, water pipes or other services in the area and they shall make whatever provisions may be required by the Authorities concerned for the support and protection of such services. Any damage or disturbance caused to any services shall be reported immediately to the Architect and the relevant Authority and shall be made good to their satisfaction at the Contractor's expense.	
E.	**TRANSPORT TO AND FROM THE SITE** The Contractor shall include in their prices for the transport of materials, workmen, etc., to and from the Site of the proposed Works, at such hours and by such routes as are permitted by the Authorities.	
F.	**OVERTIME** The Contractor shall allow in their tender for any extra costs for overtime working they consider will be necessary in order to complete the works by the contract Date of Completion. If during the course of the Contract overtime is worked for a specific purpose in accordance with a written instruction issued by the Architect, the Contractor will be reimbursed in respect of such overtime to the extent only of the additional net cost of unproductive time payable over and above the basic hourly rates as laid down by the Regulations of Wages and Conditions of Employment Act, Building and Construction Industry Wages council and excluding any bonuses, profits and overheads.	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS	AMOUNT
A.	**PUBLIC AND PRIVATE ROADS, PAVEMENTS, ETC.** The Contractor will be required to make good, at their own expense, any damage they may cause to the present road surfaces and pavements within or beyond the boundary of the Site, during the period of the Works. In particular, all existing trees, shrubs, plants, etc., which may be destroyed or damaged during the progress of the Works are to be made good by the Contractor to the approval of the Architect.	
B.	**POLICE REGULATIONS** The Contractor is to allow for complying with all instructions and regulations of the Police Authorities.	
C.	**CONTRACTORS' SUPERINTENDENCE** The Contractor shall constantly keep on the Works a literate English-speaking Agent or Representative, competent and experienced in the kind of work involved, who shall give his whole time to the superintendence of the Works. Such Agent or Representative shall receive on behalf of the Contractor, directions and instructions from the Architect and such directions and instructions shall be deemed given to the Contractor in accordance with the Conditions of Contract. The Agent shall not be replaced without the specific approval of the Architect. It is to be a specific condition of this Contract that the successful Tenderer shall provide on site throughout the period from the completion of the substructure to the Date for Practical Completion a suitably qualified, experienced and competent person to ensure that the works are carried out to the standard required by the specification and detailed on the Drawings; and shall ensure that upon any termination of employment a suitable replacement is found. Before the Tenderer's offer is accepted the Architect will personally interview the Contractor's proposed Representative. A curriculum vitae of past experience and qualifications must be provided for the Architect's scrutiny. The Architect's decision will be final regarding the suitability of the proposed Representative.	
D.	**WATER** All water shall be fresh, clean and pure, free from earthy vegetable or organic matter, acid or alkaline substance in solution or suspension. The Contractor shall provide at their own risk and cost all water for use in connection with the Works (including the work of Sub-Contractors). The Contractor shall provide at their own expense all temporary distribution pipes, storage tanks, meters, etc., and they shall clear away same upon completion of the Works.	
E.	**LIGHTING AND POWER** The Contractor shall provide at their own risk and cost all artificial lighting and power for use on the Works, including all Sub-Contractors' and Specialists' requirements and including all temporary connections, wiring, fittings, etc., and clearing away on completion. The Contractor shall pay all fees and obtain all permits in connection therewith.	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS	AMOUNT
A.	**SAFETY**	
	The Contractor shall comply at all times with the requirements of the Factory Act (Cap 514), Building Construction Rules, Supplement 18, Legal Notice No. 40 dated 5th April, 1984 ensure that the safety of their workpeople and authorised visitors to the Site is protected at all times. In particular there shall be proper provision of planked footways and guard-rails to scaffolding, etc.; protection against falling materials and tools and the Site shall be kept tidy and clear of dangerous rubbish.	
	The Contractor shall appoint a Safety Officer as required by the Factory Act and notify the Factory Inspector of his name. The Safety Officer shall be qualified in compliance with the Factory Act and shall have experience in First Aid. The Safety Officer shall be on site at all times and all directions given by the Architect to the Safety Officer shall be deemed to be Architect's Instructions, and shall be complied with promptly without additional cost to the contract.	
	The Architect shall be empowered to suspend work on the Site should he consider these conditions are not being observed, and no claim arising from such a suspension will be allowed.	
B.	**PROTECTIVE CLOTHING**	
	The Contractor shall provide all protective or any other special clothing or equipment for their employees that may be necessary.	
	These shall include, inter-alia, safety helmets, gloves, goggles, earmuffs, gumboots, steel toed boots,. overalls, etc according to the type of work. The Contractor shall ensure that all safety and protective gear are worn by all staff on site at all times	
	<u>MATERIALS AND WORKMANSHIP</u>	
C.	**GENERALLY**	
	All materials shall be new unless otherwise directed or permitted by the Architect and in all cases where the quality of goods or materials is not described or otherwise specified, is to be the best quality obtainable in the ordinary meaning of the word "best" and not merely a trade signification of that word.	
	All materials and workmanship shall, unless otherwise specified or described, conform to the appropriate Kenya Bureau of Standards or British Standards Institution Specification current at the date of tender.	
	The Contractor shall order all materials to be obtained from overseas immediately after the Contract is signed and shall also order materials to be obtained from local sources as early as necessary to ensure that such materials are on Site when required for use in the Works.	
	The Contractor shall be responsible for and shall replace or make good at their own expense any materials lost or damaged.	
	The Works throughout shall be executed by skilled workmen well versed in their respective trades.	
	It's the contractor's responsibility to erect an approved storage facility for the materials on site.	
D.	**REJECTED WORKMANSHIP OR MATERIALS**	
	Any workmanship or materials not complying with the specific requirements or approved samples or which have been damaged, contaminated or have deteriorated, must immediately be removed from the Site and replaced at the Contractor's expense, as required.	
E.	**PROPRIETARY MATERIALS**	
	Where proprietary materials are specified herein-after the Contractor may propose the use of materials of other manufacture but equal quality for approval by the Architect.	
	All materials and goods, where specified to be obtained from a particular manufacturer or supplier are to be used or fixed strictly in accordance with their instructions.	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS	AMOUNT
A.	**SAMPLES**	
	The Contractor shall furnish at the earliest possible opportunity before work commences and at his own cost, any samples of materials or workman-ship that may be called for by the Architect for his approval or rejection, and any further samples in the case of rejection until such samples are approved by the Architect and such samples, when approved, shall be the minimum standard for the work to which they apply.	
B.	**CONCRETE TESTS**	
	Concrete test cubes I.e. per set of three as later described, including testing fees, labour and materials, making moulds, transport and handling e.t.c. and ensuing copies of tests are promptly dispatched to the Architect's and Quantity Surveyor's offices. Tenderer to allow for undertaking successful tests throughout the project period as and when required.	
	TEMPORARY WORKS	
C.	**SITE OFFICE**	
	The Contractor shall provide where directed within the site, site offices and clean toilet facilities for the sole use of the Architect and their representatives to the satisfaction of the Local Authorities. The offices shall be provided with adequate furniture and the contractor shall provide the services of a sweeper, pay all charges and keep the facilities in a clean and sanitary condition during the whole period of the Works. In particular, the Contractor is to note that the neighbourhood will continue with operations during the period of the works and the contractor shall ensure that construction activities do not interfere with such operations by way of noise, obstruction, dust, vibrations or trespass. The contractor shall allow for all cost necessary to comply with the above to the satisfaction of the Architect. The site office is to be fully supplied with power.	
	The contractor to allow for provision of snacks and soft drinks to participants during site inspections and meetings.	
D.	**TELEPHONE**	
	The Contractor shall provide a telephone connection to the town exchange for the period of the Works, and shall pay all fees and rental for the same. The telephone connection shall remain on site until completion of the works	
E.	**SANITATION**	
	The Contractor shall make arrangements for the necessary toilet facilities for their staff and workmen to the requirements and satisfaction of the Health authorities and maintain the same in a thoroughly clean and sanitary condition and pay all conservancy fees during the period of the Works and remove when no longer required.	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS	AMOUNT
A.	**PLANT, TOOLS AND SCAFFOLDING**	
	The Contractor shall provide all necessary hoists, tackle, plant, vehicles, tools and appliances of every description for the due and satisfactory completion of the Works and shall remove same on completion.	
	The Contractor shall provide, erect and maintain all temporary scaffolding, sufficiently strong and efficient for the due performance of the Works, including Sub-contract Works, provide special scaffolding as and when required during the Works and remove on completion and make good. This shall also include the scaffolds and brackets required for Lift Installation. Such scaffolding shall be constructed of tubular steel or timber of sufficient scantlings and be provided with planked footways and guard-rails to approval.	
	All such plant, tools and scaffolding shall comply with all regulations whether general or local, in force throughout the period of the Contract and shall be altered or adapted during the Contract as may be necessary to comply with any amendments in or additions to such regulations.	
	Scaffolding is not measured hereinafter, and the Contractor must allow here or in his rates for the above.	
B.	**EXISTING AND ADJACENT PROPERTY**	
	The Contractor must take all steps necessary to safeguard existing and adjacent property, make good at their own expense any damage to persons or property caused thereon, and hold the Employer indemnified against any such claim arising.	
	The Contractor will be held fully responsible for the safety of the existing and adjacent buildings and for any damage caused in consequence of these Works. They must reinstate all damages at his own expense and indemnify the Employer against any loss.	
	The Contractor must take such steps and exercise such care and diligence as to minimise nuisance from dust, noise or any other cause to the occupiers of the existing and adjacent property.	
C.	**HOARDING**	
	The Contractor shall enclose the site, with a hoarding 2.40 metres high, with openings and gates as required, constructed of substantial timbers to approval and covered with reasonably new corrugated galvanised iron sheeting painted to approval.	
	The contractor is to allow for all such costs including any statutory and facilitation levies.	
D.	**WATCHING AND LIGHTING**	
	The Contractor shall provide at their risk and cost all watching and lighting as necessary to safeguard the Works, plant and materials against damage and theft.	
E	**SIGNBOARD**	
	The Signboard and lettering on same for the display of the General and Sub-Contractors' names shall be of an approved size with the Employer's name painted thereon. The Architect's, Quantity Surveyor's and other Consultants' names shall be printed in 50 mm letters all to the Architect's approved design. No other signboard or advertising will be permitted without prior permission from the Architect.	
F.	**COMPUTER AND INTERNET CONNECTION**	
	The Contractor shall provide and maintain the Consultant's site office with, A3 printer, a high performance desk top top computer and a laptop connected with unlimited high speed wifi internet connection. The Contractor is to pay all connection charges and shall allow for any other fees that may become payable during the contract period. The computer specifications shall meet the Architect's requirement and shall be for sole use of the Architect and/or Architect's representative.	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS	AMOUNT
	NOMINATED SUB-CONTRACTORS AND SUPPLIERS	
	(See also under FORM OF CONTRACT Clauses 31 and 32)	
A.	**NOMINATED SUB-CONTRACTORS**	
	The Contractor shall be responsible for Nominated Sub- Contractors in every respect and in particular it shall be the Contractor's responsibility to ensure that each Sub- Contractor commences and completes the work in such manner and is ready on the Site with their materials, labour and special plant at such times so as to conform with the Progress Schedule, as specified previously, and to ensure satisfactory progress.	
	The Contractor shall also accept liability for and bear the cost of General Attendance on Nominated Sub-Contractors which shall be deemed to include for:	
	Allowing the use of standing scaffolding, maintenance and alteration of all scaffolding, retention of all scaffolding until such time as all relevant Sub-Contractors' works are complete and removal of all scaffolding on completion. Providing office accommodation, and for storage of plant and materials; allowing use of sanitary accommodation; the supply of all necessary water, power and lighting; and clearing away all rubbish.	
	The items for "General Attendance" given herein-after following P.C. Sums in respect of Sub-Contractors' work shall be deemed to include all the above.	
	The Contractor shall also accept liability for and bear the cost of Special Attendance on Nominated Sub-Contractors which shall include for one or more of the following:	
	Unloading, storing, hoisting, placing in position,provision of special scaffolding.	
	The items of "Special Attendance" given herein-after following P.C. Sums shall include any one or more of the above items as set out in the particular reference.	
	Cutting away for and making good after the work of Sub- Contractors as may be required will be priced and allowed for separately under Builder's work to the Specialist trade.	
B.	**NOMINATED SUPPLIERS**	
	The Cost of "Fix Only" materials to be obtained from Nominated Suppliers which are covered by Prime Cost or Provisional Sums shall include for taking delivery where directed, checking with invoices or indents, reporting and claiming damages for shortages and damaged goods, defraying demurrage, signing for as having been received in good order, transporting, unloading, storing, covering and protecting until the time of fixing, unpacking, replacing anything lost or damaged, sorting, assembling, hoisting to required levels and fixing as described.	
	Before placing any orders with Nominated Sub-Contractors or Nominated Suppliers the Contractor must ascertain that the terms and conditions of the quotations and the dates of delivery of materials or execution of works comply with the terms of Contract and the Progress Schedule.	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS	AMOUNT
A.	**PRIME COST RATES** Where description of items include a P.C. rate per unit this rate is to cover the nett supply cost of the unit only. The Contractor's price must include for the cost of the unit at the rate stated, plus waste, taking delivery, storage, fixing in position, profit and overheads. The actual nett cost per unit will be adjusted within the Final Account against the P.C. rate stated. **PROTECTION AND CLEANING**	
B.	**PROTECTION** The Contractor shall cover up and protect from damage, including damage from inclement weather, all finished work and unfixed materials, including that of Sub-Contractors, etc., to the satisfaction of the Architect until the completion of the Contract.	
C.	**CLEANING** The Contractor shall, upon completion of the Works, at their own expense, remove and clear away all surplus excavated materials, plant, rubbish and unused materials and shall leave the whole of the Site and Works in a clean and tidy state to the satisfaction of the Architect, including clearing away and making good all traces of temporary access roads, offices, sheds, camps, etc. Particular care shall be taken to leave clean all floors and windows and to remove all paint and cement stains. They shall also, at the discretion of the Architect, remove all rubbish and dirt as it accumulates. The Contractor is to find their own dump and shall pay all charges in connection therewith.	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS	AMOUNT
A.	**CONTINGENCIES** Provide the Provisional Sum of Shillings **NIL** for contingencies to be omitted or expended in whole or in part at the discretion of the Architect	
B.	**TRAINING LEVY** The Contractor's attention is drawn to Legal Notice No. 237 of October 1971, which requires payment by the Contractor of Training Levy on all Contracts of more than Shs.50,000/- in value and his Tender must include for all costs arising or resulting therefrom.	
C.	**VALUE ADDED TAX** The Contractor's attention is drawn to the Finance Act 1993 which requires payment by the contractor of Value Added Tax on construction services rendered. The contractor shall allow for the requirements of this tax in their rates.	
D.	**OCCUPATION CERTIFICATE** The Architect will provide to the Contractor a duly completed application together with the requisite "As Built" drawings. The contractor will be required to submit the application and obtain the Occupation Certificate from the Local Authority no later than the end of the Defects Lability Period. The Contractor will deliver the original certificate to the owner with a copy to the Architect.	
E.	**STANDARDS LEVY** The Contractor's attention is drawn to Legal Notice No. 267 of 22nd June 1990, which requires payment by the Contractor of Standards Levy. his Tender must include for all costs arising or resulting therefrom.	
F.	**NEMA REQUIREMENT** The Contractor shall be responsible for complying with Nema requirements and shall allow for all costs arising or resulting therefrom. No claim of extension of time shall be allowed as a result of complains to NEMA requirements. Copy of NEMA license may be inspected in the QS office by prior notice.	
G.	**OTHER STATUTORY OBLIGATIONS, NOTICES, FEES AND CHARGES** Not withstanding any other statutory obligations, notices, fees and charges not listed above, the contractor shall allow in his tender for all such costs incurred in complying with all statutory requirements and payment of all leviers currently in force and affecting the construction industry.	
H.	**The National Construction Authority compliance** The contractor shall ensure compliance with the National Construction authority regulations including paying for all fees and levies where applicable.	
	Total to Collection **Kshs**	

ITEMS	DESCRIPTIONS				AMOUNT
	COLLECTION				
	From	Page	1		
	From	Page	2		
	From	Page	3		
	From	Page	4		
	From	Page	5		
	From	Page	6		
	From	Page	7		
	From	Page	8		
	From	Page	9		
	General Preliminaries	**Total to summary**		**Kshs**	

BUILDER'S WORK

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 1: SUBSTRUCTURES (PROVISIONAL)				
	Site Clearance				
A	Clear site of any vegetation including grass, hedges, shrubs, etc. and dispose all arisings from site to an approved dump	Sm	1,436		
	Excavation; Including supporting sides of the excavation usings props and struts				
B	Excavation to remove vegetable soil; and heap arising on site to be used for landscaping as approved; average 800mm deep	Cm	1,149		
C	Bulk excavation to red soil to reduced levels and cart away (m/s)	Cm	227		
D	Excavate for strip footing; depth not exceeding 1.50m deep from the reduced level	Cm	253		
E	Ditto; depth 1.5m - 3.00m	Cm	101		
F	Excavate for column bases; depth not exceeding 1.50m deep from the reduced level	Cm	118		
G	Ditto; depth 1.5m - 3.00m	Cm	59		
H	Extra over all excavations for excavating in rock; irrespective of the class (I-III)	Cm	110		
	Disposal				
J	Return, fill in and ram approved hardcore material in layers to make up levels and around foundation walls.	Cm	344		
K	Load surplus excavated materials and deposit to a location approved by the client	Cm	586		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	Disposal of water				
A	Allow for keeping excavations free from all water including spring and running water by pumping,bailing or otherwise	Item			
	Removal of termite nests				
B	Allow for destrction of any and all termite nests, including removal of the queen and treatment of all nests with approved insecticide treatment	Item			
	Hardcore filling				
C	Over 300mm thick approved hardcore or other approved filling material well watered and compacted in 150mm thick layers.	Cm	378		
D	Labour only for forming sinking in hardcore average 450mm wide x 150mm deep to receive thicknessing including cutting to required slope.	Lm	167		
	Stone or quarry dust				
E	50mm thick layer of approved stone dust or murram blinding to surfaces of hardcore.	Sm	1,080		
	Anti-termite treatment				
F	Treat surfaces of blinded hardcore and foundation walling with "Gladiator" or other equal and approved insecticide treatment to be carried out in accordance with the manufacturer's printed instructions	Sm	1,136		
	Damp proof membranes				
G	1000 gauge polythene or other equal and approved damp-proof membrane laid over blinded hardcore (measured nett-no allowance for laps)	Sm	1,136		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	Insitu concrete works				
	50mm thick concrete 1:3:6 (Class Q/20mm) in blinding to:				
A	Strip footing	Sm	169		
B	Column bases	Sm	79		
	Vibrated reinforced concrete 1:1.5:3 (Class 25/20mm as described in:-				
C	Strip footing	Cm	46		
D	Column bases	Cm	42		
E	Columns	Cm	14		
F	150mm thick floor bed	Sm	1,136		
G	Concrete thicknessing average 450mm wide x 150mm deep	Lm	167		
	Formwork to insitu concrete Sawn formwork as described to:-				
H	Sides of strip footing	Sm	155		
J	Sides of column bases	Sm	106		
K	Sides of columns	Sm	142		
L	Edge of floor bed 75-150mm high.	Lm	167		
	Reinforcement (All Provisional): Supply and fix bar reinforcement including bending, hooking, tying, cutting and supporting. High tensile ribbed bars to B.S. 4461				
M	Assorted bars (@ 180 Kg/cm)	Kg	18,360		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
A	B.R.C Fabric mesh reinforcement to B.S 4483 Ref. No. A142 in floor bed (measured nett- no allowance for laps) ; including bends, tying wire and distance blocks	Sm	1,136		
	Foundation walling				
B	200mm thick quarry dressed natural stone wall in foundations bedded and jointed in cement sand (1.4) mortar and reinforced with hoop iron every alternate course as described.	Sm	618		
	Plinths				
C	12mm thick cement sand 1:4 render to plinth of building	Sm	67		
D	Prepare and apply three coats of bituminous paint to rendered surfaces of plinth.	Sm	67		
	Carried to Collection				
	COLLECTION				
1.1	Total Brought Forward from Page No		BW/1		
1.2			BW/2		
1.3			BW/3		
1.4			BW/4		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 1** **SUBSTRUCTURE WORKS (ALL PROVISIONAL)**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 2: CONCRETE SUPERSTRUCTURE (ALL PROVISIONAL)				
	Vibrated reinforced concrete 1:1.5:3 (Class 25/20mm as described in:-				
A	Beams; ; horizontal or sloping not exceeding 15 degrees from horizontal	Cm	93		
B	Ditto; gutter beam; with waterproofing admixtures	Cm	19		
C	Columns; vertical or sloping not exceeding 15 degrees from verical	Cm	36		
D	175mm thick suspended solid slab; horizontal or sloping not exceeding 15 degrees from horizontal	Sm	1,009		
E	175mm thick suspended solid slab; ditto - with waterproofing agent	Sm	126		
	Formwork to insitu concrete Sawn Formwork as described to:				
F	Sides and soffits of beams and gutters	Sm	862		
G	Sides of columns	Sm	294		
H	Soffits of suspended solid slabs	Sm	1,135		
J	Edges of suspended slabs; 150 - 225mm high	Lm	293		
	Reinforcement (Provisional)				
	Supply and fix bar reinforcement including bending, hooking, tying, cutting and supporting as described: High tensile ribbed bars to B.S. 4461				
L	Assorted bars (@180Kg/cm)	Kg	57,852		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 2** **CONCRETE SUPERSTRUCTURE**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 3: STAIRCASE, RAMP AND FINISHES				
	Vibrated reinforced concrete 1:1.5:3 (Class 25/20mm as described in:-				
A	Steps of staircase. .	Cm	6		
B	Ramp; 150mm thick; max gradient 10.51%	Cm	18		
C	Waist of staircase; 175mm thick	Cm	13		
D	175mm thick suspended landings	Sm	44		
	Formwork to insitu concrete Sawn formwork as described to:				
E	Soffits of landings.	Sm	44		
F	Sloping soffits of staircases	Sm	87		
G	Ditto; ramp	Sm	117		
H	Waist edges of landings; extreme 350mm high.	Sm	22		
J	Edges of risers; 75 mm - 150mm high.	Lm	279		
K	Ditto; ramp	Lm	105		
	Reinforcement (Provisional)				
	Supply and fix bar reinforcement including bending, hooking, tying, cutting and supporting as described: High tensile ribbed bars to B.S. 4461				
L	Assorted bars (@140kg/cm)	Kg	6,104		
	Staircase finishes **30mm thick cement Sand (1:4) backing or screeds on staircase as described in finished to receive terazzo floor finish (m.s)**				
M	Landings.	Sm	44		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
A	Treads; 300mm wide	Lm	254		
B	Risers; 150mm wide	Lm	279		
C	Ramp	Sm	117		
	<u>Ceramic tiles floor finish</u>				
	Supply and fix approved 600 x 600 x 10mmm thick non-slip ceramic tiles floor finish to a regular pattern to cement and sand screed (m.s), including grouting in matching colour, and spacer blocks, all to Architect's approval				
D	Landings	Sm	44		
E	Treads; 300 mm wide	Lm	254		
F	Risers; 150 mm high	Lm	279		
G	100mm high skirting to landing	Lm	40		
H	Ditto to profile of staircase	Lm	75		
J	Ditto; ramp	Sm	117		
	Plastering: 15mm thick two coats internal gauged plaster (1:2:9); steel trowelled				
K	To soffits of landings	Sm	44		
L	Ditto sloping soffits of waist.	Sm	87		
M	Ditto; extreme waist	Sm	22		
N	Ditto; sloping soffits of ramp	Sm	117		
	<u>Painting and decorating</u>				
	Three coat silk vinyl emulsion paint (first quality); to crown paints or equal and approved to steel trowelled plastered surfaces including skimming with stucco filler to:-				
P	Soffits of landings	Sm	44		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
A	Ditto sloping soffits of waist.	Sm	87		
B	Ditto; extreme waist	Sm	87		
C	Ditto sloping soffits of ramp	Sm	117		
	Balustrading				
D	900mm high wrought iron balustrading; purpose made; all welded; comprising of 60mm wide x 45mm thick mahogany timber handrail fixed to and including approved wrought iron baluster fanged at the bottom and built into concrete steps at 550mm centers; panels infilled with approved wrought iron decoration; including welding and grinding welds smooth and priming with zinc chromate primer and automotive spray painting with three coats rustic paint finish; all to Architect's Approval and details; MAIN STAIRCASE	Lm	19		
E	Ditto; EXIT STAIRCASES	Lm	38		
F	Ditto; RAMP	Lm	105		
	Carried to Collection				
	COLLECTION				
3.1	Total Brought Forward from Page No		BW/6		
3.2			BW/7		
3.3			BW/8		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 3** **STAIRCASE AND STAIRCASE FINISHES**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 4: BALCONY BALUSTRADING				
A	900mm high mild steel balustrading; purpose made;all welded; comprising of 60mm diameter x 3mm thick handrail welded to and including 30mm x 6mm thick mild steel flat bar baluster fanged at bottom and built into concrete steps at 550mm centres; 2 No. 20mm diameter mild steel intermediate rods welded to balusters at equal centres including welding and grinding welds smooth and priming with zinc chromate primer and automotive spray painting with three coats gloss oil paint; all to Architect's Approval and details.	Lm	16		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 4** **BALCONY RAILING**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 5: ROOF CONSTRUCTION, FINISHES AND RAINWATER INSTALLATIONS				
	The following steel work in hollow sections; including bolted and welded connections with accessories such as gusset plates, brackets, bolts, cleats etc.; hoisting, fixing and priming surface of metal with one coat of zinc chromate primer all as per Engineer's details				
	Rafters				
A	RHS 75 x 50x 3mm (5.60kg/m)thick	Kg	1,108		
B	RHS 40 x 40 x 3mm (3.48kg/m)thick	Kg	1,219		
C	250 x 200 x 8mm (11.78kg/m) thick mild steel plate	No.	20		
D	300 x 8mm (18.84kg/m) thick steel plate	No.	40		
E	16mm diameter x 300mm long hold down bolts	No.	80		
	Trusses				
F	RHS 75 x 50x 3mm (5.60kg/m)thick	Kg	984		
	Purlins				
G	ZP 40 150 x 50 x 2mm (4.44kg/m)	Kg	7,421		
H	50mm long 100 x 50 x 2mm (2.23kg/m) angle plates welded onto the rafter	Kg	3,711		
	Roof Covering				
J	IT4 roofing sheets to the Architect's approved	Sm	424		
	4 mm thick approved Attactic Poly-Prolylene (APP) waterproofing membrane to cement and sand screed (m/s) : laid in accordance with manufacturer's printed instructions				
L	To flat roof slab and gutter beams; laid to falls	Sm	1,034		
M	150mm high skirting	Lm	324		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	50mm thick one coat screed; cement and sand (1:4); wood floated; to receive APP waterproofing (m/s); laid to falls; generally to				
A	To flat roof slab and gutter beams; laid to falls	Sm	1,034		
B	200mm high; angle fillet	Lm	234		
	25 mm thick one coat screed; cement and sand (1:4); wood floated; to receive precast concrete interlocking tiles (m/s); generally to				
C	To flat roof slab and gutter beams; laid to falls	Sm	1,034		
	20 mm thick Coloured Terrazzo floor finishes; including approved and coloured marble chipping; and 25 x 3mm deep edge and expansion strips				
D	To flat roof slab and gutter beams; laid to falls	Sm	1,034		
E	200mm high; angle fillet	Lm	234		
	Rainwater Installations				
F	Extra over concrete works for forming 150 x 150mm wide fullbora rainwater outlets in concrete slab; making good disturbed surfaces and waterproofing all areas	No.	12		
G	Mild steel grating; 150 x 150mm wide cast in and including 40 x 20mm frames; all primed with red lead oxide before placing; and finished product sprayed in enamel/oil paint; both sides measured	No.	12		
	Supply and fix Heavy duty uPVC rain water down pipe, including fittings (holder bots, clips, etc.)				
H	100 mm diameter Extra; swanneck	Lm	122		
J	Ditto; gutter	Lm	165		
K	Extra; shoe	No	12		
	Fascia Board				
L	200mm x 25mm thick wrot prime grade cypress fascia board/barge board fixed onto ends of rafters (measured separately)	Lm	165		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	Painting and decorating Prepare, prime and apply one undercoat and two gloss finishing coat oil paint to timber surfaces; to crown paints or equal and approved				
A	Surfaces of both sides of fascia/barge boards; 100-200mm	Lm	165		
	Carried to Collection				
	COLLECTION				
5.1	Total Brought Forward from Page No		BW/10		
5.2			BW/11		
5.3			BW/12		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 5** **ROOFING AND ROOFING FINISHES (PROVISIONAL)**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 6 - EXTERNAL WALLING				
A	200mm thick walling in machine cut stone from an approved source, bedded and jointed in cement sand(1:4) mortar including reinforcing with hoop iron every alternate course as described	Sm	1,731		
B	200mm thick parapet walling; 1200mm high	Sm	159		
C	Ditto; 450mm high	Lm	121		
D	Ditto; gable walls	Sm	29		
	Coping				
E	300mm wide x 75mm thick pre-cast concrete coping bedded and jointed on top of wall in cement sand (1:3) mortar including all necessary hoisting and placing in position and moulds (parapet - roof area)	Lm	188		
F	600 x 600 x 75mm thick ditto; column caps	No.	15		
	Damp proof courses				
G	200 mm wide bitumen hessian base; 150 mm laps; bedded in cement sand motar (1:3); Horizontal; no allowance made for laps	Lm	173		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 6** **EXTERNAL WALLING**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 7 - INTERNAL WALLING				
A	200mm thick walling in machine cut stone from an approved source, bedded and jointed in cement sand (1:4) mortar; including reinforcing with hoop iron every alternate course as described	Sm	1,244		
	Damp proof courses				
B	200 mm wide bitumen hessian base; 150 mm laps; bedded in cement sand motar (1:3); Horizontal; no allowance made for laps	Lm	109		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 7** **INTERNAL WALLING**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 8 - WINDOWS AND WINDOW FINISHES				
	Window cill				
A	Pre-cast concrete window cills once throated and weathered overall 275mm wide x 50mm deep bedded and jointed on top of wall in cement sand (1:4) mortar including all necessary moulds.	Lm	131		
	Mild steel casement window				
	Supply, assemble and fix the following purpose made 25 x 4mm Z-section heavy duty steel casement windows with and including 12.5X12.5mm thick mild steel bars burglar proofing grilles to match profile of panes not exceeding 300mm wide x 300mm high, one coat lead oxide primer complete with fixing lugs on, hooded mosquito-proofed permanent vent, pin type hinges, all necessary cutting and ironmongery as Kensmetal or equal and approved including cutting and pinning fixing lugs to walling and bedding in waterproof cement mortar (1:4) and pointing in approved mastic externally to the following windows openings. windowa complete with brass stays and handles and all necessary				
B	Window overall size: 3000 x 2950 mm high - W01	No.	35		
C	Ditto; 1500 x 2950mm high - W02	No.	2		
D	Ditto; 5000 x 500mm high - W03	No.	2		
E	Ditto; 1600 x 12750mm high - W04	No.	2		
F	Ditto; 1400 x 12750mm high - W05	No.	1		
	Glazing				
G	6mm thick grey tinted plate glass in panes exceeding 0.10 SM but not exceeding 0.50 SM fixed with metal putty glazing compound in panes	Sm	382		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	Painting and decorating				
	Prepare one red lead undercoat and apply approved three coats full gloss oil paint as Crown paints or equal and approved to wood surfaces				
A	Surfaces of window casement; both sides	Sm	764		
B	100 mm - 200 mm wide; frames	Lm	542		
	Carried to Collection				
	COLLECTION				
8.1	Total Brought Forward from Page No		BW/15		
8.2			BW/16		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 8** **WINDOWS**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 9: DOORS AND DOOR FINISHES				
	Wrot mahogany hardwood timber as described in:				
A	Ex-200 x 50mm door frame	Lm	57		
B	Ex-50 x 25mm architrave moulded	Lm	57		
C	Ex-20 x 20mm moulded quadrant	Lm	57		
	Lintels				
	Precast concrete 1:2:4 (Class 20/12mm) as described including twisting mould and bedding and jointing in cement and (1:4) mortar in:				
D	200mm wide x 200mm deep Lintel reinforced with and including 4 No 10mm diameter high tensile bars with hooked end including handling bars	Lm	73		
	Timber panelled doors				
	Supply and fix into position 50mm thick wrot mahogany pannelled timber door comprising of 250 x 50mm bottom rail,150mm x 50mm top rail, 3No. 150 x 50mm stiles, 4No 100 x 50mm middle rails; infilled with panels tongued and grooved into stile and rails; including 300mm x 600mm high rectangular funlight panel infilled with 6mm thick frosted glass surrounded with timber lining; All to Architect's approval				
E	Single door; overall size 850 x 2050mm high - D03	No.	10		
F	Single door; overall size 1100 x 2050mm high - D04	No.	1		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	Steel Casement Doors				
	Steel Casement Doors: Supply, assemble and fix the following purpose made 25 x 4mm Z-section heavy duty steel casement doors with and including; 300mm high 4mm thick clear fanlight glass with putty; 25 x 4mm mild steel flats bars at 150mm centres same vertical and horizontal intervals as mullions incorporating complete with fixing lugs on, hooded mosquito-proofed permanent vent, pin type hinges including all necessary cutting, and ironmongery, padlock latches, as Kensmetal or equal and approved				
A	Double door with 6mm thick glazing to panels (m.s); overall size 2000 x 2400mm high - D01	No.	14		
B	Ditto; 5500 x 2400mm high - D01A	No.	1		
C	Ditto; 1500 x 2400mm high - D02 & D02A	No.	9		
D	Ditto; but louvered; with no glass panes; 1300 x 2400mm hi	No.	6		
	Glazing				
E	6mm thick clear plate glass in panes exceeding 0.10 SM but not exceeding 0.50 SM fixed with metal putty	Sm	50		
F	Ditto; obscure	Sm	20		
	Painting and Decorating				
	One coat aluminium hardwood primer; to crown paints or equal and approved to wood surfaces; before fixing				
G	Not exceeding 100 mm wide	Lm	67		
H	200 mm - 300 mm wide	Lm	57		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	Prepare undercoat and apply three coats clear varnish as Crown paints or equal and approved to wood surfaces				
A	Not exceeding 100 mm wide	Lm	67		
B	200 mm - 300 mm wide	Lm	57		
	Prepare one red lead undercoat and apply approved three coats full gloss oil paint as Crown paints or equal and approved to wood surfaces				
C	Surfaces of timber doors; both sides	Sm	43		
D	Surfaces of metal doors; both sides	Sm	254		
E	Not exceeding 100 mm wide; steel frames	Lm	333		
	Ironmongery (Provisional)				
	NOTE: References are to "Union" catalogue unless otherwise specified. Other equal and approved ironmongery will only be used with the Architects approval.				
F	Euro profile cylinder lock complete with brass handles	No.	1		
G	Brass latches - Toiltes	No.	11		
H	100mm heavy duty steel hings	Prs	90		
J	100mm brass butt hinges	Prs	17		
	Carried to Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	COLLECTION				
9.1	Total Brought Forward from Page No		BW/17		
9.2			BW/18		
9.3			BW/19		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 9** **DOORS**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 10: INTERNAL WALL FINISHES				
	Insitu finishes				
A	15mm thick two coats internal gauged plaster (1:2:9) steel trowelled smooth to sides of walls all as described; internally	Sm	4,126		
B	Ditto to reveals of openings not exceeding 100mm girth internally	Lm	542		
	Screed backing				
C	15mm thick cement sand backing prepared to receive white glazed ceramic wall tiles(m.s)	Sm	183		
	Tile finishes: Supply and fix 300 x 300 x 8mm thick glazed ceramic tiles; as approved to prepared cement sand (1:4) backing (m.s) with and including an approved adhesive and pointed in matching cement mortar.				
D	Walls; vertical; internal; Kitchen, bathrooms & cloak rooms	Sm	183		
	Painting and decorating				
	Apply one coat undercoat then two coats eggshell paint (first quality); to crown paints or equal and approved to steel trowelled plastered surfaces including skimming surfaces plastered walls with stucco filler before painting to:-				
E	Walls; vertical; internal	Sm	4,126		
F	Reveals of walls; not exceeding 100 mm girth; internal	Lm	542		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 10** **INTERNAL FINISHES**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 11: EXTERNAL WALL FINISHES				
	Insitu finishes Cement sand backing				
A	20mm thick two coats external gauged plaster (1:2:9) steel trowelled smooth to sides of walls all as described; externally	Sm	2,519		
B	Reveals of walls; 100 - 200mm girth; external	Lm	542		
	Painting and decorating				
	Approved exterior quality paint; to crown paints or equal and approved to Wood floated rendered surfaces				
C	Surfaces of walls; vertical; external	Sm	2,183		
D	Reveals of walls; 100 - 200mm girth; external	Lm	542		
	Bricks cladding finishes				
	(Note: Tenderers to allow for cutting, fixing etc;)				
E	Supply and fix approved bricks cladding or equal and approved on cement and sand backing (m.s) with and including an approved adhesive and pointed in matching cement mortar; to surfaces of walls.	Sm	336		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 11** **EXTERNAL FINISHES**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 12: FLOOR FINISHES				
	Cement sand (1:4) backing or screeds on floor slab or beds in horizontal level as described in:				
A	32mm thick backing to receive granito/porcelain floor finish (m.s.)	Sm	1,001		
B	32mm thick backing to receive non-slip ceramic floor tiles (m.s.); waterproofed - bathrooms	Sm	135		
	Ceramic Tiles				
C	Supply and fix 600 x 600 x 10mm thick non-slip ceramic floor tiles to regular pattern bedding and jointing in cement mortar (1:4) and fixing with approved adhesive grouting joints with waterproofed epoxy grout using approved mechanical means; laid on cement and sand screed (m/s); Main floor areas	Sm	1,001		
D	Ditto; to bathrooms	Sm	135		
E	Ditto; 100mm high skirting in granito tiles having rounded top edge and coved junction to paving	Lm	1,020		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 12** **FLOOR FINISHES**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 13: CEILING FINISHES				
	Insitu finishes				
A	15mm thick two coats internal gauged plaster (1:2:9) steel trowelled smooth to soffits of ceiling all as described; internally	Sm	2,313		
	Gypsum ceiling				
	Supply and fix 9 mm thick Gypsum plasterboard fixed to galvanized mild steel framework suspended from concrete above with mild steel angle sections, perimeter channels, primary support channels, strap hangers connecting clips etc; butt jointed with scrim joint filler and taped finish; including breathers and skimming with gypsum plaster including forming and curved cuttings; all to Architect's approval and detailed drawings				
B	Ceiling surfaces; over 300 mm wide; internal	Sm	382		
C	18mm thick x 100mm wide laminated MDF cornice at junction of wall and slab; as per Architect's details and approval	Lm	165		
	Painting and Decorating				
	Apply one coat undercoat then two coats silk vinyl emulsion paint (first quality); to crown paints or equal and approved to steel trowelled plastered surfaces including skimming surfaces plastered walls with stucco filler before painting to:-				
D	Soffits of plastered ceiling surfaces; horizontal; internal	Sm	2,313		
E	Ditto; gypsum ceiling	Sm	382		
F	Ditto; cornice; girth 100 - 200mm	Lm	165		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **BUILDERS' WORKS** **ELEMENT No. 13** **CEILING FINISHES**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 15: SANITARY FITTINGS				
	Wash Sinks **100mm thick vibrated concrete class 20/20 sink tops, on and including 200mm thick masonry wall supports plastered and painted on all sides and soffits of slab; finished with 20mm thick granite top and 100mm high rounded edge fascia and splash back with proprietary adhesive; in matching colored waterproof proprietary grouting and silicon sealant with openings for wash hand basins reinforced with BRC A142 and complete with all necessary formwork etc.**				
A	3000mm long x 800mm wide x 900mm high	No.	2		
	CARRIED TO MAIN SUMMARY OF: **BILL NO. II** **MAIN HOUSE (BUILDERS' WORKS)** **ELEMENT No. 15** **FITTINGS**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	MAIN SUMMARY				
1	SUBSTRUCTURES		BW/4		
2	CONCRETE SUPERSTRUCTURE		BW/5		
3	STAIRCASE AND STAIRCASE FINISHES		BW/8		
4	BALCONY BALUSTRADING		BW/9		
5	ROOFING AND ROOF FINISHES		BW/12		
6	EXTERNAL WALLING		BW/13		
7	INTERNAL WALLING		BW/14		
8	WINDOWS AND WINDOW FINISHES		BW/16		
9	DOORS AND DOOR FINISHES		BW/20		
10	INTERNAL WALL FINISHES		BW/21		
11	EXTERNAL WALL FINISHES		BW/22		
12	FLOOR FINISHES		BW/23		
13	CEILING FINISHES		BW/24		
14	FITTINGS		BW/25		
	CARRIED TO GRAND SUMMARY PART C BUILDER'S WORKS				

EXTERNAL WORK

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 1: FOUL WATER DRAINAGE				
	Excavate trench for drain pipe not exceeding 1.50 metres deep, part return fill and ram and remainder cart away.				
A	Trench, average 1500mm deep for 200mm diameter pipe	Lm	23		
	Key terrain or other equal and approved buried waste and soil UPVC pipes and fittings.				
B	200mm diameter soil pipe laid in trench	Lm	23		
	Plain concrete 1:3:6 (25mm aggregates) in				
C	150mm Thick surround including haunching around 200mm diameter pipes	Lm	23		
	The following in inspection chambers				
D	Manhole TYPE B as per Engineer's drawing : consisting of 225mm thick concrete bed: 250mm thick average benching: 50mm thick concrete class 15 blinding: 200mm thick class 25/20 reinforced concrete slab: reinforced with 10mm diameter mild steel bars spaced at 200mm centers both ways: 150mm thick insitu concrete class 25/20 walls: reinforced with 10mm diameter mild steel bars at 200mm centers both ways: cement and sand render to walls: step irons to BS 1247 built into concrete at 300mm centers: excavations and soil disposal: formwork; 75mm thick heavy duty concrete manhole covers with cast iron frames; 1050mm internal dimensions, Maximum depth taken as 1500mm	No.	10		
	Testing and commissioning				
E	Allow for testing and commissioning the whole of foul drainage	Item			
	CARRIED TO MAIN SUMMARY OF: **BILL NO. III** **EXTERNAL WORKS (PROVISIONAL)** **ELEMENT No. 1** **FOUL WATER DRAINAGE**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	ELEMENT No. 2: STORM WATER DRAINAGE				
	Excavate trench for drain pipe not exceeding 1.50 metres deep, part return fill and ram and remainder cart away.				
	Excavations including maintaining and supporting sides and keeping free from water, mud and fallen material, supporting and underpinning adjacent structures as need be, trimming sides and bottom of excavations				
A	Trench, average 750mm deep x 600mm wide for 300mm wide shallow dish drain (m.s)	Lm	184		
	Plain concrete 1:3:6 (25mm aggregates) as described in				
B	75mm thick surround including haunching for shallow dish drain	Lm	184		
	Shallow dish drain				
C	450mm x 225mm x 300mm diameter invert block drain	Lm	184		
	Testing and commisioning				
D	Allow for testing and commissioning all storm water drainage works	Item			
	CARRIED TO MAIN SUMMARY OF: **BILL NO. III** **EXTERNAL WORKS (PROVISIONAL)** **ELEMENT No. 2** **STORM WATER DRAINAGE**				

ITEM	DESCRIPTION	UNIT	QTY	RATE Ksh.	AMOUNT Ksh.
	EXTERNAL WORKS (ALL PROVISIONAL)				
	MAIN SUMMARY				
1	FOUL WATER DRAINAGE		EW/1		
2	STORM WATER DRAINAGE		EW/2		
	CARRIED TO GRAND SUMMARY **PART D** **EXTERNAL WORKS**				

PROVISIONAL SUMS

ITEM	DESCRIPTION	UNIT	AMOUNT Ksh.
	PART E		
	PROVISIONAL SUMS		
A	Allow a Provisional Sum of Kenya Shillings Nine Hundred and Seventeen Thousand (Ksh. 917,000.00) only for concrete paving blocks around the tuition block	Sum	917,000.00
B	Allow a Provisional Sum of Kenya Shillings Two Hundred Thousand (Ksh. 200,000.00) for landscaping	Sum	200,000.00
	CARRIED TO GRAND SUMMARY PART E PROVISIONAL SUMS		**1,117,000**

VOLUME ONE: BUILDER'S WORK
GRAND SUMMARY

VOLUME 2

PLUMBING & DRAINAGE INSTALLATION WORKS

SUPPLY, DELIVERY, INSTALLATION, TESTING

AND COMMISSIONING OF SANITARY

FITTINGS, INTERNAL PLUMBING & DRAINAGE,

FIRE PROTECTION AND WATER

RETICULATION INSTALLATION WORKS

TABLE OF CONTENTS

SECTION A:

INSTRUCTIONS TO TENDERERS

INSTRUCTIONS TO TENDERERS
CONTENTS

AWARD OF CONTRACT

TENDEREVALUATIONCRITERIA

After tender opening, the tenders will be evaluated in **2 stages**, namely:

1. Preliminary examination;
2. Technical evaluation;

STAGE1:PRELIMINARY/MANDATORYREQUIREMENTS

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

These conditions may include the following:

i) Certificate of Incorporation
ii) Copy of CR12
iii) Current Category of Registration with National Construction Authority (NCA) in the relevant trade; NCA 4 and above
iv) Annual Current Licenses with NCA
v) Current Class of Licenses with the relevant statutory bodies i.e. **Must County Governments attach Drain Layers License and Business Permit**
vi) Valid Tax Compliance Certificate;
vii) Duly filled Confidential Business Questionnaire;
viii) Duly signed Statement of Compliance; and
ix) Compliance with Technical Specifications;
x) Duly signed and stamped contract agreement and witnessed by a commissioner of oath between the Main Contractor and the Domestic Subcontractor.

Note:

On compliance with Technical Specifications, bidders shall supply equipment/items which comply with the technical specifications set out in the bid document. In this regard, the bidder will be required to submit relevant technical brochure/catalogues with the tender document, highlighting (using a mark-pen or highlighter) the Catalogue Number/model of the proposed items. Such brochures/ catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:

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

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

The tenderer shall also fill in the Technical Schedule as specified in the tender document for Equipment and Items indicating the Country of Origin, Model/Make/Manufacturer and catalogue numbers of the Items/Equipment they propose to supply.

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

STAGE 2: TECHNICAL EVALUATION

The tenderer shall be required to fill Standard Forms Provided in the bid document for the purpose of providing information to assess their experience and personnel capacity in carrying out the works defined in the bid document. The tenderers may also attach the required information if they so desire;

The award of points considered in this section shall be as shown below:

PARAMETER	MAXIMUM POINTS
(i) Key personnel……	20
(ii) Contract Completed in the last Five (5) years……	18
(iii) Schedules of on-going projects……	5
(iv) Schedules of contractor's equipment……	9
(v) Litigation History……	3
TOTAL	55

The pass-mark under the Technical Evaluation is 40 Points.

The detailed scoring plan shall be as shown in table 1.

TABLE 1: Assessment for Eligibility

Item	Description	Points Scored	Max. Point	
1.	Key Personnel (Attach evidence)			20
	Director of the firm • Holder of degree in relevant Engineering field---------- 5 • Holder of diploma in relevant Engineering field----------4 • Holder of certificate in relevant Engineering field----------3 • Holder of trade test certificate in relevant Engineering field-------2 • No relevant certificate----------1		5	
	At least 1No. degree/diploma holder of key personnel in relevant field • With over 10 years relevant experience----------5 • With over 5 years relevant experience----------3 • With under 5 years relevant experience ----------2		5	
	At least 1No certificate holder of key personnel in relevant field • With over 10 years relevant experience---------- 5 • With over 5 years relevant experience ---------- 3 • With under 5 years relevant experience ----------2		5	
	At least 2No artisan (trade test certificate in relevant field) • Artisan with over 10 years relevant experience----------2.5 • Artisan with under 10 years relevant experience ----------2 • Non skilled worker with over 10 years relevant experience-----1		5	

Item	Description	Points Scored	Max. Point
2.	Contracts completed in the last five (5) years (Max of 3No. Projects)- Provide Evidence • Project of similar nature, complexity or magnitude---------- 6 • Project of similar nature but of lower value than the one in consideration----------4 • No completed project of similar nature---------- 0		18
3.	On-going projects – Provide Evidence • No Project of similar nature, complexity and magnitude ------- 5 • Three and below Projects of similar, nature complexity and magnitude –----------4 • Four and above Projects of similar nature, complexity and magnitude ---------- 2		5
4.	Schedule of contractor's relevant equipment (at least 6No.) • Has relevant equipment for work being tendered----------1.5 • No relevant equipment for work being tendered----------0		9
5.	Litigation History • Filled, Signed and Stamped ----------3 • Not filled ----------0		3
	TOTAL		55

Any bidder who scores 40 points and above shall be considered for further evaluation.

SECTION B:

PRELIMINARIES

AND

GENERAL CONDITIONS

CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

PRELIMINARIES AND GENERAL CONDITIONS

1.01 Examination of Tender Documents

The tenderer is required to check the number of pages of this document and should he find any missing or indistinct, he must inform the Engineer at once and have the same rectified.

All tenderers shall be deemed to have carefully examined the following:

Work detailed in the Specification and in the Contract Drawings.

The Republic of Kenya Document "General Conditions of Contract for Mechanical Works".

Other documents to which reference is made

He shall also be deemed to have included for any expenditure which may be incurred in conforming with the above items (a), (b), (c) and observe this expense as being attached to the contract placed for the whole or any part of the work.

The tenderer shall ensure that all ambiguities, doubts or obscure points of detail, are clarified with the Engineer before submission of his tender, as no claims for alleged deficiencies in the information given shall be considered after this date.

1.02 Discrepancies

The Contractor shall include all work either shown on the Contract Drawings or detailed in the specification. No claim or extra cost shall be considered for works which has been shown on the drawings or in the specification alone.

Should the drawing and the specification appear to conflict, the Domestic Sub-contractor shall query the points at the time of tendering and satisfy himself that he has included for the work intended, as no claim for extra payment on this account shall be considered after the contract is awarded.

1.03 Conditions of Contract Agreement

The Contractor shall be required to enter into a Sub contract Agreement with the Main Contractor before submission of the tender.

The Conditions of the Contract between the Main Contractor and any Domestic Sub-contractor as hereinafter defined shall be the latest edition of the Agreement and Schedule of Conditions of Kenya Association of Building and Civil Engineering Contractors as particularly modified and amended hereinafter.

For the purpose of this contract the Agreement and Schedule of Conditions and any such modifications and amendments shall read and construed together. In any event of discrepancy the modifications and amendments shall prevail.

1.04 Payment

Payment will be made through certificates to the Main Contractor. All payments will be less retention as specified in the Main Contract. No payment will become due until materials are delivered to site.

1.05 Definition of Terms

Throughout these contract documents units of measurements, terms and expressions are abbreviated and wherever used hereinafter and in all other documents they shall be interpreted as follows:

i) **Employer:** The term "**Employer"** shall mean **The PRINCIPAL, Office of the Attorney- General and Department of Justice.**

ii) **Architect:** The term **"Architect"** shall mean **The Chief Architect, State Department of Public Works**

iii) **Quantity Surveyor**: The term **"Quantity Surveyor"** shall mean **The Chief Quantity Surveyor, State Department of Public Works**

iv) **Civil/Structural Engineers**: The term **"Civil/Structural Engineers"** shall mean **The Chief Engineer (Structural), State Department of Public Works**

v) **Engineer**: The term **"Engineer"** shall mean **Chief Engineer Mechanical (BS), State Department of Public Works**

vi) **Main Contractor:** The term **"Main Contractor"** shall mean the firm or company appointed to carry out the Building Works and shall include his or their heir, executors, assigns, administrators, successors, and duly appointed representatives.

Domestic Sub-contractor: The term **"Domestic Sub-contractor"** shall mean the persons or person, firm or Company whose tender for this work has been accepted, and who has entered into a contract agreement with the Contractor for the execution of the Sub-contract Works, and shall include his or their heirs, executors, administrators, assigns, successors and duly appointed representatives.

viii) **Sub-contract Works:** The term **"Sub-contract Works"** shall mean all or any portion of the work, materials and articles, whether the same are being manufactured or prepared, which are to be used in the execution of this Sub-contract and whether the same may be on site or not.

Contract Drawings: The term **"Contract Drawings"** shall mean those drawings required or referred to herein and forming part of the Bills of Quantities.

Working Drawings: The term **"Working Drawings"** shall mean those drawings required to be prepared by the Domestic Sub-contractor as hereinafter described.

xi) **Record Drawings:** The term **"Record Drawings"** shall mean those drawings required tobe prepared by the Domestic Sub-contractor showing "as installed" and other records for the Sub-contract Works.

xii) **Abbreviations:**
CM shall mean **Cubic Metre**
SM shall mean **Square Metre**
LM shall mean **Linear Metre**
LS shall mean **Lump Sum**
mm shall mean **Millimetres**
No. Shall mean **Number**
Kg. shall mean **Kilogramme**
KEBS or KS shall mean **Kenya Bureau of Standards**
BS shall mean. **Current standard British Standard Specification published by the British Standard Institution, 2 Park Street, London W1, England**

"Ditto" shall mean the whole of the preceding description in which it occurs. Where it occurs in description of succeeding item it shall mean the same as in the first description of the series in which it occurs except as qualified in the description concerned. Where it occurs in brackets it shall mean the whole of the preceding description which is contained within the appropriate brackets.

1.06 Site Location

The site of the Contract Works is situated **Gatundu Town.** The tenderer is recommended to visit the site and shall be deemed to have satisfied himself with regard to access, possible conditions, the risk of injury or damage to property on/or adjacent to the site, and the conditions under which the sub-contract Works shall have to be carried out and no claims for extras will be considered on account of lack of knowledge in this respect.

1.07 **Duration of Sub-Contract**

The Contractor shall be required to phase his work in accordance with the Main contractor's programme (or its revision).

1.08 **Scope of Contract Works**

The contractor shall supply, deliver, unload, hoist, fix, test, commission and hand-over in satisfactory working order the complete installations specified hereinafter and/or as shown on the Contract Drawings attached hereto, including the provision of labour, transport and plant for unloading material and storage, and handling into position and fixing, also the supply of ladders, scaffolding the other mechanical devices to plant, installation, painting, testing, setting to work, the removal from site from time to time of all superfluous material and rubbish caused by the works.

The contractor shall supply all accessories, whether of items or equipment supplied by the Domestic Sub-contractor but to be fixed and commissioned under this contract.

1.09 **Extent of the Domestic Sub-contractor's Duties**

At the commencement of the works, the contractor shall investigate and report to the Engineer if all materials and equipment to be used in the work and not specified as supplied by the others are available locally. If these materials and equipment are not available locally, the contractor shall at this stage place orders for the materials in question and copy the orders to the Engineer. Failure to do so shall in no way relieve the contractor from supplying the specified materials and equipment in time.

Materials supplied by others for installation and/or connection by the Contractor shall be carefully examined in the presence of the supplier before installation and connection. Any defects noted shall immediately be reported to the Engineer.

The contractor shall be responsible for verifying all dimensions relative to his work by actual measurements taken on site.

The Contractor shall mark accurately on one set of drawings and Indicate all alterations and/or modifications carried out to the designed System during the construction period. This information must be made available on site for inspection by the Engineer.

1.10 **Execution of the Works**

The works shall be carried out strictly in accordance with:

a) All relevant Kenya Bureau of Standards Specifications.
b) All relevant British Standard Specifications and Codes of Practice (hereinafter referred to B.S. and C.P. respectively).
c) General specifications of materials and works Section D of this document
d) The Contract Drawings.
e) The Bye-laws of the Local Authority.
f) The Architect's and/or Engineer's Instructions.

The Contract Drawings and Specifications are to be read and construed together.

1.11 **Validity of Tender**

The tender shall remain valid for acceptance within 120 days from the final date of submission of the tender, and this has to be confirmed by signing the Tender Bond. The tenderer shall be exempted from this Bond if the tender was previously withdrawn in writing to the Employer before the official opening.

1.12 **Firm – Price Contract**

Unless specifically stated in the documents or the invitation to tender, this is a firm-price Contract and the contractor must allow in his tender for the increase in the cost of labour and/or materials during the duration of the contract. No claims will be allowed for increased costs arising from the fluctuations in duties and/or day to day currency fluctuations. The Domestic Sub-contractor will be deemed to have allowed in his tender for any increase in the cost of materials, which may arise as a result of currency fluctuation during the contract period.

1.13 **Variation**

No alteration to the Contract Works shall be carried out until receipt by the Contractor of written instructions from theProjectManager.

Any variation from the contract price in respect of any extra work, alteration or omission requested or sanctioned by the Engineer shall be agreed and confirmed in writing at the same time such variations are decided and shall not affect the validity of the Contract. Schedule of Unit Rates shall be used to assess the value of such variations. No allowance shall be made for loss of profit on omitted works.

Where the Architect requires additional work to be performed, the Domestic Sub-contractor, if he considers it necessary, will give notice within seven (7) days to the Main Contractor of the length of time he (the Domestic Sub-contractor) requires over and above that allotted for completion of the Contract.

If the Domestic Sub-contractor fails to give such notice he will be deemed responsible for the claims arising from the delay occasioned by reason of such extension of time.

1.14 **Prime Cost and Provisional Sums**

A specialist Domestic Sub-contractor may be nominated by the Project Manager to supply and/or install any equipment covered by the Prime Cost or Provisional Sums contained within the Contract documents.

The work covered by Prime Cost and Provisional Sums may or may not be carried out at the discretion of the Project Manager.

The whole or any part of these sums utilized by the Contractor shall be deducted from the value of the Contract price when calculating the final account.

1.15 **Bond**

The tenderer must submit with his tender the name of one Surety who must be an established Bank only who will be willing to be bound to the Government for an amount equal to 7½ % of the Contract amount as Clause 28 of the Conditions of Contract.

1.16 **Government Legislation and Regulations**

The Contractor's attention is called to the provision of the Factory Act 1972 and subsequent amendments and revisions, and allowance must be made in his tender for compliance therewith, in so far as they are applicable.

The Contractor must also make himself acquainted with current legislation and any Government regulations regarding the movement, housing, security and control of labour, labour camps, passes for transport, etc.

The Contractor shall allow for providing holidays and transport for work people, and for complying with Legislation, Regulations and Union Agreements.

1.17 **Import Duty and Value Added Tax**

The Domestic Sub-contractor will be required to pay full Import Duty and Value Added Tax on all items of equipment, fittings and plant, whether imported or locally manufactured. The tenderer shall make full allowance in his tender for all such taxes.

1.18 **Insurance Company Fees**

Attention is drawn to the tenderers to allow for all necessary fees, where known, that may be payable in respect of any fees imposed by Insurance Companies or statutory authorities for testing or inspection.

No allowance shall be made to the contractor with respect to fees should these have been omitted by the tenderer due to his negligence in this respect.

1.19 **Provision of Services by the Main Contractor**

In accordance with Clause 1.08 of this Specification the Contractor shall make the following facilities available to the Domestic Sub-contractor:

a) Attendance on the Domestic Sub-contractor and the carrying out of all work affecting the structure of the building which may be necessary, including all chasing, cutting away and making good brickwork, etc., except that all plugging for fixing, fittings, machinery, fan ducting, etc., and all drilling and tapping of steel work shall be the responsibility of the Domestic Sub-contractor. Any purpose made fixing brackets shall not constitute Builder's Work and shall be provided and installed by the Domestic Sub-contractor unless stated hereinafter otherwise.

b) The provision of temporary water, lighting and power: the Contractor pay for all these services utilized.

c) Fixing of anchorage and pipe supports in the shuttering shall be supplied by the Contractor who shall also supply the Project Manager with fully dimensioned drawings detailing the exact locations.

d) i)Provision of scaffolding, cranes, etc. It shall be the Contractor's responsibility to liaise with the Project Manager to ensure that there is maximum co-operation with other nominated Domestic Sub-contractors in the use of scaffolding, cranes, etc.

ii) Any specialist scaffolding, cranes, etc. by the Contractor for his own exclusive use shall be paid for by the Domestic Sub-contractor.

1.20 **Suppliers**

The Contractor shall submit names of any supplier for the materials to be incorporated, to the Engineer for approval. The information regarding the names of the suppliers may be submitted at different times, as may be convenient, but no sources of supply will be changed without prior approval.

Each supplier must be willing to admit the Engineer or his representative to his premises during working hours for the purpose of examining or obtaining samples of the materials in question.

1.21 **Samples and Materials Generally**

The Contractor shall, when required, provide for approval at no extra cost, samples of all materials to be incorporated in the works. Such samples, when approved, shall be retained by the Engineer and shall form the standard for all such materials incorporated.

1.22 **Administrative Procedure and Contractual Responsibility**

Wherever within the Specification it is mentioned or implied that the Contractor shall deal direct with the Employer or Engineer, it shall mean "through the Project Manager who is responsible to the Employer for the whole of the works including the Sub-contract Works.

1.23 **Bills of Quantities**

The Bills of Quantities have been prepared in accordance with the standard method of measurement of Building Works for East Africa, first Edition, Metric, 1970. All the Quantities are based on the Contract Drawings and are provisional and they shall not be held to gauge or to limit the amount or description of the work to be executed by the Contractor but the value thereof shall be deducted from the Contract Sum and the value of the work ordered by the Engineer and executed thereunder shall be measured and valued by the Engineer in accordance with the conditions of the Contract.

All work liable to adjustment under this Contract shall be left uncovered for a reasonable time to allow measurements needed for such adjustment to be taken by the Quantity Surveyor or Engineer. Immediately the work is ready for measuring the Contractor shall give notice to the Quantity Surveyor or Engineer to carry out measurements before covering up. If the Contractor shall make default in these respects he shall, if the Engineer so directs, uncover the work to enable the necessary measurements to be taken and afterwards reinstate at his own expense.

1.24 **Contractor's Office in Kenya**

The Contractor shall maintain (after first establishing if necessary) in Kenya an office staffed with competent Engineer Manager and such supporting technical and clerical staff as necessary to control and coordinate the execution and completion of the Contract Works.

The Engineer Manager and his staff shall be empowered by the Contractor to represent him at meetings and in discussions with the Project Manager, the Engineer and other parties who may be concerned and any liaison with the Contractor's Head Office on matters relating to the design, execution and completion of the Contract Works shall be effected through his office in Kenya.

It shall be the Contractor's responsibility to procure work permits, entry permits, licences, registration, etc., in respect of all expatriate staff.

The Contractor shall prepare a substantial proportion of his Working Drawings at his office in Kenya. No reasons for delays in the preparation or submission for approval or otherwise of such drawings or proposals will be accepted on the grounds that the Domestic Sub-contractor's Head Office is remote from his office in NAIROBI or the site of the Contract Works or otherwise.

1.25 **Builder's Work**

All chasing, cutting away and making good will be done by the Contractor. The Contractor shall mark out in advance and shall be responsible for accuracy of the size and position of all holes and chases required.

The Contractor shall drill and plug holes in floors, walls, ceiling and roof for securing services and equipment requiring screw or bolt fixings.

Any purpose made fixing brackets shall be provided and installed by the Contractor.

1.26 **Structural Provision for the Works**

Preliminary major structural provision has been made for the Contract Works based on outline information ascertained during the preparation of the Specification.

The preliminary major structural provision made will be deemed as adequate unless the Contractor stated otherwise when submitting his tender.

Any major structural provision or alteration to major structural provisions required by the Contractor shall be shown on Working Drawings to be submitted to the Engineer within 30 days of being appointed.

No requests for alterations to preliminary major structural provisions will be approved except where they are considered unavoidable by the Engineer. In no case will they be approved if building work is so far advanced as to cause additional costs or delays in the works.

1.27 **Position of Services, Plant, Equipment, Fittings and Apparatus**

The Contract Drawings give a general indication of the intended layout. The position of the equipment and apparatus, and also the exact routes of the ducts, main and distribution pipework shall be confirmed before installation is commenced. The exact siting of appliances, pipework, etc., may vary from that indicated.

The routes of services and positions of apparatus shall be determined by the approved dimensions detailed in the Working Drawings or on site by the Engineer in consultation with the Contractor.

Services through the ducts shall be arranged to allow maximum access along the ducts and the services shall be readily accessible for maintenance. Any work, which has to be re-done due to negligence in this respect, shall be the Domestic Sub-contractor's responsibility.

The Domestic Sub-contractor shall be deemed to have allowed in his Contract Sum for locating terminal points of services (e.g. lighting, switches, socket outlets, lighting points, control switches, thermostats and other initiating devices, taps, stop cocks) in positions plus or minus 1.2m horizontally and vertically from the locations shown on Contract Drawings. Within these limits no variations in the Contract Sum will be made unless the work has already been executed in accordance with previously approved Working Drawings and with the approval of the Engineer.

1.28 **Checking of Work**

The Contractor shall satisfy himself to the correctness of the connections he makes to all items of equipment supplied under the Contract agreement and equipment supplied under other contracts before it is put into operation. Details of operation, working pressures, temperatures, voltages, phases, power rating, etc., shall be confirmed to others and confirmation received before the system is first operated.

1.29 **Setting to Work and Regulating System**

The Contractor shall carry out such tests of the Contract Works as required by British Standard Specifications or equal and approved codes as specified hereinafter and as customary.

No testing or commissioning shall be undertaken except in the presence of and to the satisfaction of the Engineer unless otherwise stated by him (Contractor's own preliminary and proving tests excepted).

It will be deemed that the Contractor has included in the Contract Sum for the costs of all fuel, power, water and the like, for testing and commissioning as required as part of the Contract Works. He shall submit for approval to the Engineer a suitable programme for testing and commissioning. The Engineer and Employer shall be given ample warning in writing, as to the date on which testing and commissioning will take place.

The Contractor shall commission the Contract Works and provide attendance during the commissioning of all services, plant and apparatus connected under the Contract Agreement or other Sub-contract Agreements, related to the project.

Each system shall be properly balanced, graded and regulated to ensure that correct distribution is achieved and where existing installations are affected, the Contractor shall also regulate these systems to ensure that their performance is maintained.

The proving of any system of plant or equipment as to compliance with the Specification shall not be approved by the Engineer, except at his discretion, until tests have been carried out under operating conditions pertaining to the most onerous conditions specified except where the time taken to obtain such conditions is unreasonable or exceeds 12 months after practical completion of the Contract Works.

1.30 **Identification of Plant Components**

The Contractor shall supply and fix identification labels to all plant, starters, switches and items of control equipment including valves, with white traffolyte or equal labels engraved in red lettering denoting its name, function and section controlled. The labels shall be mounted on equipment and in the most convenient positions. Care shall be taken to ensure the labels can be read without difficulty. This requirement shall apply also to major components of items of control equipment.

Details of the lettering of the labels and the method of mounting or supporting shall be forwarded to the Engineer for approval prior to manufacture.

1.31 **Contract Drawings**

The Contract Drawings when read in conjunction with the text of the Specification, have been completed in such detail as was considered necessary to enable competitive tenders to be obtained for the execution and completion of the Contract works.

The Contract Drawings are not intended to be Working Drawings and shall not be used unless exceptionally they are released for this purpose.

1.32 **Working Drawings**

The Contractor shall prepare such Working Drawings as may be necessary. The Working Drawings shall be complete in such detail not only that the Contract Works can be executed on site but also that the Engineer can approve the Contractor's proposals, detailed designs and intentions in the execution of the Contract Works.

If the Contractor requires any further instructions, details, Contract Drawings or information drawings to enable him to prepare his Working Drawings or proposals, the Contractor shall accept at his own cost, the risk that any work, commenced or which he intends to commence at site may be rejected.

The Engineer, in giving his approval to the Working Drawings, will presume that any necessary action has been, or shall be taken by the Contractor to ensure that the installations shown on the Working Drawings have been cleared with the Project Manager and any other Domestic Sub-contractors whose installations and works might be affected.

If the Contractor submits his Working Drawings to the Engineer without first liaising and obtaining clearance for his installations from the Project Manager and other Domestic Sub-contractors whose installations and works might be affected, then he shall be liable to pay for any alterations or modification to his own, or other Domestic Sub-contractor's installations and works, which are incurred, notwithstanding any technical or other approval received from the Engineer.

Working Drawings to be prepared by the Contractor shall include but not be restricted to the following:

Any drawings required by the Engineer to enable structural provisions to be made including Builder's Working Drawings or Schedules and those for the detailing of holes, fixings, foundations, cables and paperwork ducting below or above ground or in or outside or below buildings.

General arrangement drawings of all plant, control boards, fittings and apparatus or any part thereof and of installation layout arrangement of such plant and apparatus.

Schematic Layout Drawings of services and of control equipment.

Layout Drawings of all embedded and non-embedded paperwork, ducts and electrical conduits.

Complete circuit drawings of the equipment, together with associated circuit description.

Such other drawings as are called for in the text of the Specification or Schedules or as the Engineer may reasonably require.

Three copies of all Working Drawings shall be submitted to the Engineer for approval. One copy of the Working Drawings submitted to the Engineer for approval shall be returned to the Contractor indicating approval or amendment therein.

Six copies of the approved Working Drawings shall be given to the Project Manager by the Domestic Sub-contractor for information and distribution to other Domestic Sub-contractors carrying out work associated with or in close proximity to or which might be affected by the Sub-contract Works.

Approved Working Drawings shall not be departed from except as may be approved or directed by the Engineer.

Approval by the Engineer of Working Drawings shall neither relieve the Contractor of any of his obligations under the Sub-contract nor relieve him from correcting any errors found subsequently in the Approved Working Drawings or other Working Drawings and in the Sub-contract Works on site or elsewhere associated therewith.

The Contractor shall ensure that the Working Drawings are submitted to the Engineer for approval at a time not unreasonably close to the date when such approval is required. Late submission of his Working Drawings will not relieve the Contractor of his obligation to complete the Contract Works within the agreed Contract Period and in a manner that would receive the approval of the Engineer.

1.33 **Record Drawings (As Installed) and Instructions**

During the execution of the Contract Works the Contractor shall, in a manner approved by the Engineer record on Working or other Drawings at site all information necessary for preparing Record Drawings of the installed Contract Works. Marked-up Working or other Drawings and other documents shall be made available to the Engineer as he may require for inspection and checking.

Record Drawings, may, subject to the approval of the Engineer, include approved Working Drawings adjusted as necessary and certified by the Contractor as a correct record of the installation of the Contract Works.

They shall include but not restricted to the following drawings or information:
Working Drawings amended as necessary but titled "Record Drawings" and certified as a true record of the "As Installed" Sub-contract Works. Subject to the approval of the Engineer such Working Drawings as may be inappropriate may be omitted.

Fully dimensioned drawings of all plant and apparatus.

General arrangement drawings of equipment, other areas containing plant forming part of the Contract Works and the like, indicating the accurate size and location of the plant and apparatus suitability cross-referenced to the drawings mentioned in (b) above and hereinafter.

Routes, types, sizes and arrangement of all pipework and ductwork including dates of installation of underground pipework.

Relay adjustment charts and manuals.

Routes, types, sizes and arrangement of all electric cables, conduits, ducts and wiring including the dates of installation of buried works.
System schematic and trunking diagrams showing all salient information relating to control and instrumentation.

Grading Charts
Valve schedules and locations suitability cross-referenced.

Wiring and piping diagrams of plant and apparatus.
Schematic diagrams of individual plant, apparatus and switch and control boards. These diagrams to include those peculiar to individual plant or apparatus and also those applicable to system operation as a whole.

Operating Instruction
Schematic and wiring diagrams shall not be manufacturer's multipurpose general issue drawings. They shall be prepared specially for the Contract Works and shall contain no spurious or irrelevant information.

Marked-up drawings of the installation of the Contract Works shall be kept to date and completed by the date of practical or section completion. Two copies of the Record Drawings of Contract Works and two sets of the relay adjustment and grading charts and schematic diagrams on stiff backing shall be provided not later than one month later.

The Contractor shall supply for fixing in sub-stations, switch-rooms, boiler houses, plant rooms, pump houses, the office of the Maintenance Engineer and other places, suitable valve and instructions charts, schematic diagrams of instrumentation and of the electrical reticulation as may be requested by the Engineer providing that the charts, diagrams, etc., relate to installations forming part of the Contract Works. All such charts and diagrams shall be of suitable plastic material on a stiff backing and must be approved by the Engineer before final printing.

Notwithstanding the Contractor's obligations referred to above, if the Contractor fails to produce to the Engineer's approval, either:-

The Marked-up Drawings during the execution of the Contract Works or

The Record Drawings, etc., within one month of the Section or Practical Completion

The Engineer shall have these drawings produced by others. The cost of obtaining the necessary information and preparing such drawings, etc., will be recovered from the Contractor.

1.34 **Maintenance Manual**
Upon Practical Completion of the Contract Works, the Contractor shall furnish the Engineer four copies of a Maintenance Manual relating to the installation forming part of all of the Contract Works.

The manual shall be loose-leaf type, International A4 size with stiff covers and cloth bound. It may be in several volumes and shall be sub-divided into sections, each section covering one Engineering service system. It shall have a ready means of reference and a detailed index.

There shall be a separate volume dealing with Air Conditioning and Mechanical Ventilation installation where such installations are included in the Contract Works.

The manual shall contain full operating and maintenance instructions for each item of equipment, plant and apparatus set out in a form dealing systematically with each system. It shall include as may be applicable to the Contract Works the following and any other items listed in the text of the Specifications:
System Description.

Plant

Valve Operation Switch

Operation Procedure of

Fault Finding Emergency

Procedures Lubrication

Requirements

Maintenance and Servicing Periods and Procedures

Color Coding Legend for all Services

Schematic and Writing Diagrams of Plant and Apparatus

Record Drawings, true to scale, folded to International A4 size

Lists of Primary and Secondary Spares.

The manual is to be specially prepared for the Contract Works and manufacturer's standard descriptive literature and plant operating instruction cards will not be accepted for inclusion unless exceptionally approved by the Engineer. The Contractor shall, however, affix such cards, if suitable, adjacent to plant and apparatus. One spare set of all such cards shall be furnished to the Engineer.

1.35 **Hand-over**

The Contract Works shall be considered complete and the Maintenance and Defects Liability Period shall commence only when the Contract Works and supporting services have been tested, commissioned and operated to the satisfaction of the Engineer and officially approved and accepted by the Employer.

The procedure to be followed will be as follows:
On the completion of the Contract Works to the satisfaction of the Engineer and the Employer, the Contractor shall request the Engineer, at site to arrange for handing over.

The Engineer shall arrange a Hand-over Meeting or a series thereof, at site.

The Contractor shall arrange with the Engineer and Employer for a complete demonstration of each and every service to be carried out and for instruction to be given to the relevant operation staff and other representatives of the Employer.

In the presence of the Employer and the Engineer, Hand-over will take place, subject to Agreement of the Hand-over Certificates and associated check lists.

1.36 **Painting**

It will be deemed that the Contractor allowed for all protective and finish painting in the Contract Sum for the Contract Works, including color coding of service pipework to the approval of the Engineer. Any special requirements are described in the text of the Specifications.

1.37 **Spares**

The Contractor shall supply and deliver such spares suitably protected and boxed to the Engineer's approval as are called for in the Specifications or in the Price Schedules.

1.38 **Testing and Inspection – Manufactured Plant**

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

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

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

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

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

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

1.39 **Testing and Inspection -Installation**

Allow for testing each section of the Contract Works installation as described hereinafter to the satisfaction of the Engineer.

1.40 **Labour Camps**

The Contractor shall provide the necessary temporary workshop and mess-room in position to be approved by the Architect.

The work people employed by the Contractor shall occupy or be about only that part of the site necessary for the performance of the work and the Contractor shall instruct his employees accordingly.

If practicable, W.C. accommodation shall be allocated for the sole use of the Contractor's workmen and the Domestic Sub-contractor will be required to keep the same clean and disinfected, to make good any damage thereto and leave in good condition.

1.41 **Storage of Materials**

The Contractor shall provide storerooms and workshop where required. He shall also provide space for storage to nominated Domestic Sub-contractors who shall be responsible for these lock-up shades or stores provided.

Nominated Domestic Sub-contractors are to be made liable for the cost of any storage accommodation provided specially for their use. No materials shall be stored or stacked on suspended slabs without the prior approval of the Project manager.

1.42 **Initial Maintenance**

The Contractor shall make routine maintenance once a month during the liability for the Defects Period and shall carry out all necessary adjustments and repairs, cleaning and oiling of moving parts. A monthly report of the inspection and any works done upon the installation shall be supplied to the Engineer.

The Contractor shall also provide a 24 -hour break-down service to attend to faults on or malfunctioning of the installation between the routine visits of inspection.

The Contractor shall allow in the contract Sum of the initial maintenance, inspection and break-down service and shall provide for all tools, instruments, plant and scaffolding and the transportation thereof, as required for the correct and full execution of these obligations and the provision, use or installation of all materials as oils, greases, sandpaper, etc., or parts which are periodically renewed such as brake linings etc., or parts which are faulty for any reason whatsoever excepting always Acts of God such as storm, tempest, flood, earthquake and civil revolt, acts of war and vandalism.

1.43 **Maintenance and Servicing After Completion of the Initial Maintenance**

The Contractor shall, if required, enter into a maintenance and service agreement with the employer for the installation for a period of up to five years from the day following the last day of the liability for Defects Period which offers the same facilities as specified in Clause 1.41 (Initial Maintenance).

The terms of any such agreement shall not be less beneficial to the employer than the terms of Agreements for either similar installation.

The Contractor shall submit with his tender for the works, where called upon a firm quotation for the maintenance and service of the installation as specified herein, which shall be based upon the present day costs and may be varied only to take into account increases in material and labour unit rate costs between the time of tendering and the signing of the formal maintenance and service agreement and which shall remain valid and open for acceptance by the Employer to and including the last day of the fifth complete calendar month following the end of the liability for Defects Period.

1.44 **Trade Names**

Where trade names of manufacturer's catalogue numbers are mentioned in the Specification or the Bills of Quantities, the reference is intended as a guide to the type of article or quality of material required. Alternate brands of equal and approved quality will be acceptable.

1.45 **Water and Electricity for the Works**

These will be made available by the Contractor who shall be liable for the cost of any water or electric current used and for any installation provided especially for his own use.

1.46 **Protection**

The Contractor shall adequately cover up and protect his own work to prevent injury and also to cover up and protect from damage all parts of the building or premises where work is performed by him under the Contract.

1.47 **Defects after Completion**

The defects liability period will be 6 months from the date of practical completion of the Works in the Contract and certified by the Engineer.

1.48 **Damages for Delay**

Liquidated and Ascertained damages as stated in the Contract Agreement will be claimed against the Contract for any unauthorized delay in completion. The Contractor shall be held liable for the whole or a portion of these damages should he cause delay in completion.

1.49 **Clear Away on Completion**

The Contractor shall, upon completion of the works, at his own expense, remove and clear away all plant, equipment, rubbish and unused materials, and shall leave the whole of the works in a clean and tidy state, to the satisfaction of the Engineer. On completion, the whole of the works shall be delivered up clean, complete and perfect in every respect to the satisfaction of the Engineer.

1.50 **Final Account**

On completion of the works the Contractor shall agree with the Engineer the value of any variations outstanding and as soon as possible thereafter submit to the Engineer his final statement of account showing the total sum claimed sub-divided as follows:

Statement A - detailing the tender amounts less the Prime Cost and Provisional Sums, included therein.

Statement B - detailing all the variation orders issued on the contract.

Statement C - Summarizing statement A and B giving the net grand total due to the Contractor for the execution of the Contract.

1.51 **Fair Wages**

The Contractor shall in respect of all persons employed anywhere by him in the execution of the contract, in every factory, workshop or place occupied or used by him for execution of the Contract, observe and fulfil the following conditions:

The Contractor shall pay rates of the wages and observe hours and conditions of labour not less favourable than those established for the trade or industry in the district where work is carried out.

In the absence of any rates of wages, hours or conditions of labour so established the Contractor shall pay rates and observe hours and conditions of labour are not less favourable than the general level of wages, hours and conditions observed by other employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.

1.52 **Supervision**

During the progress of the works, the Contractor shall provide and keep constantly available for consultation on site experienced English - speaking Supervisor and shall provide reasonable office facilities, attendance, etc., for the Supervisor.

In addition, during the whole of the time the works are under construction, the Contractor shall maintain on site one experienced foreman or charge-hand and an adequate number of fitters, etc., for the work covered by the Specification. The number of this staff shall not be reduced without the prior written approval of the Project manager or Engineer.

Any instructions given to the Supervisor on site shall be deemed to have been given to the Domestic Sub-contractor.

One copy of this Specification and one copy of each of the Contract Drawings (latest issue) must be retained on site at all times, and available for reference by the Engineer or Domestic Sub-contractor.

1.53 **Test Certificates**

The Contractor shall provide the Engineer with three copies of all test reports or certificates that are or may be required by this Specification.

1.54 **Labour**

The Contractor shall provide skilled and unskilled labour as may be necessary for completion of the contract.

1.55 **Discounts to the Main Contractor**

No discount to any Domestic Sub-contractor will be included in the tender for this installation.

1.56 **Guarantee**

The whole of the work will be guaranteed for a period of six months from the date of the Engineer's certification of completion and under such guarantee the Domestic Sub-contractor shall remedy at his expense all defects in materials and apparatus due to faulty design, construction or workmanship which may develop in that period.

1.57 **Direct Contracts**

Notwithstanding the foregoing conditions, the Government reserves the right to place a "Direct Contract" for any goods or services required in the works which are covered by a P.C Sum in the Bills of Quantities and to pay for the same direct. In any such instance, profit relative to the P.C Sum in the priced Bills of Quantities will be adjusted as deserved for P.C Sum allowed.

1.58 **Attendance upon the Tradesmen etc**

The Contractor shall allow for the attendance of trade upon trade and shall afford any tradesmen or other persons employed for the execution of any work not included in this contract every facility for carrying out their work and also for the use of ordinary scaffolding. The contractor however, shall not be required to erect any special scaffolding for them.

1.59 **Trade Unions**

The contractor shall recognize the freedom of his work people to be members of trade unions.

1.60 **Local and other Authorities notices and fees**

The contractor shall comply with and give all notices required by any Regulations, Act or by Law of any Local Authority or of any Public Service, Company or Authority who have any jurisdiction with regard to the works or with those systems the same are or will be connected and he shall pay and indemnify the Government against any fees or charges legally demandable under any regulation or by-law in respect of the works; provided that the said fees and charges if not expressly included in the contract sum or stated by way of provisional sum shall be added to the contract sum.

The contractor before making any variation from the contract drawings or specification necessitated by such compliance shall give the Project Manager written notice specifying and giving the reason for such variation and applying for instructions in reference thereto.

If the contractor within seven days of having applied for the same does not receive such instructions, he shall proceed with the works in conforming to the provision regulation or by-law in question and any variation thereby necessitated shall be deemed to be a variation in accordance to the conditions of contract.

1.61 **Assignment or subletting**

The contractor shall not without the written consent of the Project Manager assign this contract or sublet any portion of the works, provided that such consent shall not be unreasonably withheld to the prejudice of the contractor.

1.62 **Partial Completion**

If the Government shall take over any part or parts works, apparatus, equipment etc. then within seven days from the date on which the Government shall have taken possession of the relevant part, the Project Manager shall issue a Certificate stating his estimate of the approximate total value of the works which shall be the total value of that part and practical completion of the relevant part shall be deemed to have occurred, and the Defects Liability Period in respect of the relevant part be deemed to have commenced on the date Government shall have taken possession thereof.

The contractor shall make good any defects or other faults in the relevant part that had been deemed complete.
The contractor shall reduce the value of insurance by the full value of the relevant part
The contractor shall be paid for the part of works taken possession by the Government

1.63 **Temporary Works**

Where temporal works shall be deemed necessary, such as Temporary lighting, the contractor shall take precaution to prevent damage to such works.

The contractor shall include for the cost of and make necessary arrangements with the Project Manager for such temporary works. For temporary lighting, electricity shall be metered and paid for by the contract

1.64. **Patent Rights**

The contractor shall fully indemnify the Government of Kenya; against any action, claim or proceeding relating to infringement of any patent or design rights, and pay any royalties which may be payable in respect of any article or any part thereof, which shall have been supplied by the contractor to the Project Manager. In like manner the Government of Kenya shall fully indemnify the contractor against any such action, claim or proceedings for infringement under the works, the design thereof of which shall have been supplied by the Project Manager to the contractor, but this indemnify shall apply to the works only, and any permission or request to manufacture to the order of the Project Manager shall not relieve the contractor from liability should he manufacture for supply to other buyers.

1.65 **Mobilization and Demobilization**

The contractor shall mobilize labour plant and equipment to site according to his programme and schedule of work. He shall ensure optimum presence and utilization of labour, plant and equipment. He should not pay and maintain unnecessary labour force or maintain and service idle plant and equipment. Where necessary he shall demobilize and mobilize the labour, plant and equipment, as he deems fit to ensure optimum progress of the works and this shall be considered to be a continuous process as works progress. He shall make provision for this item in his tender. No claim will be entertained where the contractor has not made any provision for mobilization and demobilization of labour, plant and equipment in the preliminary bills of quantities or elsewhere in this tender.

1.66 **Extended Preliminaries**

Where it shall be necessary to extend the contract period by the Project manager the contractor shall still ensure availability on site, optimum labour, materials, plant and equipment. The contractor shall make provision for extended preliminaries, should the contract period be extended and this shall be in a form of a percentage of the total Contractor works. Where called upon in the Appendix to these Preliminaries the Contractor shall insert his percentage per month for extended preliminaries that shall form basis for compensation.

Lack of inserting the percentage shall mean that the Domestic Sub-contractor has provided for this requirement elsewhere in the Bills of Quantities.

1.67 **Supervision by Engineer and Site Meetings**

A competent Project Engineer appointed by the Engineer as his representative shall supervise the Contract works. The Project Engineer shall be responsible for issuing all the site instructions in any variations to the works and these shall be delivered through the Contractor with the authority of the Project Manager. Any instructions given verbal shall be confirmed in writing.

The project engineer and (or) the Engineer shall attend management meetings arranged by the Project Manager and for which the Contractor or his representative shall also attend. For the purpose of supervising the project, provisional sums are provided to cover for transport and allowances. The Contractor shall in his tender allow for the provision of management meetings and site inspections, as instructed by the Engineer, and also profit and attendance on these funds. The funds shall be expended according to Project Manager's instructions to the contractor.

1.68 **Amendment to Scope of Contract Works**

No amendment to scope of sub-contract works is expected and in case of amendment or modification to scope of work, these shall be communicated to all tenderers in sufficient time before the deadline of the tender submission. However during the contract period and as the works progress the Project Manager may vary the works as per conditions of contract by issuing site instructions.

No claims shall be entertained on account of variation to scope of works either to increase the works (pre-financing) or reduction of works (loss of profit-see clause 1.70)

1.69 **Contractor Obligation and Employers Obligation**

The Domestic Sub-contractor will finance all activities as part of his obligation to this contract. The employer shall pay interim payment for materials and work completed on site as his obligation in this contract, as the works progresses. No claims will be entertained for pre-financing of the project by the Domestic Sub-contractor, or for loss of profit (expectation loss) in case of premature termination, reduction or increase of works as the Domestic Sub-contractor shall be deemed to have taken adequate measures in programming his works and expenditure and taken necessary financial precaution while executing the works. No interest shall be payable to the Contractor, except as relates to late payment as in the conditions of contract clause 23.3. The contractor shall where called upon, insert his price to compensate for any of the occurrence stated here (premature termination, reduction or increase of works), as a percentage of the contract sum in the Appendix to this section.

SECTION C:

GENERAL MECHANICAL SPECIFICATIONS

SECTION D

GENERAL MECHANICAL SPECIFICATION

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 Domestic 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 Domestic Sub-contractor.

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

Materials and apparatus supplied by others for installation and connection by the Domestic Sub-contractor shall be carefully examined on receipt. Should any defects be noted, the Domestic 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 Chartered Institute of Building Services Engineers (CIBSE) Guides.
b) British Standard and Codes of Practice as published by the British Standards Institution (BSI)
e) The Local Council By-laws.
f) The Water Supply Authority By-laws.
g) County 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 Domestic Sub-contractor. All other wiring and connections to equipment shall form part of this Sub-contract and be the responsibility of the Domestic Sub-contractor.

The Domestic 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 Domestic 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 Domestic 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 Domestic Sub-contractor shall replace this equipment at his own cost.

2.06 **Site Supervision**

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

The Engineer or his representative shall be entitled to witness such tests and inspections. The cost of such tests and inspections shall be borne by the Domestic 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 Domestic 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 Domestic 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 Domestic 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 Domestic Sub-contractor and the specified tests shall then be applied.

The Domestic 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 WeldingCodeandConstruction

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

a) PipeWelding

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

b) GeneralWelding

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

2.10.4 WeldersQualifications

Any welder employed on this Domestic 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 D:

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 Domestic 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 Domestic 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 Domestic 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 Domestic 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 (Upto 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 Littleshampton, 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 Domestic Sub-contractor shall supply and install all steelwork forming part of the pipe support assemblies and shall be responsible for making good damage to builders work associated with the pipe support installation.

The Domestic Sub-contractor shall submit all his proposals for pipe supports to the Engineer for approval before any erection works commence.

b) CPVCPipework

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) SteelandCopperPipesandTubes

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 Domestic 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 Domestic 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 Domestic 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 Domestic 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 Domestic 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 Domestic 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 Domestic 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 Domestic Sub-contractor and the section re-tested.

The Domestic 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 Domestic 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 Domestic 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 Domestic Sub-contractor in accordance with the requirements of B.S. Code of Practice 301, Clause 409 and to the approval of the Engineer.

SECTION E:

PARTICULAR SPECIFICATION FOR PORTABLE FIRE EXTINGUISHER BOOSTED HOSE REEL SYSTEM, DRY RISER, FIRE HYDRANT INSTALLATIONS AND FIRE SPRINKLER SYSTEM

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 Domestic 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 Domestic 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 Domestic 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 it s 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 Domestic 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 fire fighting 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 Domestic 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 Domestic 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 through out 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.

5.4 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:

6.0 PARTICULAR SPECIFICATION FOR SPRINKLER SYSTEM

6.1 General

The particular specification details the requirements for the supply, installation and commissioning of the Automatic Sprinkler Installation. The sprinkler installation shall comply in all respects to the requirements set out in the National Fire Protection Association (NFPA 13, 2002 Edition and any ADDENDUM thereafter) for Automatic Sprinkler Installation, for Ordinary Hazard Installations.

The Domestic 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.

No claims for extra payment shall be accepted from the Domestic Sub-contractor because of his non-compliance with the above requirements.

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

6.2 Climatic Conditions

a) The following climatic conditions apply at the site of the works and all plant, equipment, apparatus, materials and installations shall be suitable for these conditions.
b) Where not otherwise stated, all rating of plant equipment and apparatus shall be interpreted at site rating and NOT sea level or other ratings.

c) Maximum mean temperature - 28.3^0 C
Minimum mean temperature - 12^0 C
Range of relative humidity - 40-90%
Altitude 1687 meters
Latitude 1^0 16'S
Longitude 34^0 48'E
Rainfall Heavy at certain periods of the year

The Domestic Sub-contractor shall be deemed to have taken account of the above details in his prices and his planning of the execution of the works.

6.3 Scope of Works

The Domestic Sub-contractor shall supply, deliver, erect, test and commission all the automatic fire fighting sprinkler installation which is called for in this specification and shown on the Contract Drawings listed in the drawing schedule.

The Domestic Sub-contractor shall be responsible for making a new connection to the existing Local Authority water mains, supplying laying and connecting service pipe up to water tank.

The Domestic Sub-contractor shall install all the electrical pumps called for in this Sub-Contract, including inter-wiring from a local isolator to the Control Panel. The electrical Domestic Sub-contractor shall supply electrical power, up to and including the local isolator.

If so desired, the Domestic Sub-contractor shall ask the Electrical Domestic Sub-contractor to install starting and stopping gears, indication equipment and all electrical connections to the sprinkler system in compliance with electrical regulation. However, the Domestic Sub-contractor for the Works contained in this document shall retain full responsibility for the correct functioning of the installation.

The Sprinkler system shall be fed by the sources of water supply described below:

i. A 50mm nominal diameter water service main tapped off the existing Local Authority Water Mains.
ii. A concrete water storage tank in the basement and 1No. Automatic electric pump 1No. Diesel Pump and 1No. Jockey pump.
iii. A two-way inlet breeching valve to be used by the Local Authority's Fire Brigade.

6.4 Standards and Definitions

a) General: Comply with applicable standards as indicated herein, and as required by governing authorities for general requirements to comply with applicable standards for the work. The latest edition of the following industry standards contains provisions which are explicitly applicable to the works.

b) Standards

1. "Approval Guide" by Factory Mutual (FM)

2. "FireProtection Equipment Directory" by Underwriters Laboratories, Inc. (UL)

3. Standards by the National Fire Protection Association (NFPA), including the following:

   a. Std.13, Installation of Sprinkler Systems.
   b. Std.14, Installation of Standpipe and Hose Systems.
   c. Std.20, Installation of Centrifugal Fire Pumps.
   d. Std.24, Installation of Private Fire Service Mains/Apparatuses.
   e. Std.25, Water Based Fire Protection Systems.
   f. Std.70, National Electric Code.

c) Definitions: Except as otherwise indicated herein, refer to NFPA 13 for definition of general fire sprinkler terminology used in this Section.

6.5 Submittals

a. General: Submit the following, in compliance with provisions of Section 01301, "Construction Submittals" hereof, and in compliance with CC&C provisions.

b. Product Data for system components. Include descriptive and technical literature, catalogue cuts and installation instructions. Submit (6) bound copies of product data.

c. Shop Drawings in accordance with NFPA 13 must be submitted to the Engineer for review and approval prior to purchasing of equipment or installation of system. Shop drawings must be no smaller than 607 x 914 mm in size and in minimum scale of 1:100.

d. Quality Control Data: Following installation of work in this Section, including field testing, submit field test report and certified statement of compliance with requirements duly signed by a trained personnel.

e. Provide Project Record Drawings (As-Built), not smaller than 607 x 914 mm and in minimum scale of 1:100. Identify final installed location of valves, auxiliary drains, sprinkler heads, piping, etc. on project record drawings. Provide project record drawings prior to time of commissioning.

6.6 Quality Assurance

a. Installer Qualifications: The contractor shall employ at least one person qualified for installation of automatic fire sprinkler systems. The automatic sprinkler system installer shall have a minimum of five years experience in the requirements and installation of automatic sprinkler systems. The contractor shall complete an automatic sprinkler system certificate of completion and present this documentation to the Project Engineer with a copy to the Client. The individual shall remain on site for the commissioning and acceptance of the system, and to resolve any discrepancies found by Engineer.

b. Components and Installation: Provide equipment and installation in compliance with NFPA 13, "Automatic Sprinkler Systems."

c. NFPA Compliance: Provide fire sprinkler system conforming to requirements of NFPA 13, "Automatic Sprinkler Systems."

6.7 Automatic Sprinkler Pumps

The automatic sprinkler pumps shall consist of automatic horizontally mounted centrifugal electrically driven pump, diesel pump and an automatic jockey pump.

The automatic sprinkler pumps shall be SPP packaged sprinkler pumping set (or approved equivalent), comprising of two pumps and a Jockey pump. One pump shall be duty and the other pump standby. Both pumps shall be supplied with power as per FOC regulations and be complete with delivery check valves, delivery stop valves, pressure switch arrangement, etc. and all other accessories

Both pumps shall be connected to the maintained bus bar of the MV switchboard and the other one to be coupled to a diesel engine.

6.7.1 Electric Pump

The pump shall be capable of providing at the installation control valve a running pressure of at least 1.4 bars plus the pressure equivalent of the difference in height between the highest sprinkler and the valves when the water is being discharge from the valves at a rate of 2250L/min (37.2 L/s).

The pump shall be constructed of cast iron with impeller of cast iron and shall have mechanical seals. Electric motor driven pump shall be close coupled complete with the panel (Star-delta starter).

The motor shall be three phase totally enclosed fan cooled squirrel cage continuously rated complying in general with B.S 1613/1970.

The pump construction shall be according to LPC rules for automatic sprinkler installations and shall incorporate BS 5306 part 2.

Provision shall be made for **low level cut outs** to the pumps to prevent dry pump run in the event of low level water conditions.

The pump shall be provided with a plate giving the output pressure at the nominal flow specified. Where the performance characteristic is achieved with an orifice plate not integral with the pump delivery, the pump name plate shall carry a reference to the fact that the performance given is that of the pump and orifice plate combination, and reference shall be made to the orifice K factor.

An automatic jockey pump shall be capable of delivering 6.3L/s) at a static pressure of 10.0 bars. Speed shall be 2900rpm as SPP model or approved equivalent complete with accessories and connected to the same control panel as for the main sprinkler pumps.

6.7.2 The Diesel Engine.

The diesel engine construction shall incorporate the following requirements:

6.7.2.1 Type and Design

Vertical type multi - cylinder four-stroke diesel engine to be gear driven through flexible coupling, the fuel pump shall be integral and shall incorporate a hand primer, complete with all necessary ancillary equipment and drives, constructed to comply with B.S 649 and suitable for running continuously on oil engine fuel to B.S 2369, Class A.

6.7.2.2 Rating

The rating shall be continuous as defined in B.S. 649.

6.7.2.3 Speed and Governing

The normal speed of the engine shall be 1500 revolutions per minute.
Speed governing shall be to B.S 649, Class A and over speed protection shall be provided.

6.7.2.4 Time of Run-up to Speed.

From the initial operation of the starting switch, the engine shall start, run up to normal speed and capable of accepting full load within a minimum time of 10-15 seconds.

6.7.2.5 Cooling

Engine cooling - shall be by water jacket, with water circulating pump and heavy radiator with mechanical or electrically driven fan. The radiator shall be fitted with flanged or other suitable arrangement to enable ventilating ductwork to be attached with airtight joints. The fan rating shall be adequate allowing for the additional resistance to air flow of any ductwork and louvers fitted.

A thermostatically controlled valve shall be provided in the cooling system to assist rapid heating up of the water in the engine jacket when starting from cold and to control its temperature when the engine in running. Where necessary to limit the oil temperature rise a water – cooled lubricating oil temperature stabilizer
Complying with B.S 3274 (KS ISO 4548 – 3:1997), shall be incorporated in the engine cooling system. Sufficient inhibitor shall be added to the cooling water to protect the cooling system from internal corrosion.

6.7.2.6 Engine Starting

Engine starting shall be by a battery powered electric starter complete with automatic starting sequencing control equipment and starter cut-out switch. The engine starting control equipment shall be arranged to disconnect the mains operated battery charger to prevent its being overloaded during starting. The starter motor shall be of adequate power for its duty and of the non-hold-on" type in which the pinion is moved axially to engage within a gear-ring on the engine fly wheel before the starter motor is fully energized. The pinion shall positively disengage when the engine starts or when the motor is de-energized.

6.7.2.7 Fail-to-start Protection

The starting equipment shall incorporate a suitable automatic process timer, so arranged that, if the engine fails to start within a reasonable time (e.g. 8 seconds), the starter motor shall be disconnected. The starting attempt shall be repeated after an interval of 3 seconds and, if necessary, repeated a third time. If the engine fails to start at the third attempt, the starter motor shall be automatically isolated from the battery.

Disconnection of the starter by the fail-to-start device shall operate the visual warning indicators(s) and audible alarm(s) specified hereafter.

6.7.2.8 Engine Safeguards

Safeguard shall be provided and arranged to stop the engine automatically by de-energizing a solenoid couple to the stop lever on the fuel injection pump rack. The operation of this safeguard shall at the same time give individual warning of the failure by illuminating appropriate visual indicator and sounding audible alarm(s) as specified hereafter.

The safeguard shall operate when any of the following conditions occur, Irrespective of whether the set is on automatic or manual control:-

Engine Over speed
High Cooling Water Temperature
Low Lubricating Oil Pressure
Low Cooling Water Level

A key operated switch shall be fitted on the control panel and so connected as to override the engine safeguards and, in an emergency, allow the engine to be restarted under manual control, but with the visual warnings remaining operative.

6.7.2.9 Lubrication

The engine shall be totally enclosed and the engine components shall be lubricated via pressure oil system from an integral oil pump driven by the engine.

6.7.2.10 Oil Dipstick

A lubricated oil level dipstick suitably graduated shall be provided and located in an accessible position.

The engine shall be totally enclosed and the engine components shall be lubricated via pressure oil system from an integrated oil pump driven by the engine.

6.7.2.11 Starting Handle or Barring Gear

Suitable means shall be provided for turning by hand engine main shaft and the associated pump to facilitate inspection and overhaul and to allow hand starting if necessary.

6.7.2.12 Starter Battery

The starter battery shall be 24 volts heavy duty high performance quality lead- acid type of adequate size, suitable for trickle charging and rapid re-charging after use and shall be supplied complete with corrosion resisting outer container or box of an approved type standing direct on the floor.

The type, voltage and ampere-hours capacity of the battery shall be stated in the appropriate schedule. The battery shall be supplied in a fully charged state ready for use and shall be complete with hydrometer for testing the electrolyte.

The tender price shall be based on the provision of a lead acid type battery, but an alkaline battery may be offered as an alternative and, together with its charging equipment, shall then be separately described and priced in the appropriate schedule.

6.7.2.13 Dynamo, Cut-out, etc

An engine driven battery charging dynamo (or alternator with static rectification) of adequate capacity shall be provided complete with cut-out, automatic voltage regulator, ammeter, wiring and engine mounted control board.

6.7.2.14 Engine Instruments

The following dial type engine instruments shall be provided:-

- Engine shaft speed indicating tachometer reading revolutions per minute.
- Service hours counter.
- Lubricating Oil Pressure Gauge
- Lubricating Oil Thermometer
- Cooling Water Thermometer

The instruments may be mounted on a suitable panel fixed to the engine or may be incorporated in the main control panel.

6.7.2.15 Exhaust System and silencing

The exhaust system shall be manufactured in heavy quality steel tubing to B.S 1387 (KS 06 – 259:1998) fitted with suitable robust flexible gas-tight sections close to the engine to allow engine movement and to reduce the transmission of engine vibration to the remainder of the exhaust system and the surroundings. Bends shall have a minimum radius of three times the diameter of the tube. As far as possible, flexible sections shall be vertical, free from bends and have sufficient length or slack to allow free movement without damage.

Silencers shall be of heavy duty baffle and absorption type, so designed and installed as to reduce noise to the minimum practicable level without appreciably impairing the working efficiency of the engine.

The silencers and exhaust pipe work shall be properly and adequately supported clear of fuel tank and fuel pipes and shall be provided with suitable insulation to protect personnel, plant and buildings from excessive heat.
The pipe work shall drain away from the exhaust manifold and drain cocks shall be fitted in the lower parts of the system to enable condensate readily to be removed.

The system shall be so constructed as to enable it to be readily dismantled for maintenance. Bolts, washers and nuts shall be greased with graphite grease or other suitable heat resisting lubricant during assembly.

The finish of all exhaust pipe work and silencers exposed to the open air shall be sprayed metallic aluminium by a process complying with B.S 2569, Part 2, Process A.

The exhaust system shall terminate at a safe point outside of the building to be approved by the Engineer.

6.7.2.16 Intake Air Cleaner.

A suitable and efficient air cleaner /silencer of an approved type complying with B.S 1701 'A' (KS06 – 294:1986) for use in a medium atmosphere shall be fitted on the air intake manifold.

6.7.2.17 Drain Plugs and Cocks

Drain plugs and cocks, as appropriate shall be fitted adequately to drain the engine of lubricating oil, water and fuel. They shall be designed and constructed as to be free from leaks and so positioned as to be readily accessible and allow draining to be undertaken without need for special receptacles.

6.7.2.18 Fuel and Lubrication Oil Filters

Suitable and efficient oil filters of an approved type and construction, having replaceable filter elements, shall be provided in the fuel and engine lubrication systems, The oil filters shall be readily accessible and allow the elements to be changed without difficulty. The fuel oil filter shall be located as close as possible to the fuel pump manifold.

6.7.2.19 Wiring on Engine Unit

The electrical wiring on the engine unit shall be carried out with M.I.C.C cable having a conductor minimum cross section of 1.5mm^2 for single core cables and for multi-core cables.

All wiring shall be adequately supported and protected from accidental damage and properly installed and terminated in suitable terminal boxes with flexible connections , all in accordance with the manufacturers recommendations. Special arrangements shall be made where wiring is subject to movement and vibration.

Mains voltage circuits and extra-low voltage circuits shall be segregated as far as practicable.

6.7.2.20 Fuel tank and Connections

A fuel service tank shall be provided having a capacity sufficient to give **ten hours** full load running of the engine and manufactured and installed generally in accordance with B.S 799, Part 1. The tank, complete with all necessary pipe work, valves and connections, shall be arranged as an integral part of the set or shall be installed at high level on adequate and approved supports adjacent to the set.

The service tank shall be clearly labeled to indicate the type of fuel to be used and the capacity of the tank in litres and gallons, and shall be provided with the following:-

i. Filling orifice, oil strainer, filling pipe extension and filler cap.
ii. Vent pipe to atmosphere
iii. Dial type contents level indicator, with adequate size scale clearly marked in proportional part content, i.e. empty, quarter, half, three-quarters and full.
iv. Connections for the engine leak-off return pipe (where necessary).
v. Drain valve and drain hose connection.

6.7.2.21 Fuel Tank Filling Pump

A cast iron wall mounted hand operated semi-rotary fuel transfer pump shall be provided of a size capable (with normal operation) of transferring fuel from the delivery drum of other vessel to the service tank at a rate of at least twenty times the maximum consumption of the engine at full output.

The pump shall be clearly labelled to indicate the type of oil to be used and shall be provided and fitted with suitable connecting pipe work including a length of oil-resisting non- collapsible flexible pipe on the suction side. The removable protective cap or cover with retaining chain shall be provided for each end of the pump line to prevent ingress of dirt, etc. A removable type filter shall be incorporated in the oil supply.

6.7.2.22 Coupling to Pump

The engine shall be coupled to the pump in an approved manner in a mono-bloc arrangement or by a suitable shaft coupling and satisfactorily guarded to comply with B.S 1649.

6.8 Installation Control Valves

The Domestic Sub-contractor shall supply and install approved installation control valves called for on the Contract Drawings and in this specification. The installation control valves set shall comprise of a main stop valve, wet pipe alarm valve, drain valve, a water motor alarm and gong, installation pressure gauges. It shall be as manufactured by **the Central Sprinkler Company** or approved equivalent that is **L.P.C/U.L/F.M** listed.

6.9 Spares

The Domestic Sub-contractor shall comply and fix a cabinet with 24No. Spare sprinkler heads together with a set of sprinkler spanners for each type of sprinkler heads.

6.10 Control Panel

The control panels are to be of mild steel construction or other approved material, moisture-proof and insect and rodent-proof and shall be provided complete with a wiring diagram that is moisture –proof. They shall have hinged lockable doors. They shall conform to **LPC** rules and shall be as manufactured by SPP pumps or approved equivalent.

Pump operation shall be controlled by pressure switches; the control panel is therefore to include the following.

a) Manual Stop/Reset push button to No.1 electric duty pump.

b) Manual Stop/Reset push button to No.2 standby pump.

c) Test push button with green indicator light to No. 1 electric duty pump.

d) Test push button with green indicator light to No.2 standby pump.

e) Electric alarm bell provided for remote warning of systems operation during pump run.

f) Red warning for indication of 'no water' in Storage Tank.

g) BMS Stop/Run, fault indication (volt free contact)

h) Any other necessary components as per NFPA 13 Edition 2002.

6.11 Sprinkler Heads

The sprinkler heads shall be of conventional pattern, designed with a universal deflector and shall be as manufactured by **Spraysafe automatic sprinklers Ltd** or equal and approved. All the sprinkler heads and deflectors shall be corrosion resistant to withstand the harsh climatic conditions.

All sprinkler heads shall comply with the following requirements:-

Nominal size	15mm
K Factor	115+ 5%
Temperature rating	68^0C (Red colour).

A. Types: Automatic sprinklers shall be of the following types:

1. Standard coverage concealed spray pendent sprinklers (quick response type) shall be installed in all areas with finished ceilings with matching ceiling plates.

2. Standard coverage convectional sprinklers (quick response type) shall be installed in non-public, unfinished areas such as basement car park and other utility rooms.

B. Final Selection: The Engineer will select finishes for all automatic sprinklers and escutcheons from samples of available finishes supplied by Contractor.

C. Uniformity: All sprinklers within a space shall be from the same manufacturer and have the same heat response element, including temperature rating and response characteristics.

D. Temperature Rating: It shall be the Contractor's responsibility to install sprinklers of the proper temperature rating as required by NFPA 13.

E. Corrosion and Mechanical Protection: Corrosion and Mechanical Protection: Provide corrosion-resistant sprinkler heads where they are exposed to weather, moisture or corrosive vapours. Protect heads installed where they might receive mechanical injury or are less than 2.1 meters above the floor level with approved guards in accordance with NFPA 13.

F. Sprinkler Escutcheons: Escutcheons shall be metal and be listed with the sprinklers for recessed sprinkler locations.

G. Sprinkler Orifice: All sprinklers shall be standard orifice sprinklers (12.5mm orifice) unless specifically approved otherwise.

H. Return bends in the piping arrangement supplying all pendent sprinklers shall be used.

6.12 Pipework

The pipework for the sprinkler systems shall be black steel, class C heavy grade, to comply with BS 1387, E337, BS 143 and to NFPA guidelines.

Pipe and Fittings: Sprinkler system piping or tubing shall meet the requirements of NFPA 13. Contractor shall use black steel, class C heavy grade above ground.

A. Thin wall Pipe: Schedule 10 Pipe meeting ASTM A-53, A-135 or A-795 requirements with:

1. Mechanical grooved pipe couplings and fittings for roll grooved pipe sizes 65mm and larger.

2. Plain-end pipe couplings and fittings for pipe sizes 25mm through 50mm, inclusive.

3. Threaded fittings for tubing specifically listed for such uses and installed in accordance with the manufacturers recommendations and listing requirements.

B. Black steel, class C heavy grade: The pipes shall conform to BS 1387 requirements with:

1. Threaded pipe couplings and fittings

2. Mechanical grooved pipe couplings and fittings for roll or cut pipe sizes 65mm and larger.

3. Plain-end pipe couplings and fittings shall not be allowed.

C. Pressure Ratings: Pressure ratings of all fittings shall meet or exceed maximum working pressures available within the system but shall never be less than 15 bars.

D. Corrosion protection: All piping and hangers where exposed to the weather or installed in a corrosive atmosphere shall be protected against corrosion.

E. Seismic bracing for the system piping shall be incorporated in accordance with NFPA 13 Edition 2002. The installation of such bracing shall meet the requirements of NFPA 13. System shall be designed for seismic zone 2A.

6.13 Pipe Support

The variety and type of pipe supports shall be kept to a minimum and their design shall be such as to facilitate quick and secure fixing to metal, concrete, cement screed and wood.
Piping shall be secured in the normal manner with pipe clips. 'U' bolts shall not be used as substitute for pipe clips.

Where the design of the structure is in reinforced concrete, pipe hangers and brackets shall be secured to the structure by means of redheads, raw bolts or other approved means.

Where the structure is constructed of hollow clay pot and concrete fill the Domestic Sub-contractor shall arrange for hip pipe hangers and brackets to be supported from the concrete columns and beams, No raw bolts and redheads shall be inserted in any clay pot constructions unless specifically and exceptionally approved by the Engineer.

An approximate guide to maximum permissible support spacing for different classes of pipe and tube is given for horizontal runs in the following table:-

Vertical pipe runs shall be supported at intervals not greater than one and a half times the distance shown in the table

Size N/Bore (mm)	Copper to B.S 659 (mm)	Steel Tube to B.S 1387 Heavy Grade (mm)
15	1200	1800
20	1200	2000
25	1500	2500
32	1500	2500
40	1800	2700
50	1800	3000
65	1800	3400
80	2000	3400
100	2500	3700
125	2700	4000
150	2700	4300

The Domestic Sub-contractor shall submit all; pipe support designs for the Engineer's approval.

Positions and type of supports shall be shown on the working drawings and submitted to the Engineer for approval.

6.14 Pipe Fittings

The pipe fittings for sprinkler systems shall comply with black steel, class C heavy grade fittings and shall meet the requirements of NFPA 13

6.15 Flanges

The flanges shall comply with B.S 4504: 1969. All flanges shall comply to a nominal pressure of 16 bar (PN 16) and shall be either grey cast iron or steel with raised faces.

6.16 Gaskets

The gaskets for use with flanges to B.S 4504: 1969 shall comply with B.S 4865 Part I 1972 for pressure up to 64 bars.

6.17 Foot Valves

The foot valves shall be as CRANE to B.S 5153 1974 incorporating strainer, with flanges to B.S 4504 PN 16.

The strainer shall be Meehanite Cast iron with strainer area no less than twice the suction pipe area.

6.18 Non-return Valves

The non-return valves shall be as CRANE conforming to B.S 5153: 1974 with flanges to B.S 4504 PN 16.
The body, door and cover are to be of Meehanite cast iron constriction with gun metal seat to B.S 1400.

6.19 Gate Valves

The gate valves up to and including 150mm diameter shall be as CRANE to B.S 5163 with flanges to B.S 4504 PN 16 with raised faces. The valve is a double flanged cast iron wedge gate valve for water work purposes with Meehanite cast iron body to BS 1452 Grade 14 with rubber covered meehinite cast iron gate. The stem is to be forged stainless steel to B.S 970 with meehanite cast iron hand wheel.

6.20 Control and Drain Valves

Sprinkler system control and drain valves shall be the following types:

1. 100, 150 and 200mm butterfly valves on the sprinkler system risers. All riser valves shall count on integral valve supervisory switches, whose entire assembly is approved for use in sprinkler systems.

2. 50mm valves on each of the system main drains shall be incorporated as part of each first level test/drain assembly.

3. Provide gate valves in piping to sprinklers protecting machine rooms, and other utility rooms. Valves shall be located outside the room in an accessible location. Provide tamper switches on all such valves.
4. Provide signs indicating area of coverage in conspicuous location for all control valves.

5. Provide permanently fixed ladder for all control valves greater than 2100mm above floor level.

6.21 Check Valves

All check valves shall be clear opening swing-check type.

1. 50mm and smaller check valves shall be all bronze with screw ends.

2. 65mm and larger check valves shall be either iron body, brass mounted with flanged ends, access plate, and non-ferrous metal set rings and bearings or groove-lock type.

6.22 Drain Assemblies

Drain Assemblies shall be provided in all drain lines as required by NFPA 13. Connect all drain piping to approved drain locations and provide splash guards, where necessary, at discharge outlets.

1. The main drain valve(s) shall discharge outside the building.

2. All drain discharge outlets on the outside of the building shall be located no higher than 0.3 meters above grade level.

6.23 Test Valves

Inspector's Test Connection: Install test valves conveniently accessible within 2.1 meters of the floor. An Inspector's Test Connection, located at the floor control valve, shall be provided to test each water-flow device. The test connection shall discharge to a drain assembly.

6.23 Identification Signs

Attach properly lettered and approved metal signs to each control valve, alarm device, inspector's test valve, drain valve, and alarm bypass valve. Each sign shall indicate the normal valve position as well as the portion of the system that the valve serves. Permanently affix hydraulic design data nameplates to the riser of each system. All control valves shall be labelled to indicate the area/zone serviced by that valve. The hydraulic name plate shall indicate the following information:

(1) Water supply and pressure available at that point,
(2) Location of the most remote design area(s) for that floor or level,
(3) Design discharge density over the design area(s) for that floor or level,
(4) Required flow and residual pressure demand at that point on the riser,
(5) Hose stream demand included in addition to the sprinkler demand.

Description: Signs shall be rigid, flat steel or aluminium plaques with embossed enamel background and lettering. Signs shall be secured by chain or durable wire to each sprinkler zone control valve, or in an obvious location specifically approved by the Engineer/Architect.

6.24 Pipe Sleeves

General: Provide pipe sleeves where piping passes entirely through walls, floors and partitions. Secure sleeves in position during construction. Provide sleeves of sufficient length to pass through entire thickness of walls, floors and roofs. Provide 25 mm minimum clearance between exterior of piping and interior of sleeve or core-drilled hole. Firmly pack space with mineral wool insulation. Seal space at both ends of the sleeve or core-drilled hole with plastic waterproof cement, which will dry to a firm but pliable mass, or provide a mechanically adjustable segmented elastomeric material. Penetrations of fire-rated wall and floor assemblies shall be sealed with a listed fire-stopping material.

Sleeves in masonry and concrete walls, floors and roofs: Provide hot-dip galvanized steel, ductile-iron, or cast iron sleeves. Core-drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.

Sleeves in Other Than Masonry and Concrete Walls, Floors, and Roofs: Provide 26 gauge galvanized steel sleeves.

The sleeves shall be two pipes diameter higher than the sprinkler pipes and should have flanges where necessary or as shall be instructed by the project engineer.

6.25 Miscellaneous Products

Pressure Gauges: Pressure gauges shall be UL listed 65mm diameter minimum dial type gauges with a maximum limit of not less than twice the normal working pressure at the point installed. All gauges shall be provided with a shut-off valve (gauge-cock).

6.26 Finish Painting

Upon completion of testing and commissioning the sprinkler installation shall be painted with 1No. coat red oxide primer, undercoat and 2No. coats of gloss coat to NFPA colour code specifications.

6.27 Supervisory and Alarm Equipment

All water flow and valve supervisory switches shall be furnished, installed and properly adjusted by the sprinkler contractor.

A. Contacts: All water flow and valve supervisory switches shall be provided with two "Form C" (D.P.D.T.) contacts for monitoring. Specific contact rating shall be coordinated with the fire alarm contractor.

B. Vane-Type Waterflow Switches: Provide vane-type waterflow switches where indicated on the drawings. The device shall contain double pole, double throw contacts and screw terminals for each conductor. Devices shall also be equipped with a time delay feature, which is field adjustable from zero to at least 90 seconds. The time delay shall be initially set to 30 seconds.

C. Supervisory (Tamper) Switches: Provide a tamper switch for each interior sprinkler system control valve. Tamper switches shall have double pole, double throw contacts with screw terminals for each conductor. Operation of the switch shall cause a supervisory signal to be transmitted to the FACP upon not more than two complete turns of the valve wheel or a closure of twenty percent, whichever is less.

6.28 Instruction Period

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

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

6.29 Approval of Automatic Sprinkler System

After the tender contract had been awarded, the Domestic Sub-contractor shall prepare complete detailed working drawings of the sprinkler system with plans of the floor, details of water supplies up to the installation control valve and any pressure reducing valves, water meters , water locks and any orifice plates. The drawings shall be on an indicated scale not less than 1:100. The drawings shall be submitted in both hard copy and soft copy to the engineer for approval. A key of any symbol used is too included in the drawing legend.

A summary schedule should be included stating:-

(i) Total number of sprinkler heads in each installation

(ii) Height of highest sprinkler head in each installation.

(iii) Type of installation, in this case to be wet pipe system and the size of main control valves to be indicated.

The above data shall be submitted by the Domestic Sub-contractor to the Engineer for final approval before erection of the equipment is commenced.

6.30 Testing and Commissioning of Sprinkler System

The installation is to be tested to one and half times the working pressure of the installation, all to the approval of the Project Engineer. The pressure shall be maintained for about 1 hour ensuring that there is no change in pressure is observed

SECTION F:

BILLS OF QUANTITIES

AND

SCHEDULE OF UNIT RATES

BILLS OF QUANTITIES AND SCHEDULE OF UNIT RATES

CONTENTS

SPECIAL NOTES

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.

2. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (**including 16% VAT**).

   In accordance with Government policy, the 16% VAT and 3% Withholding Tax **shall be deducted** from all payments made to the Tenderer, and the same shall be forwarded to the **Kenya Revenue Authority (KRA).**

3 All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part there of.

4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the Domestic Sub-contractor shall adhere. Otherwise alternative brands of **equal** and **approved** quality will be accepted.

   Should the Domestic Sub-contractor install any material not specified here in before receiving **written approva**l from the Project Manager, the Domestic Sub-contractor shall remove the material in question and, **at his own cost**, install the proper material.

5. The grand total of prices in the price summary page must be carried forward to the **Form of Tender for the tender to be deemed valid**.

6. Tenderers must enclose, together with their submitted tenders, detailed manufacturer's Brochures detailing Technical Literature and specifications on all the equipment they intend to offer.

1. Statement of Compliance

a) I confirm compliance of all clauses of the General Conditions, General Specifications and Particular Specifications in this tender.

b) I confirm I have not made and will not make any payment to any person, which can be perceived as an inducement to win this tender.

Signed: …….*for and on behalf of the Tenderer*

Date: ……..

Official Rubber Stamp: ……

BILLS No. 1

A) PRICING OF PRELIMINARIES ITEMS.

Prices will be inserted against item of preliminaries in the Domestic Sub-contractor's Bills of Quantities and specification. These Bills are designated as Bill 1 in this Section. Where the Domestic Sub-contractor fails to insert his price in any item he shall be deemed to have made adequate provision for this on various items in the Bills of Quantities. The preliminaries form part of this contract and together with other Bills of Quantities covers for the costs involved in complying with all the requirements for the proper execution of the whole of the works in the contract.

The Bills of Quantities are divided generally into three sections:-

a. Preliminaries – Bill 1

Domestic Sub-contractors preliminaries are as per those described in section C – Domestic Sub-contractor preliminaries and conditions of contractor. The Domestic Sub-contractor shall study the conditions and make provision to cover their cost in this Bill. The number of preliminary items to be priced by the Tenderer has been limited to tangible items such as site office, temporary works and others. However the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.

b. Installation Items – Other Bills

i. The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the contract Drawings, conditions of contract and specifications.
ii. The unit of measurements and observations are as per those described in clause 3.05 of the section

c. Summary

The summary contains tabulation of the separate parts of the Bills of Quantities carried forward with provisional sum, contingencies and any prime cost sums included. The sub-contract shall insert his totals and enter his grand total tender sum in the space provided below the summary.
This grand total tender sum shall be entered in the Form of Tender provided elsewhere in this document

BILL No. 1 PRELIMINARIES

ITEM	DESCRIPTION	QTY	UNIT	RATE	KSHS	cts
1	Discrepancies clause 1.02					
2	Conditions of sub-contract Agreement clause 1.03					
3	Payments clause1.04					
4	Site location clause 1.06					
5	Scope of Contract Works clause 1.08					
6	Extent of the Contractor's Duties clause 1.09					
7	Firm price contract clause 1.12					
8	Variation clause 1.13					
9	Prime cost and provisional sum clause 1.14 (insert profit and attendance which is a percentage of expended PC or provisional sum.)					
10	Bond clause 1.15					
11	Government Legislation and Regulations clause 1.16					
12	Import Duty and Value Added Tax clause 1.17 (Note this clause applies for materials supplied only. VAT will also be paid by the Domestic Sub-contractor as allowed in the summary page)					
13	Insurance company Fees clause 1.18					
14	Provision of services by the Main contractor clause 1.19					
15	Samples and Materials Generally clause 1.21					
	SUB-TOTAL CARRIED TO PAGE F-6					

ITEM	DESCRIPTION	QTY	UNIT	RATE	KSHS	cts
16	Supplies clause 1.20					
17	Bills of Quantities clause 1.23					
18	Contractor's Office in Kenya clause 1.24					
19	Builder's Work clause 1.25					
20	Setting to work and Regulating system clause 1.29					
21	Identification of plant components clause 1.30					
22	Working Drawings clause 1.32					
23	Record Drawings (As Installed) and Instructions clause 1.33					
24	Maintenance Manual clause 1.34					
25	Hand over clause 1.35					
26	Painting clause 1.36					
27	Testing and Inspection – manufactured plant clause 1.38					
28	Testing and Inspection – Installation clause 1.39					
29	Storage of Materials clause 1.41					
30	Initial Maintenance clause 1.42					
	SUB-TOTAL CARRIED TO PAGE F-6					

ITEM	DESCRIPTION	QTY	UNIT	RATE	KSHS	cts
31	Attendance Upon Tradesmen, etc. (Insert percentage only) clause 1.58					
32	Local and other Authorities notices and fees clause 1.60					
33	Temporary Works clause 1.63					
34	Patent Rights clause 1.64					
35	Mobilization and Demobilization Clause 1.65					
36	Extended Preliminaries Clause 1.66(see appendix on page C- 24)					
37	Industrial/Supplier visit by Engineer and Approvals				500,000.00	
38	Allow for profit & and Attendance for the above					
39	Amendment to Scope of Sub-contract Works Clause 1.68					
40	Contractor Obligation and Employers Obligation clause 1.69(see appendix page C- 24)					
41	Any other preliminaries;					
	Subtotal above Subtotal brought forward from page F-4 Subtotal brought forward from pageF-5					
	TOTAL FOR BILL NO. 1- PRELIMINARIES CARRIED FORWARD TO PRICE MAIN SUMMARY					

A: TUITION BLOCK

Bill No. 2: Sanitary Fittings

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	SANITARY FITTINGS *Supply, deliver, install, test and commission the following sanitary appliances complete with all the accessories including all connections to the services, waste, jointing to water supply overflows, supports and all plugging and screwing to walls and floors.* *Note: (i) All sanitary fittings shall be in approved colour.* *(ii) The Model and Ref No. indicated is only a guide to the type and quality of fittings.* *(iii) Equivalent & Approved models may be acceptable.*				
A	**Water Closet** Back to wall WC suite in approved colour complete with soft close heavy duty seat and cover with chrome plated hinges as Duravit D-Code ref # 211509 and ref #0067390. The unit shall come complete with back entry concealed flush valves as DOCOL one and half inch low pressure flush valve ref # 01021500, anti vandal cover plate ref # 01505006 and all other necessary accessories.	2	No.		
B	**Water Closet Squat Pan (Squating)** White ceramic W. C.squat pan. The W. C. pan should come complete with non-slip treads. Prefered W. C dimensions to be 370mm x 650mm. The pan to come complete with, inlet gaskets, ceramic trap and all drainage fitments. The pan to be as "**Ideal Standard**" or approved equivalent.	6	No.		
C	**Flush Valve - Manual Lever Action** Manual lever action, back inlet squat toilet flush valve with 6 litre per flush. The valve to have a 11/4" chrome plated connections with synthetic diaphragm adjustabel tailpipe. Valve to be as "**Sloan, Royal 137-1.6**"or approved equivalent.	8	No.		
D	**Arabian Shower** Chrome plated wall mounted arabian shower with the following features: - Heavy duty chrome plated flexible hose - Spray rose with press lever operation - Chrome plated mounting bracket for the spray rose above	8	No		
Sub-total carried forward to the Sanitary Fittings collection page….. F-10					**572,000**

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**Toilet Roll Holder** U-shaped chrome plated wall mounted toilet roll holder as '**Duravit, D-Code #0099261000'**.	8	No.		
B	**Toilet Brush Holder** Floor mounted stainless steel Toilet Brush holder. Holder to be as '**Duravit, D-Code #0099281000**'.	8	No.		
C	**Robe Hook** Stainless steel wall mounted robe hook. Hook to be as '**Duravit, D-Code #0099041000**'.	8	No.		
D	**Wash Hand Basin** Countertop wash hand basin size 560 x 500mm with overflow, one tap hole, 32mm diameter chrome plated chain waste, chain stay hole, Single lever basin mixer with pop up waste as Hansgrohe Logis E 70 ref 71160000 or equivalent and heavy duty plastic bottle trap (32mm 'P' trap) with 75mm seal. Wash Hand Basin (WHB) to be as **Duravit Durastyle ref 0374560000** or equal and approved.	18	No.		
E	**Pillar Tap - Press-Down Delay (Metering)** Press-down delay chrome plated metering basin faucet complete with aerator cartridge. Faucet to be as "**Schell**" or approved equivalent.	18	No.		
F	**Mirror** 6mm thick polished plate glass silver backed mirror with decorativeborders and beveled edges, size 600 x 600mm, plugged and screwed to wall with 4 No. chrome plated dome capped screws. The mirror shall rest against a layer of 5mm thick foam.	18	No.		
G	**Mirror - Full Legth** 6mm thick polished plate glass silver backed full legth mirror with decorativeborders and beveled edges, size 600 x 1800mm, plugged and screwed to wall with 6 No. chrome plated dome capped screws. The mirror shall rest against a layer of 5mm thick foam.	4	No.		
H	**Foam Soap Dispenser - Wall Mounted** 0.6 Litre wall mounted manual press action foam soap dispenser with satin finish spout and glass bottle. Dispenser to be wall mounted and to be as '**Duravit, D-Code # 0099161000'** or approved equivalent.	9	No.		
I	**Basin Towel Ring** Wall mounted stainless steel basin twin towel ring. Towel ring to be as '**Duravit, D-Code #0099211000**'.	6	No.		
Sub-total carried forward to the Sanitary Fittings collection page…….F-10					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**Disabled Person Water Closet** A completely assembled unit of wheel chair-accesible toilet combination facility comprising:- 1) A close-coupled white in colour WC bowl with horizontal outlet, complete with a 7.5litres cistern with fittings and additional cover clip for additional security, 100mm high 'Avalon' seat ring with chrome-plated metal hinges. 2) Wall- mounted wash hand basin with one left-hand or right-hand offset taphole and chainstay hole, wall brackets, lever action chrome-plated 15mm dia. tap, chrome plated chain waste 32mm. 3) 4No. 600mm long grabrails. 4) 1No. hinged support rail with toilet Roll Holder, and a back support rail, all in nylon-coated aluminium. 5) Mirror 400mm wide by 900mm high fixed 900mm above floor level. The whole facility to conform in all aspects to the requirements of LANTAC certificate, Ref. NR35-T-10. To be as TWYFORDS AVALON - DOC.M pac or equal and approved equivalent.	1	No.		
B	**Urinal Bowl** Ceramic urinal bowl complete with 40mm heavy duty plastic bottle trap and 40mm diameter chrome plated outlet with grating firmly fixed on the wall with chrome plated screws and a flush valve. The fittings shall be as Roca or equal and approved	3	No.		
C	Heavy duty sink size 465 x 410 x 285mm deep in enamelled fireclay complete with hardwood pad on the front edge and fitted bucket stainless steel grating and 20mm chrome plated wall mounted inclined bricon tap, chrome plate chain and rubber stopper and heavy gauge 40mmn chrome plated bottle trap, stainless steel legs and bearers and 40mm grid waste fitting. All as Ideal Standard "cleaners sink" or approved equivalent.	2	No.		
Sub-total carried forward to the Sanitary Fittings collection page….. F-10					

Bill No. 2: Sanitary Fittings for TUITION Block Collection Page

Item	Description	Amount (Kshs)
A	**Sub-total b/f from Page……..F-7**	
B	**Sub-total b/f from Page……..F-8**	
C	**Sub-total b/f from Page……..F-9**	
Total for Sanitary Fittings TUITION BLOCK PHASE 1 Works Collection Page……..... F-24		

Bill No. 3: Internal Plumbing and Water Reticulation TUITION BLOCK PH 1

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	INTERNAL PLUMBING AND WATER RETICULATION				
	Supply and Install the following Plumbing installation as described and shown on the drawing.All pipework and fittings in this installation to be to PP-R.Tenderers must allow for jointings, couplings, plugging, clampings, reducers, mortices, hangers, clippings etc necessary for the proper functioning of the installation when pricing.				
	PP-R Pipework				
A	20mm diameter pipework	32	Lm		
B	25mm -ditto-	110	Lm		
C	32mm -ditto-	60	Lm		
D	40mm -ditto-	32	Lm		
E	50mm -ditto-	20	Lm		
	Bends				
E	20mm diameter bend	22	No.		
G	25mm -ditto-	48	No.		
H	32mm -ditto-	26	No.		
I	40mm -ditto-	12	No.		
J	50mm -ditto-	12	No.		
	Tees				
K	20mm equal tee	26	No.		
L	25mm -ditto-	5	No.		
M	32mm -ditto-	20	No.		
	Reducers				
N	25 x 20mm diameter reducer	25	No.		
O	32 x 25mm -ditto-	29	No.		
P	40 x 32mm -ditto-	10	No.		
Q	50 x 32mm -ditto-	8	No.		
R	50 x 40mm -ditto-	8	No.		
	Reducers				
S	25x 20 diameter	20	No.		
T	32mm x 25mm-ditto-	15	No.		
U	32x 20 mm	15	No.		
Sub-total carried forward to the INTERNAL PLUMBING/External Water Reticulation collection page…... F-14					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Reducing Tees				
A	25 x 25 x 20mm diameter reducing tee	20	No.		
B	32 x 32 x 20mm -ditto-	10	No.		
C	32 x 32 x 25mm -ditto-	30	No.		
	Valves				
D	20mm diameter high pressure screw down, full way non-rising stem wedge gate valve to BS 5154 standards. The gate valve to be as **"Pegler"** or approved equivalent.				
	20mm -ditto-	10	No.		
E	25mm -ditto-	27	No.		
F	32mm -ditto-	13	No.		
G	40mm -ditto-	2	No.		
H	50mm -ditto-	1	No.		
	Unions -ppr				
I	20mm diameter pipe union	15	No.		
J	25mm -ditto-	45	No.		
K	32mm -ditto-	18	No.		
L	40mm -ditto-	6	No.		
M	50mm -ditto-	2	No.		
	PP-R to Brass Threaded Fittings				
N	20mm x $^{1}/_{2}$" BSP brass threaded male adapter	12	No.		
O	20mm x $^{1}/_{2}$" BSP brass threaded female adapter	8	No.		
P	25mm x $^{1}/_{2}$" BSP brass threaded male elbow	20	No.		
Q	20mm x $^{1}/_{2}$" BSP brass threaded female elbow	40	No.		
R	25mm x $^{1}/_{2}$" BSP brass threaded male tee	30	No.		
S	20mm x $^{1}/_{2}$" BSP brass threaded male tee	50	No.		
T	20mm x $^{1}/_{2}$" BSP brass threaded female tee	5	No.		
U	25mm x $^{3}/_{4}$" BSP brass threaded male adapter	10	No.		
	Flexible Tubing + Angle Valve				
V	15mm diameter x 450mm long flexible connectors complete with integral chrome plated angle valve. To be as '**Cobra**' or equal and approved.	18	No.		
	Washing Stand Pipe				
W	15mm diameter chrome plated bib tap as '**Cobra**' suitable for hose pipe connection complete with threaded adaptors connected to a wall mounted 15mm diameter, firmly anchored ppr pipe with associated fittings	2	No		
Sub-total carried forward to the INTERNAL PLUMBING/External Water Reticulation collection page…... F-14					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**Excavations**				
	Excavate trench in hard soil/murram 600mm wide and depth not exceeding 1000mm deep and average 750mm deep, prepare bed with red soil/marram of particle size not more than 20 mm to a depth of 750mm. Bed shall be approved by Engineer before laying of pipes. Fill with same material as above and compact in layers of 75 mm. Cart away surplus soil.	60	Lm		
	Pipe Work - HDPE 16 Bar				
B	40 mm diameter HDPE Pipe	34	Lm		
C	50 mm diameter HDPE Pipe	100	Lm		
	Air Release Valves				
D	50 mm diameter air release valve	3	No		
	Drain Valves				
E	50 mm diameter drain valve	3	No		
	Valve/Meter Chamber				
F	Valve chamber size 500 x 500 x 450mm deep with 100mm concrete (1: 3: 6) base 100mm block sides rendered all round in cement and sand (1:4) and with approved hinged and flanged cast iron cover and frame including all necessary excavation, disposal and form work.	1	No		
	Indicator Plates				
G	Standard precast concrete Fire Hydrant, Water Line and Hosereel Line marker posts marked ‘FH’, 'WL' and 'HL' set in concrete (1:3:6) base, including formwork, excavations backfilling and disposal. The plate to be painted with Red and Blue gloss oil paint respectively	10	No		
	Sterilization				
H	Allow for flushing out and sterilizing the whole system with chlorine to the satisfaction of the engineer	1	Item		
	Testing and commissioning				
I	Allow for testing and commissioning of the internal plumbing installations	1	Item		
Sub-total carried forward to the INTERNAL PLUMBING/External Water Reticulation collection page….. F-14					

Bill No. 3: Plumbing works Collection Page

Item	Description	Amount (Kshs)
A	**Sub-total b/f from Page…….....……F-11**	
B	**Sub-total b/f from Page…….....……F-12**	
C	**Sub-total b/f from Page…….....……F-13**	
Total for plumbing Works Collection Page…. F-24		

Bill No. 4: Water Storage and Pipework

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**Roof Water Storage -5000 litres** Cylindrical roof water tank, made from rotational moulded LDPE CYLIDRICAL tank of preferred dimensions D mm diameter and Lmm height and capacity of 5000 litres . The tank to come complete with 3/4" high pressure ball valve, lockable tank cover, 50mm dia threaded inlet, 50mm dia threaded overflow, 50mm dia threaded outlet. All pipe connections to have rubber washers. The tank to be as "**Roto**" or approved equivalent.	3	No.		
B	**Testing and commissioning** Allow for testing and commissioning of the Water storage system installations.	1	Item		
Sub-total carried forward to the Water Storage and pipework collection page… F-24					

Bill No. 5: Foul & Rain Water Drainage-TUITION BLOCK

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	FOUL WATER DRAINAGE				
	Supply and fix uPVC soil system to BS 4660 and BS 4515 and MuPVC waste systems to BS 5255 with screwed and socketed joints to BS 21. Solvent welded joints shall be as per the system's manufacturer's written instructions. Tenderers must allow in their pipework prices for all the couplings, clippings, connectors, joints etc. for the proper and satisfactory functioning of the system.				
	MuPVC and uPVC Waste and Soil pipework				
A	100mm diameter heavy gauge golden brown UPVC pipe	72	Lm		
B	100mm diameter heavy gauge grey mUPVC pipe	21	Lm		
C	50mm ditto	45	Lm		
D	40mm ditto	25	Lm		
E	32mm ditto	20	Lm		
	Bends				
F	100mm diameter long radius bend	12	No.		
G	100mm diameter sweep bend	16	No.		
H	50mm ditto	15	No.		
I	40mm ditto	18	No.		
J	32mm ditto	24	No.		
K	32 mm diameter 45 degree bend	6	No.		
L	40 mm diameter 45 degree bend	10	No.		
M	50mm diameter 45 degree bend	5	No.		
	Acess Bends				
N	100 mm diameter bends	3	No.		
	Tees				
O	100mm diameter sweep tee	7	No.		
P	50mm ditto	6	No.		
Q	40mm ditto	5	No.		
R	32mm ditto	5	No.		
	Access Caps				
S	100mm diameter access cap	5	No.		
T	50mm ditto	18	No.		
U	40mm ditto	8	No.		
V	32mm ditto	10	No.		
	Reducers				
W	50 x 32mm diameter reducer	5	No.		
X	50 x 40mm ditto	5	No.		
Y	40 x 32mm ditto	5	No.		
Z	100 x 40mm ditto	5	No.		
	WC Connectors				
AA	100mm diameter WC connector	9	No.		
	Branches				
BA	100mm diameter single branch	6	No.		
Sub-total carried forward to the Foul & Rain Water Drainage collection page…. F-17					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**Floor Traps**				
	Four-way floor trap with 50mm diameter outlet and 100mm white plastic cover grating.	10	No.		
B	**Gully Traps**				
	Standard 300 x 300 x 450mm masonry gully trap complete with 125mm thick reinforced concrete cover.	4	No.		
	Weathering Slates and Vent Cowl				
C	100mm diameter weathering slate and apron.	5	No.		
D	100mm diameter vent cowl	5	No.		
E	**Excavation**				
	Excavate trench for 100mm pipe not exceeding 1500mm deep and average 250mm deep, part return in, fill & surplus cart away.	80	Lm		
	RAIN WATER DRAINAGE				
	Rain water Down Pipes				
	Aluminium gutters and dwn pipes				
F	100mm diameter manufactured to engineer's satisfaction from anoded sheets of 0.5 mm thick anoded aluminium sheet down pipes	450	Lm		
G	Aluminium gutters of 200x 200x 100 mm	200	Lm		
	Bends				
H	100mm diameter 45^0 bend	42	No.		
I	Aluminium gutter brackets	120	No.		
J	100mm Aluminium clip with stainless steel wall screws	42	No.		
K	**Fulbora Outlet**				
	150mm diameter aluminium outlet aluminium gutter.	18	No.		
L	**Rain Water Gully**				
	Standard 300 x 300 x 450mm masonry rain water gully complete with uPVC p-trap and airtight 75mm thick reinforced concrete cover.	14	No.		
M	Allow for testing & commissioning of the rain water drainage installations.	1	Item		
Sub-total carried forward to the Foul & Rain Water Drainage collection page…. F-17					

Bill No. 5: Foul and Rain Water Drainage Collection Page

Item	Description	Amount (Kshs)
A	**Sub-total b/f from Page…….....……F-15**	
B	**Sub-total b/f from Page…….....…….F-16**	
Total for Foul and Rain Water Drainage Works Collection Page…. F-24		

Bill No. 6: Fire Protection Installations

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	FIRE FIGHTING				
	Supply, deliver and install the following fire fighting equipment in positions indicated on the contract drawings or as shall be instructed by the Engineer.				
	Hose Reel System				
	Hose Reel				
A	Swinging type hosereel fitted with 30 metres long, 20mm diameter reinforced non-kink rubber hose with 5/6 mm lever operated shut-off nozzle, mild steel feed pipe, isolation valve, guide and all other accessories as 'Angus Fire Armour' or equal and approved.	6	No.		
	GMS Pipes Class B				
B	25mm diameter pipework	86	Lm		
C	50mm diameter pipework	28	Lm		
D	63mm diameter pipework	12	Lm		
	Extra Over Pipework				
	Bends				
E	25mm diameter bend	38	No.		
F	50mm diameter bend	12	No.		
	63mm diameter bend	4	No.		
	Tees				
G	65mm diameter equal tee	2	No.		
H	50mm diameter equal tee	20	No.		
	Reducers				
I	50 x 25 mm diameter reducer	18	No.		
J	65 x 50 mm diameter reducer	2	No.		
	Valves				
K	25mm diameter approved medium pressure screw down full way non-rising stem wedge gate valve to BS 1952, with wheel and head joints to steel tubing. The gate valve to be as PEGLER or approved equivalent.	6	No.		
L	50mm diameter gate valve	3	No.		
M	65mm diameter gate valve	2	No.		
	Total Carried Forward to Collection Page F-23 for FIRE PROTECTION INSTALLATIONS				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Unions				
A	25mm diameter pipe union	18	No.		
B	50mm diameter pipe union	3	No.		
C	65mm diameter pipe union	2	No.		
	Hosereel Pumpset				
D	Hose reel pumpset, one duty, the other standby mounted on a frame with a mild steel base plate. Each pump shall have a duty $5m^3/hr$ against 65m head as Grundfos model CHV 4 - 100 or approved equivalent. In addition, there shall be a 100 litres diaphragm pressure vessel (as Varem or approved equivalent), pressure switches, a switch to protect dry run, 65mm foot valve and strainer, tank connections, gate valves and non-return valves. The pressure set to be as Dayliff or equal and approved.Control shall be effected via a pressure switch through a pre-wired control panel which shall give automatic change-over from duty to standby pump within 5 seconds should the duty pump fail to deliver for any reason. The pumpset shall include all non-returns valves, timer, isolating valves and pipe connections.	1	Set		
	Control Panel				
E	Control panel for above pumps with contactors, over voltage and under voltage protection relays, MCBs, phase failure protection, timer, 120 meters long float switch control 4-core cable to the roof tanks, start/stop push buttons and indicator lights. All these shall be housed in a lockable cabinet (with integral isolator) made from SWG 18 mild steel sheet that is oven powder coated. There shall also be an adjustable time delay switch to ensure pumping cycles are controlled to not more than 6 per hour. It should include a change-over switch to enable the pumps to work alternately.	1	Item		
	Painting				
F	Allow for painting of the hose reel pipework as per particular specifications.	1	Item		
	Fire Hydrant Landing Valve				
G	32mm diameter fire hydrant landing valves to BS 5041 or equvalent and approved be mounted on pillar type outlet pipe.	1	Item		
	Total Carried Forward to Collection Page F-23 for FIRE PROTECTION INSTALLATIONS				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Portable Fire Extinguishers				
	Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.				
	Water/Carbon Dioxide Gas Fire Extinguisher				
A	9 litres water/carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	12	No		
	Carbon Dioxide Gas Fire Extinguisher				
B	5 Kg carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	12	No		
	Dry Chemical Powder Fire Extinguisher				
C	6kg dry chemical podwer portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	12	No		
	Manual Alarm Bell				
D	9" (225mm) manual operated alarm bell (Gong)	8	No		
	Fire Balls				
E	Fire ball made of pressurised fire extinguisher. It shall be fitted on the wall with a bracket to Engineer's approval so as to offer instantaneous action on detection of temparature exceeding 60 degree celcius to BS 1721.	36	No		
	Fire Notices				
F	Allow for fire signage for the hose reel system, fire exits and fire instructions as directed by the Project Engineer. The signage to be self illuminating even when there are no lights.	12	No		
	Total Carried Forward to Collection Page F-23 for FIRE PROTECTION INSTALLATIONS				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	DRY RISER INSTALLATION				
	Supply and installation the following fittings for dry riser				
	Sheet Metal Box				
A	Inlet breeching sheet metal box with wired glass door secured with spring locks openable from inside by smashing the glass and releasing the locking devices on the lock. Approximate size to be 595 x 295 x 395mm high.	3	No.		
	Fire Brigade Breeching Inlet				
B	100mm diameter inlet breeching with twin inlets, each inlet consisting of a 65mm diameter male instantaneous coupling with a non-return valve and black cap secured with a short length of chain.	3	No.		
	Landing Valve				
C	65 mm diameter gunmetal gate pattern landing valve with flanged inlet and female instantaneous outlet fitted with plug secured by short chains and fixed on 100mm diameter dry riser pipe.	6	No.		
	Fire Hose				
D	65mm diameter, 30 metres long canvas fire hose complete with branch pipe, nozzle, female instantaneous coupling head, hanging hook and other associated fittings for its proper functioning.	6	No.		
	Associated Pipework				
E	Supply and installation of Galvanized mild steel piping and fittings with screwed & socketed joint to medium grade class “B” to BS. 1387.				
	GMS Pipework				
F	100mm diameter pipe	60	Lm		
G	65mm diameter ditto	18	Lm		
H	50mm diameter ditto	6	Lm		
	Extra over Pipework				
	Bends/Elbows				
I	100mm diameter bends/elbows	12	No.		
J	65mm diameter bends/elbows	8	No.		
	Total Carried Forward to Collection Page F-23 for FIRE PROTECTION INSTALLATIONS				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Tees				
A	100 x 100 x 100mm tee	2	No.		
B	100 x 100 x 65mm tee	6	No.		
C	100 x 100 x 50mm tee	1	No.		
	Reducers				
D	100 x 65mm reducer	6	No.		
E	100 x 50mm reducer	1	No.		
	Valves				
F	65mm isolating valve with its associated unions	6	No.		
G	65mm diameter flange	6	No.		
H	50mm automatic air release valve	1	No.		
	Testing and Commissioning				
I	Allow for testing and commissioning of the dry riser, Hosereel and portable fire extinguishers installations to the satisfaction of the Engineer.	1	Item		
	Total Carried Forward to Collection Page F-23 for FIRE PROTECTION INSTALLATIONS				

Bill No. 6: Fire Protection Installations

Item	Description	Amount (Kshs)
A	Sub-total b/f from Page…….....…….F-18	
B	Sub-total b/f from Page…….....…….F-19	
C	Sub-total b/f from Page…….....…….F-20	
D	Sub-total b/f from Page…….....……F-21	
E	Sub-total b/f from Page…….....…….F-22	
Total for FIRE PROTECTION COLLECTION PAGE F-24		

TUITION BLOCK Works Collection Page

Item	Description	Amount (Kshs)
A	Total for Sanitary Fittings b/f from Page….F-10	
B	Total for PLUMBING WORKS b/f from Page…F-14	
C	Total for Water Storage and Pumpsets b/f from Page…F-14	
D	Total for Foul and Rain Water Drainage b/f from Page….…F-17	
E	Total for Fire Protection Installations b/f from Page………F-23	
Total Amount for TUITION BLOCK Installation Works TO F-25 MAIN SUMMARY FOR MECHANICAL WORKS		

MECHANICAL WORKS SUMMARY PAGE

Item	Description		Amount (Kshs)
1	Total for Preliminaries and General Items (Page F-6)	…….	
2	Total for Office Block Carried Forward from Collection Page F-25	…….	
3	Contingency Sum	…….	**500,000**
Total Cost for SANITARY FITTINGS, PLUMBING & DRAINAGE, FIRE PROTECTION Carried to Form of Tender			

Amount in words…….....

……..……..……..

Tenderer's Name and Stamp……...

……..……..……..……

Address ……..……..…..……

Period To Execute The Works ……..……...……..

Tenderer's V.A.T No ……..……

Tenderer's P.I.N No ……..…… …….

Telephone No. ……..…….……

Mobile No. ……..…… …….

Tenderer's Signature …… Date……..……

Witness Signature ……..... Date……

SECTION G:

TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED

CONTENTS

TECHNICAL SCHEDULE

1. General Notes to the Tenderer

1.1 The tenderer shall submit technical schedules for all materials and equipment upon which he has based his tender sum.

1.2 The tenderer shall also submit separate comprehensive descriptive and performance details for all plant apparatus and fittings described in the technical schedules. Manufacturer's literature shall be accepted. Failure to comply with this may have his tender disqualified.

1.3 Completion of the technical schedule shall not relieve the Contractor from complying with the requirements of the specifications except as may be approved by the Engineer.

TECHNICAL SCHEDULE

The tenderer must complete in full the technical schedule. Apart from the information required in the technical schedule, the tenderer **MUST SUBMIT** comprehensive manufacturer's technical brochures and performance details for all items listed in this schedule (fill forms attached).

ITEM	DESCRIPTION	MANUFACTURER	COUNTRY OF ORIGIN	REMARKS (Catalogue No. etc.)
A	Water Closet			
B	Wash hand basin			
C	Urinal Bowl			
D	Urinal Flush Valve			
E	Kitchen sink			
F	Disabled Water Closet			
G	CPVC Pipes			
H	Gate Valves			
I	Hose reel Pump			
J	Booster Pump			

Catalogue must be attached for all the tems **in the schedule of material above**

SECTION H:

DRAWING SCHEDULE

CONTENTS

DRAWING SCHEDULE:

As shall be provided during project implementation.

SECTION J:

STANDARD FORMS

STANDARD FORMS

CONTENTS

NOTE: ALL FORMS IN THIS SECTION MUST BE FILLED AS THEY SHALL BE PART OF THE EVALUATION CRITERIA

PERFORMANCE BANK GUARANTEE

To: The PRINCIPAL

Mama Ngina University College
P.O. Box 444 - 01030
GATUNDU

Dear Sir,

WHEREAS …….(hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. …… dated …… to execute …… (hereinafter called "the Works");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of:
Kshs. ……. (*amount of Guarantee in figures*)
Kenya Shillings ……
…….(*amount of Guarantee in words*),
and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of Kenya Shillings …….. …….. (*amount of Guarantee in words*) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change, addition or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any change, addition, or modification.

This guarantee shall be valid until the date of issue of the Certificate of Completion.

SIGNATURE AND SEAL OF THE GUARANTOR …….

Name of Bank …….

Address ……

Date ……

TENDER QUESTIONNAIRE

Please fill in block letters.

1. Full names of Tenderer:

   ……

2. Full address of Tenderer to which tender correspondence is to be sent (unless an agent has been appointed below):

   ……

3. Telephone number (s) of Tenderer:

   ……

4. Telex/Fax Address of Tenderer:
   ……

5. Name of Tenderer's representative to be contacted on matters of the tender during the tender period:
   ……

6. Details of Tenderer's nominated agent (if any) to receive tender notices. This is essential if the Tenderer does not have his registered address in Kenya (name, address, telephone, telex):

   ……

   ……

_____
Signature of Tenderer

CONFIDENTIAL BUSINESS QUESTIONNAIRE

You are requested to give the particulars indicated in Part 1 and either Part 2 (a), 2 (b) or 2(c) and (2d) whichever applies to your type of business.

You are advised that it is a serious offence to give false information on this Form.

Part 1 – General

Business Name ……

Location of business premises: Country/Town…….

Plot No…… Street/Road ……

Postal Address…… Tel No……..

Nature of Business……..

Current Trade Licence No…… Expiring date……

Maximum value of business which you can handle at any time:
Kenya Shillings……

Name of your bankers……

Branch……

Part 2 (a) – Sole Proprietor

Your name in full…… Age……

Nationality…… Country of Origin……

Citizenship details ……

Part 2 (b) – Partnership

Give details of partners as follows:

	Name in full	*Nationality*	*Citizenship Details*	*Shares*
1.	……	…….	……..	……..
2.	……	…….	……..	……
3.	……	……	……	……
4.	……	……	……	……

Part 2(c) – Registered Company

Private or Public ……

State the nominal and issued capita of the company:

Nominal KShs. ……..

Issued KShs. ……..

Give details of all directors as follows:

	Name in full	*Nationality*	*Citizenship Details**	*Shares*
1.	……..	……	……..	…….
2.	……..	……	……..	…….
3.	……..	……	……..	…….
4.	……..	……	……..	…….

Part 2(d) Interest in the Firm:

Is there any person/persons in the employment of the Government of Kenya WHO has interest in this firm? Yes/No ……. (Delete as necessary)

I certify that the above information is correct.

……..	……	…….
Title	Signature	Date

* *Attach proof of citizenship*

KEY PERSONNEL

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

POSITION	NAME	YEARS OF EXPERIENCE (GENERAL)	YEARS OF EXPERIENCE IN PROPOSED POSITION
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

I certify that the above information is correct.

…….. …….. …… …….. ……

Title Signature Date

CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

Work performed on works of a similar nature and volume over the last five years.

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

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

……. ……. …….

Title Signature Date

SCHEDULE OF ON-GOING PROJECTS

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

PROJECT NAME	NAME OF CLIENT	CONTRACT SUM	% COMPLETE	COMPLETION DATE

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

……. ……..…… ……

Title Signature Date

FINANCIAL REPORTS FOR THE LAST FIVE YEARS
(Balance sheets, Profits and Loss Statements, Auditor's reports, etc.
List below and attach copies)

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

EVIDENCE OF FINANCIAL RESOURCES TO MEET QUALIFICATION REQUIREMENTS
(Cash in Hand, Lines of credit, e.t.c. List below and attach copies of supportive documents.)

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

NAME, ADDRESS AND TELEPHONE, TELEX AND FACSIMILE OF BANKS

(This should be for banks that may provide reference if contacted by the employer)

NAME	ADDRESS	TELEPHONE	TELEX	FACSIMILE

DETAILS OF LITIGATIONS OR ARBITRATION PROCEEDINGS IN WHICH THE TENDERER IS INVOLVED AS ONE OF THE PARTIES

1. ._____.

2. ._____

3. ._____.

4. ._____.

5. ._____.

6. ._____.

7. ._____.

8. ._____.

9. ._____.

10 ._____.

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

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

VOLUME 3

ELECTRICAL INSTALLATION WORKS

TENDER SPECIFICATIONS & BILLS

OFQUANTITIES FORSUPPLY, INSTALLATION,

TESTING AND COMMISSIONING OF

ELECTRICAL INSTALLATION WORKS

TABLE OF CONTENTS

SECTION A

INSTRUCTIONS TO TENDERERS

INSTRUCTIONS TO TENDERERS

CONTENTS

TENDER EVALUATION CRITERIA

After tender opening, the tenders will be evaluated in **2 stages**, namely:

1. Preliminary Evaluation;
2. Technical Evaluation;

STAGE 1: PRELIMINARY EVALUATION

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

These conditions shall include the following:

i) Company Certificate of incorporation/registration;
ii) Valid National Construction Authority Registration certificate (NCA 3 and above in Electrical Installation Works);
iii) Provide Valid annual contractors practicing license for NCA;
iv) Valid Certificate for Energy& Petroleum Regulatory Authority (EPRA B and above),
v) Valid Tax Compliance Certificate;
vi) Compliance with Technical Specifications;

Note:

On compliance with Technical Specifications, bidders shall supply equipment/items which comply with the technical specifications set out in the bid document. In this regard, the bidder will be required to submit relevant technical brochure/catalogues with the tender document, highlighting (using a mark-pen or highlighter) the Catalogue Number/model of the proposed items. Such brochures/ catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:
(i) Standards of manufacture;
(ii) Performance ratings/characteristics;
(iii) Material of manufacture;
(iv) Electrical power ratings; and
(v) All other requirements as indicated in the technical specifications of the bid.

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

The tenderer shall also fill in the Technical Schedule as specified in the tender document for Equipment and Items indicating the Country of Origin, Model/Make/Manufacturer and catalogue numbers of the Items/Equipment they propose to supply.

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

STAGE 2: TECHNICAL EVALUATION

The tenderer shall be required to fill Standard Forms Provided in the bid document for the purpose of providing information to assess their experience and personnel capacity in carrying out the works defined in the bid document. The tenderers may also attach the required information if they so desire;

The award of points considered in this section shall be as shown below:

PARAMETER	MAXIMUM POINTS
(i) Key personnel	20
(ii) Contract Completed in the last Five (5) years	18
(iii) Schedules of on-going projects	5
(iv) Schedules of contractor's equipment	9
(v) Litigation History	3
TOTAL	55

The pass-mark under the Technical Evaluation is 40 Points.

The detailed scoring plan shall be as shown in table 1.

TABLE 1: Assessment for Eligibility

Item	Description	Points Scored	Max. Point	
1.	**Key Personnel (Attach evidence)**			20
	Director of the firm • Holder of degree in relevant Engineering field---------- 5 • Holder of diploma in relevant Engineering field----------4 • Holder of certificate in relevant Engineering field----------3 • Holder of trade test certificate in relevant Engineering field-------2 • No relevant certificate----------1		5	
	At least 1No. degree/diploma holder of key personnel in relevant field • With over 10 years relevant experience----------5 • With over 5 years relevant experience----------3 • With under 5 years relevant experience ----------2		5	
	At least 1No certificate holder of key personnel in relevant field • With over 10 years relevant experience---------- 5 • With over 5 years relevant experience ---------- 3 • With under 5 years relevant experience ----------2		5	
	At least 2No artisan (trade test certificate in relevant field) • Artisan with over 10 years relevant experience----------2.5 • Artisan with under 10 years relevant experience ----------2 • Non skilled worker with over 10 years relevant experience-----1		5	

Item	Description	Points Scored	Max. Point
2.	**Contracts completed in the last five (5) years (Max of 3No. Projects)- Provide Evidence** • Project of similar nature, complexity or magnitude----------6 • Project of similar nature but of lower value than the one in consideration----------4 • No completed project of similar nature----------0		18
3.	**On-going projects – Provide Evidence** • No Project of similar nature, complexity and magnitude ------- 5 • Three and below Projects of similar, nature complexity and magnitude –----------4 • Four and above Projects of similar nature, complexity and magnitude ---------- 2		5
4.	**Schedule of contractor's relevant equipment (at least 6No.)** • Has relevant equipment for work being tendered----------1.5 • No relevant equipment for work being tendered----------0		9
5.	**Litigation History** • Filled, Signed and Stamped ----------3 • Not filled ----------0		3
	TOTAL		55

Any bidder who scores 40 points and above shall be considered for further evaluation.

SECTION B

GENERAL SPECIFICATIONS

OF

MATERIALS AND WORKS

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

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2.26 Insulation

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2.35 Position of Points and Switches

2.36 Street/Security Lighting Columns

2.37 Timing Control Switch

2.38 Wiring System for Street Lighting

2.39 Metal control Pillar

2.40 Current Operated Earth leakage circuit breaker

2.41 MV Switchboard

2.42 Steel Conduits and Steel Trunking

2.43 Testing on Site

2.1 GENERAL

This specification is to be read in conjunction with the drawings which are issued with it. Bills of quantities shall be the basis of all additions and omissions during the progress of the works.

2.2 STANDARD OF MATERIALS

Where the material and equipment are specifically described and named in the Specification followed by approved equal, they are so named or described for the purpose of establishing a standard to which the sub-contractor shall adhere.

Should the Sub-contractor install any material not specified herein before receiving approval from the proper authorities, the Engineer shall direct the Sub-contractor to remove the material in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.

All materials condemned by the Engineer as not approved for use, are to be removed from the premises and suitable materials delivered and installed in their place at the expense of the Sub-contractor. All materials required for the works shall be new and the best of the respective kind and shall be of a uniform pattern.

2.3 WORKMANSHIP

The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman and to the satisfaction of the Engineer. Helpers shall have qualified supervision.

Any work that does not in the opinion of the Engineer conform to the best standard practice will be removed and reinstated at the Sub-contractor's expense.

Permits, Certificates or Licenses must be held by all tradesmen for the type of work; in which they are involved where such permits, certificates or licenses exist under Government legislation.

2.4 PROCUREMENT OF MATERIALS

The sub-contractor is advised that no assistance can be given in the procurement or allotment of any materials or products to be used in and necessary for the construction and completion of the work.

Sub-contractors are warned that they must make their own arrangements for the supply of materials and/or products specified or required.

2.5 SHOP DRAWINGS

Before manufacture or Fabrication is commenced the sub-contractor shall submit Two copies of detailed drawings of all control pillars, meter cubicles, medium voltage switchboards including their components showing all pertinent information including sizes, capacities, construction details, etc., as may be required to determine the suitability of the equipment for the approval of the Engineer. Approval of the detailed drawings shall not relieve the sub-contractor of the full responsibility of errors or the necessity of checking the drawings himself or of furnishing the materials and equipment and performing the work required by the plans and specifications.

2.6 RECORD DRAWINGS

These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

2.7 REGULATIONS AND STANDARDS

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

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

2.8 SETTING OUT WORK

The sub-contractor at his own expenses; is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail to the Engineer before proceeding and must allow in his Tender for all such modifications and for the provision of any such sketches or drawings related thereto.

2.9 POSITIONS OF ELECTRICAL PLANT AND APPARATUS

The routes of cables and approximate positions of switchboards etc, as shown on the drawings shall be assumed to be correct for purpose of Tendering, but exact positions of all electrical Equipment and routes of cables must be agreed on site with the Engineer before any work is carried out.

2.10 MCB DISTRIBUTION PANELS AND CONSUMER UNITS

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

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

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

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

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

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

2.11 FUSED SWITCHGEAR AND ISOLATORS

All fused switchgear and isolators whether mounted on machinery, walls or industrial panels shall conform to the requirements of KS 04 – 226 PART: 1: 1985.

All contacts are to be fully shrouded and are to have a breaking capacity on manual operations as required by KS 04 – 182: 1980.

Fuse links for fused switches are to be of high rupturing capacity cartridge type, conforming to KS 04 – 183: 1978.

Isolators shall be load breaking/fault making isolators.

Fused switches and isolators are to have separate metal enclosures. Mechanical interlocks are to be provided between the door and main switch operating mechanism so arranged that the door may not be opened with the switch in the 'ON' position. Similarly; it shall not be possible to close the switch with the door open except that provision to defeat the mechanical interlock and close the switch with the door in the open position for test purposes. The 'ON' and 'OFF' positions of all switches and isolators shall be clearly indicated by a mechanical flag indicator or similar device. In T.P & N fused switch units, bolted neutral links are to be fitted.

2.12 CONDUITS AND CONDUIT RUNS

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

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

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

The Sub-contractor's attention is drawn to the necessity of keeping all conduits entirely separate from other piping services such as water and no circuit connections will be permitted between conduits and such pipes.
All conduits systems shall be arranged wherever possible to be self-draining to switch boxes and conduit outlet points for fittings:

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

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

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

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

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

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

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

2.13 CONDUIT BOXES AND ACCESSORIES

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

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

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

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

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

2.14 LABELS

Labels fitted to switches and fuse boards; -

(i) Shall be Ivorine engraved black on white.

(ii) Shall be secured by R.H brass screws of same manufacturing throughout.

(iii) Shall be indicated on switches: -
  a) Reference number of switch

  b) Special current rating

  c) Item of equipment controlled

(iv) Shall indicate on MCB panels
  a) Reference number
  b) Type of board, i.e.; lighting, sockets, etc.
  c) Size of cable supplying panel
  d) where to isolate feeder cable

(v) Shall be generally not less than 75mm x 50mm.

2.15 EARTHING

The earthing of the installation shall comply with the following requirements; -

(i) It shall be carried out in accordance with the appropriate sections of the current edition of the Regulations, for the Electrical Equipment of Buildings issued by Institute of Electrical Engineers of Great Britain.

(ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross sectional area Copper tape shall be provided and all equipment including the lead sheath and armouring of cables, distribution boards and metal frames shall be bonded thereto.

(iii) The earth tape in Sub-clause (ii) shall be connected by means of a copper tape or cable of suitable cross sectional area to an earth electrode which shall be a copper earth rod (see later sub-clause).

(iv) All tapes to be soft high conductivity copper, untinned except where otherwise specified and where run underground on or through walls, floors, etc., it shall be served with corrosion resisting tape or coated with corrosion compound and braided

(v) Where the earth electrode is located outside the building a removable test link shall be provided inside the building as near as possible to the point of entry to the tape, for isolating the earth electrode for testing purposes.

(vi) Earthing of sub-main equipment shall be deemed to be satisfactory where the sub-main cables are M.I.C.S. or conduit with separate earth wire, and installation is carried out in accordance with the figures stated in the current edition of the I.E.E Regulations.

(vii) Where an earth rod is specified (see Sub-clause (iii) it shall be proprietary manufacture, solid hand drawn copper of 15mm diameter driven into the ground to a minimum depth of 3.6M. It shall be made up to 1.2m sections with internal screw and socket joints and fitted with hardened steel tip and driving cap.

(viii) Earth plates will not be permitted

(ix) Where an earth rod is used the earth resistance shall be tested in the manner described in the current edition of the IEE Regulations, by the Sub-Contractor in the presence of the Engineer and the Sub-Contractor shall be responsible for the supply of all test equipment.

(x) Where copper tape is fixed to the building structure it shall be by means of purpose made non-ferrous saddles which space the conductor away from the structure a minimum distance of 20mm. Fixings, shall be made using purpose made plugs; No fixings requiring holes to be drilled through the tape will be accepted.

(xi) Joints in copper tape shall be tinned before assembly riveted with a minimum of two copper rivets and seated solid.

(xii) Where holes are drilled in the earth tape for connection to items of equipment the effective cross sectional area must not be less than required to comply with the IEE regulations.

(xiii) Bolts, nuts and washers for any fixing to the earth tape must be of non-ferrous material.

(xiv) Attention is drawn to the need for the earthing metal parts of lighting fittings and for bonding ball joint suspension in lighting fittings.

2.16 CABLES AND FLEXIBLE CORDS

All cables used in this Sub-Contract shall be manufactured in accordance with the current appropriate Kenya standard Specification which are as follows:-

P.V.C. Insulated Cables and Flexible Cords	---	Ks 04-192:1988
P.V.C Insulated Armoured Cables	---	Ks 04-194:1990
Armouring of Electric cables	---	Ks 04-290:1987

The successful Sub-Contractor will, at the Engineers discretion be required to submit samples of cables for the Engineers approval; the Engineer reserves the right to call for the cables of an alternative manufacture without any extra cost being incurred.

P.V.C. insulated cables shall be 500/1000 volt grade. No cables smaller than 1.5mm² shall be used unless otherwise specified. The installation and the finish of cables shall be as detailed in later clauses. The colour of cables shall conform to the details stated in the "Cable Braid and insulation Colours" Clause.

2.17 ARMOURED P.V.C. INSULATED AND SHEATHED CABLES:

Shall be 600/1000 volt grade manufactured to Ks 04-194:1988 and Ks 04-187/188 with copper stranded conductors.

The wire armour of the cable shall be used wholly as an earth continuity conductor and the resistance of the wire armour shall have a resistance not more than twice of the largest current carrying conductor of the cable.

P.V.C./S.W.A./P.V.C. cables shall be terminated using "Telecom" "B" type or approved equal or approved equal glands and a P.V.C. tapered sleeve shall be provided to shroud each gland.

2.18 CABLE SUPPORTS, MARKERS AND TILES

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

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

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

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

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

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

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

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

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

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

2.19 PVC INSULATED CABLES

Shall be of non-braided type as CMA reference 6491 x 600/1000/1000-volt grade cables, or equal approved.

PVC cables shall conform to the details of the "Cables and Flexible cords" and "Cable Braid and Insulation Colours" clauses.

2.20 HEAT RESISTING CABLES

Final connections to cookers, water heaters, etc., shall be made using butyl rubber insulated cable as CMA reference 610 butyl (Single core 600/1000 Volt).

This type of cable shall be used in all instances where a temperature exceeding 100°F, but not exceeding 150°F is likely to be experienced. Final connections to all lighting fittings (and other equipment where a temperature in excess of 150°c likely to be experienced) shall be made using silicon rubber insulated cable or equal and approved.

2.21 FLEXIBLE CORDS

Shall be in accordance with the "Cable and Flexible Cords" clause. No cord shall be less than 24/0.2mm in size unless otherwise specified.

Circular white twin TRS flex shall be used for plain pendant fittings up to 100 watts. For all other types of lighting fittings, the flexible cable shall be silicone rubber insulated.

No polythene insulated flexible cable shall be used in any lighting fitting or other appliance (see "Heat Resisting Cables" Clause 30).

2.22 CABLE ENDS AND PHASE COLOURS

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

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

2.23 CABLE INSULATION COLOURS

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

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

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

2.24 SUB-CIRCUIT WIRING

For all lighting and sockets wiring shall be carried out in the "looping in" system and there shall be no joints whatsoever. No lighting circuits shall comprise more than 20 points when protected by 10A MCB. Cables with different cross-section area of copper shall not be used in combination.

Lighting circuits P.V.C. cable.

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

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

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

(iii) 2.5mm² for one 15Amp socket.

(iv) 2.5mm² for maximum of ten switched 13 Amp sockets wired from 30 Amp MCB.

The wiring sizes for lighting circuits and sockets are shown on the drawings. In such cases, the sizes shown on the drawings shall prevail over the sizes specified.

Wiring sizes for other appliances shall be shown on the drawing or specified in later clauses of this specification.

2.25 SPACE FACTOR

The maximum number of cables that may be accommodated in a given size of conduit or trunking or duct is not to exceed the number in Tables B.5 and B.6 or as stated in Regulation B.91, B.117 and B.118 of the I.E.E Regulations whichever is appropriate.

2.26 INSULATION

The insulation resistance to earth and between poles of the whole wiring system, fittings and lumps, shall not be less than the requirements of the latest edition of the I.E.E Regulations. Complete tests shall be made on all circuits by the Sub-contractor before the installations are handed over.

A report of all tests shall be furnished by the Sub-Contractor to the Engineer. The Engineer will then check test with his own instruments if necessary.

2.27 LIGHTING SWITCHES

These shall be mounted flush with the walls, shall be contained in steel or alloy boxes with a screw less front plate and shall be of the gangs' ratings and type shown in the drawings. They shall be as manufactured by M.K. Electrical Ltd., or other equal and approved to KS 04 – 247: 1988.

2.28 SOCKETS AND SWITCHED SOCKETS

These shall be flush pattern in steel/pvc box and shall be of the gangs and type specified in the drawings.

They shall be 13- Amp, 3-pin, shuttered, switched with a screwless front plate and as manufactured by "M.K. Electrical Co. Ltd.", or other approved equal to KS 04 – 246: 1987.

2.29 FUSED SPUR BOXES

These shall be flush, D.P switched, with a screwless front plate, 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 Lampswith a screw less front plate.

The cooker control units shall be as manufactured by "M.K. Electrical Company Ltd", or other approved equal KS 04 – 247: 1988

2.31 CONNECTORS

Shall be specified in the drawings and appropriate rating. These shall be fitted at all conduit box lighting point outlets for jointing of looped P.V.C cables with flexible cables of specified quality.

2.32 LAMPHOLDERS

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

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

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

2.33 LAMPS

All lamps shall be suitable for normal stated supply voltage and the number and sizes of lamps detailed on the drawings shall be supplied and fixed. The Sub-Contractor must verify the actual supply voltage with the supply authority before ordering the lamps.

LED 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.

2.38 WIRING SYSTEM FOR STREET LIGHTING

Cables shall be as indicated on the drawings, and shall be laid in a cable trench 450mm deep along the road sides and 600mm deep across the roads and 900mm away from the road kerb or 1500mm away from the edges of the road. 'Loop-in' and 'Loop-out' arrangement shall be used at every pole. Wiring to the lanterns on each pole shall be with 1.5mm² 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.

The Switchboard shall be of the flush fronted, enclosed, metal clad type with full front or rear access as called for in the particular specifications, suitable for indoor use, sectionalized as necessary to facilitate transport and erection. The maximum height of the switchboard is to be approximately 2.0 metres. A suitable connection chamber containing all field terminals shall be provided at the top or bottom of the switchboard as appropriate.

Before manufacture, the Sub-Contractor shall submit to the consulting Engineer for approval of detailed drawings showing the layout, construction and connection of the switchboard.

All bus-bars and bus-bar connections shall consist of high conductivity copper and be provided in accordance with KS 04-226: 1985. The bus-bars shall be clearly marked with the appropriate phase and neutral colours which should be red, yellow, blue for the phases and black for neutral. The bus-bars shall be so arranged in the switchboard that the extensions to the left and right may be made in the future with ease should the need arise.

Small wiring, which will be neatly arranged and cleated, shall be executed in accordance with B.S. 158 and the insulation of the wiring shall be coloured according to the phase or neutral connection.

Switches and fuse switches, shall be in strict accordance with KS04-183:1978 Class 2 switches. Means of locking the switch in the "OFF" position shall be provided.

All fuse switches shall comply with KS04-183:1978, PARTS 2 and 3 a fault rating at least equal to the fault rating of the switchboard in which they are installed. Cartridge fuse links to KS 04-183:1978 category A.C. 46, class Q1 and fusing factor not exceeding 1.5 shall be supplied with each fused switch.

Mounting arrangements shall be such that individual complete fuse switches may be disconnected and withdrawn when necessary without extensive dismantling work.

When switches are arranged in their formation all necessary horizontal and vertical barriers shall be provided to ensure segregation from adjacent units. Means of locking the switch in the "OFF" position shall be provided.

2.42 STEEL CONDUITS AND STEEL TRUNKING

Conduits shall be of heavy gauge class "B" welded to Standard specification KS 04-180:1985. In no case will conduit smaller than 20mm diameter be used on the works. Conduits installed within buildings shall be black enamelled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanised. Conduit fittings, accessories or equipment used in conjunction with galvanised conduits shall also be galvanised or otherwise as approved by the service engineer.

Metal trunking shall be fabricated from mild steel of not less than 18 swg. All sections of trunking shall be rigidly fixed together and attached to the framework or fabric or the building at intervals of not less than 1.2m. Joint trunking shall not overhang fixing points by more than 0.5m.

All trunking shall be made electrically continuous by means of 25 x 3mm copper links across each joint and where the trunking is galvanised, the links shall be made by galvanised flat iron strips.

All trunking fittings (i.e. Bends, tees, etc) shall leave the main through completely clear of obstructions and continuously open except through walls and floors at which points suitable fire resisting barriers shall be provided as may be necessary. The inner edge of bends and tees shall be chamfered where cables larger than 35mm² are employed.

Where trunking passes through ceilings and walls the cover shall be solidly fixed to 150mm either side of ceilings and floors and 50mm either side of walls.

Screws and bolts securing covers to trunking or sections of covers together shall be arranged so that damage to cables cannot occur either when fixing covers or when installing cables in the trough.

Where trunking is used to connect switchgear of fuseboards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

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

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

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

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

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

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

The inner radius of the 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 enamelled or galvanized according to the type of conduit specified. All accessory boxes shall have threaded brass inserts.

Box lids where required shall be heavy gauge metal, secured by means of zinc plated or cadmium plated steel screws.

All adaptable boxes and lids of the same size shall be interchangeable.
Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.

Where used in conjunction with mineral insulated copper sheathed cable, galvanized boxes shall be used and painted after erection.

Draw-in boxes in the floors are generally to be avoided but where they are essential they must be grouped in positions approved by the services engineer and covered and by the suitable floor traps, with non-ferrous trays and covers.

The floor trap covers are to be recessed and filled in with a material to match the floor surface.

The Sub-contractor must take full responsibility for the filling in of all covers, but the filling in material will be supplied and the filling carried out by the main building contractor.

Where buried in the ground outside the building the whole of the buried conduit is to be painted with two coats of approved bitumastic composition before covering up.

Where run on the surface, unpainted fittings and joints shall be painted with two coats of oil bound enamel applied to rust and grease free metalwork.

2.43 TESTING ON SITE

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

(a) Tests shall be carried out to prove that all single pole switches are installed in the 'live' conductor.

(c) Tests shall be carried out to prove that all socket outlets and switched socket outlets are connected to the 'live' conductor in the terminal marked as such, and that each earth pin is effectively bonded to the earth continuity system. Tests shall be carried out to verify the continuity of all conductors of each 'ring' circuit.

(d) Phase tests shall be carried out on completion of the installation to ensure that correct phase sequence is maintained throughout the installation. Triplicate copies of the results of the above tests shall be provided within 14 days of the witnessed tests and the Sub-contractor will be required to issue to the service engineer the requisite certificate upon completion as required by the regulations referred to above.

(e) Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparently by such inspections or tests shall be rectified by the Sub-contractor at his own expense.

(f) The Sub-contractor shall provide accurate instruments and apparatus and all labour required to carry out the above tests. The instruments and apparatus shall be made available to the services engineer to enable him to carry out such tests as he may require.

(g) The Sub-contractor shall generally attend on other contractors employed on the project and carry out such electrical tests as may be necessary.

(h) The Sub-contractor shall test to the services engineer's approval and as specified elsewhere in this specification or in standards and regulations already referred to, all equipment, plant and apparatus forming part of the works and before connecting to any power or other supply and setting to work.

(i) Where such equipment, etc., forms part of or is connected to a system whether primarily or of an electrical nature or otherwise (e.g. air conditioning system) the Sub-contractor shall attend on and assist in balancing, regulating testing and commissioning, or if primarily an electrical or other system forming part of works, shall balance, regulate, test and commission the system to the service engineer's approval.

APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

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

1. Government Electrical Specifications No. 1 and No. 2.

2. All requirements of Kenya Power and Lighting Company Limited, and Communications Authority of Kenya (CAK).

3. **The contractor shall provide brochures/catalogues to show compliance to the items described in the general specification of materials and works i.e conduits and boxes, trunking, L.V switchboard, cables, accessories (sockets, switches, DP switches), earthing (earth rod and copper tape).**

SECTION C

SCHEDULE OF CONTRACT DRAWINGS

SCHEDULE OF CONTRACT DRAWINGS

DRAWING NO.	DRAWING TITLE
As shall be issued by the Engineer	

NOTE:

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

SECTION D

PARTICULAR SPECIFICATIONS

OF

MATERIALS AND WORKS

PARTICULAR SPECIFICATIONS

1.00 SITE LOCATION

The site of the proposed works is at **Proposed Mama Ngina University College, Gatundu.**

2.00 SCOPE OF WORKS

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

a) **Electrical Works**
This shall include conduiting, cabling, fittings and accessories.

b) **Telephone and data installation**
This shall include conduiting, Trunking and telephone outlet plates.

c) **Lightning Protection**
This shall include air terminations, copper tape, junction clamps, test clamps and earthing.

3.00 MATERIALS FOR THE WORKS

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

4.00 BROCHURES FOR FIRE ALARM PANEL & ANY ELECTRICAL EQUIPMENT AND FITTINGS

For consideration and qualification tenderers shall, at their own cost, provide coloured manufacturer's brochures detailing technical literature and specifications to show compliance to the electrical items described in section D.

5.00 MINIMUM SPECIFICATIONS FOR FIRE ALARM

Fire alarm shall be the addressable type and capable of integration with other brands of other manufacturers. This shall be wired using Fire resistant cable of minimum size 1.5mm sq. The fire alarm panel shall be the addressable type with a minimum of one loop.

6.00 MINIMUM SPECIFICATIONS FOR LED LIGHTING FITTINGS

i. Power Factor: ≥ 0.9
ii. Operating Frequency Range:45 – 55Hz
iii. Operating Voltage Range: 130 – 300Vac
iv. Operating Hours: ≥ 30,000Hrs
v. Correlated Colour Temperature (CCT): ≥ 6000K
vi. Total Harmonic Distortion: < 15%
vii. Housing: Corrosion proof material capable of withstanding coastal environments.
viii. Backlit type

Bidders must provide Technical Brochures to assess their technical compliance with these specifications for items 5.00 and 6.00.

7.00 ENERGY EFFICIENT SOLAR POWERED LED LIGHTING SPECIFICATIONS

The Contractor shall furnish and install the complete SOLAR LED lighting system as described in the Tender Specifications. The specific wattages of the LED luminaires, solar panels, battery subsystems etc. are to be indicated in individual luminaire specifications.

SOLAR LED Streetlight Luminaire

1. Housing

The luminaire shall have a full galvanized housing to provide adequate rigidity and strength and also ensure proper heat dissipation and corrosion proof. The luminaire housing shall have separate Driver and LED lamp cavity to ensure cooler operation of LED lamps and good electrical separation.
The optical LED compartment shall have a thermally hardened glass cover and high-quality silicon gasket system. The glass cover shall be tightly secured with the housing. The complete luminaire shall be rated for IP 66 (Ingress Protection).
The housing shall feature highly reflective components and films to increase light output.

The weight of the luminaire shall not be more than stipulated below: -
1) Up to 9,500 lumens < 7 kg
2) Up to 15,000 lumens < 9 kg
3) Up to 28,000 lumens < 15 kg

2. Optics

The luminaire shall have flexible optical system to achieve lighting parameters, as stipulated by CUSTOMER NAME for various kinds of road from M1 to M6. The luminaire shall offer a composite system efficiency of at least 90 Lumen/Watt and a lumen package of up to 11,000 lumens. The luminaire shall use high efficiency LED and optics system to achieve max energy savings. Specially designed lens system with unique inner and outer profile for high efficiency LED to ensure maximum spacing between the poles and cover higher road widths. Multi-layer optics design to ensure adequate luminance and illuminance uniformity in the unlikely event of individual LED failure.

The luminaire should offer choice of narrow beam, medium beam and wide beam light distribution.

The optical lens system should ensure:

1) Long life with no discoloration (UV Protection)
2) White painted circuit board to have high reflectivity for maximum light output.

3 Future Compatibility

The luminaire shall be fully compatible with future LED upgrades when they become available. It shall have a modular design to upgrade / replace with new LED modules or LED drivers at site. All electronic components/drivers shall be mounted on a separate gear tray with tool-less access and replacement. The luminaire shall have space available inside for communications antenna or equipment to be integrated into the luminaire for future tele-management control system implementation. Evidence showing tele-management capability shall be provided.

4 Surge Protection

The proposed luminaire shall have an in-built surge protection system to protect the electronic driver and the LED module with a minimum surge protection rating of 2KV.

5 Ingress Protection (IP) & Impact Resistance

The luminaire shall have Full IP 66 protection to ensure long reliable performance and to minimize maintenance requirement and an Impact resistance of IK 08. No chemical glue is to be used as that may cause breakdown of water-proof and dust-proof seal.

6 Maintenance

Tool-less maintenance of the LED modules and gears shall be provided for easy upgrade of LED modules on the pole

7 Mounting

The mounting of the luminaire will be in axial orientation through Ø 48-60mm sidearm.

8 Thermal Management

Managing thermal properties in LED luminaires are most critical to ensure optimum performance of LEDs and reliability of the system. The housing shell under the circuit board should be specially designed to ensure perfect contact between the board and the luminaire housing for efficient heat dissipation. The housing over the Driver compartment cavity shall have adequate surface area to ensure fast heat dissipation.

9 Color Rendering Index and Color Temperature

The luminaire should have a minimum color rendering index (Ra) of 75+/- 5 and a color temperature of up to 5700K for maximum efficiency. The LED shall have a color consistency within 5 SDCM (standard deviation of color matching) as defined by McAdam. The color temperature variation of the LEDS should be restricted as per ANSI C78.377A with CCT variation limiting within 500K for nominal CCT of 4000K.

10 Useful Life Hours

The LED luminaire shall be designed for lumen maintenance of L70 or 70% at the end of useful life at ambient temperature of 35 deg C. The complete luminaire shall have a useful life of 50,000 burning hours. The luminaire including the driver will include a warranty of 3 years against manufacturing defects and complete Solar Lighting System 2 years.

11 Standards Conformity

The luminaire should fully conform to following Specifications: -

1) IEC 62471:2006, IEC/TR 62471-2:2009, EN 62471:2008, Photo biological safety of lamps and lamp systems IEC 62471 – Photo-biological safety of lamps and lamp systems.

2) IEC 60598-1:2008, EN 60598-1:2008 + A11:2009, General requirements and tests for Luminaires

3) IEC 60598-2-3:2012, EN 60598-2-3:2003 + A1:2011, Luminaires, Part 2: Particular requirements: Section Three – Luminaires for road and street lighting

4) IEC 62493:2009, EN 62493:2010, Assessment of lighting equipment related to human exposure to electromagnetic fields

5) EN 55015: 2006/+A1:2007+A2:2009, Limits and methods of measurement of radio disturbance of electrical lighting and similar equipment.

6) EN 61547:2009, Equipment for general lighting purposes — EMC immunity requirements.

7) EN 61000-3-2:2006+A1:2009+A2:2009, Limits for harmonic currents emissions.

8) EN 61000-3-3:2008, Limitation of voltage fluctuations and flicker.

12 LED Driver Specifications

The solar LED luminaire's LED module and electrical components should be embedded in separated chamber. The solar LED luminaire input voltage / or system voltage should be 12V or 24V.

13 LED Chip Specifications

Solar LED luminaire should use 1st tier brand LED chips, and LED efficiency should be >= 125lm/W for NW/CW, >=105lm/W for WW; the 1st tier LED manufacturers should be Cree, LumiLEDs, Osram or Nichia.

14 Ambient Temperature

The luminaire shall be suitable for ambient temperature range of between -40 to 45 degrees Celsius.

15 Controls

Dimming function and customization should be available for example programmable multistep dimming profile

16 Materials and Finishing

- Housing: Hot dipped Galvanized aluminum, corrosion proof;
- Gasket: Heat resistant silicone rubber
- Glass: Tempered Glass with higher transmittance
- Frame: Gray Paint RAL7040 or different on request
- Tool-less maintenance of the LED modules and gears shall be provided for easy upgrade of LED modules on the pole.

17 Photo biological Safety

Light without blue and no photo biological risk; have been tested according to the IEC 62471(first edition, 2006-07) and been classified as Exempt group.

18 Wiring

The connector and cable should be attached with luminaire, ensuring IP67 protection.

PV Panels (Photovoltaic Solar Panels)

1. Power Output (Pmax)

PV Panel sub-system should include panel and connectors. Solar Panel utilizes poly-crystalline and mono-crystalline silicon solar cells that combine high Wp (Watts Peak) output, affordability and efficiency. PV output peak wattage should be between 35Wp and 295Wp± 3% (depends on configuration). PV Panel subsystem should have IP65 protection junction box for wiring.

2. Ambient temperature / operating temperature

PV panel shall be able to work / operate at '-40 ºC to +85 ºC.

3. Encapsulation Material

Encapsulation Material Ethylene Vinyl Acetate (EVA)

4. Lamination

PV panel shall be laminate with tempered safety glass which provide safety and best possible transmittance.

5. Wiring

PV panel shall be equipped with plug-and-play connector allowing easy connection and maintenance.

6. Lifetime

The panel shall be with 25-year designed lifetime, with power decrease less than 20%.

7. Standards Conformity

Solar Panels shall meet the following standards:

1) EN 61730-1:2007, Photovoltaic (PV) module safety qualification-Part 1 Requirements for construction.
2) EN 61730-2:2007, Photovoltaic (PV) module safety qualification - Part 2 Requirements for testing.
3) EN 61215:2005, IEC 61215:2005, crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval.
4) Corrosion proof

Charge Controller

1. The system should have protection against battery overcharge and deep discharge conditions.

2. Charge controller should be High-quality, 4-stage PWM-charging (4 Stage Battery Charging (Main, Float, Boost, Equalization),

3. Charge controller should provide:

- Automatic System Voltage Recognition (12 V/24 V)
- Reverse polarity protection
- Short circuit protection: for panel and load terminals
- Over discharging protection
- Over voltage disconnection
- Automatic electronic fuse protection
- Over current protection: for load terminal
- Reverse current protection: for panel terminal
- Over temperature protection: reduce the charging current by WM until switch off the load

Battery Subsystem

Battery sub system should be Valve Regulated Lead Acid (VRLA) Battery integrates gel electrolyte technology with long service lifetime, high performance in deep discharging; it can be used in wide range of ambient temperature and keep good performance of constant power input. The battery shall be equipped in dedicated designed box with following features:

- Water-proof — Battery box housing IP68, against from water or humidity underground; 0.6m water-resistant by 1 week underwater; housing of plastic ensures good performance of stability with non-chapping at -20°C.
- Conform to requirements of lead-acid utilization — pipeline from box and lighting pole antrum, to keep balance of air pressure inside box. The pipe is made of low temperature resistant nylon, stable quality without distortion at -40°C.
- The battery shall provide following features and functions, Gelatin electrolyte, 12 years lifespan in float service without acidification at 77°F (25°C) owes to a good recycle capability
- all plug and play connection
- Working Temperature Range

Charge (-22 ºC to 55 ºC)
Discharge (-10 ºC to 55 ºC)
Storage (-22 ºC to 55 ºC)

Standards Conformity

Battery shall meet the following standards:

1. EN 61427:2005, IEC 61427:2005, Secondary cells and batteries for renewable energy storage – General requirements and methods of test

Battery box shall meet the following standards:
2. IEC 60598-1:2008, General requirements and tests for Luminaires, IPX8 rating.

QUALITY AND WARRANTEE:

i) All the components and parts used in the solar street lighting systems should be corrosion proof

ii) All the components and parts used in the solar street lighting systems should conform to the latest BIS or IEC specifications, wherever such specifications are available and applicable.

iii) The street lighting system including the battery will be warranted for a period of five years from the date of supply.

iv) The PV module(s) will be warranted for a minimum period of 5 years from the date of supply. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of five (10) years and 80% at the end of Ten (10) years.

v) The Warranty Card to be supplied with the system must contain the details of the system.

OPERATION AND MAINTENANCE MANUAL:

An Operation, Instruction and Maintenance Manual, in English and/or the National Language - Kiswahili, should be provided with the Solar Street Lighting System. The following minimum details must be provided in the Manual:

- Basic principles of Photovoltaic.
- A small write-up (with a block diagram) on Solar Street Lighting System - its components, PV module, battery, electronics and luminaire and expected performance.
- Type, Model number, Voltage & capacity of the battery, used in the system.
- The make and wattage of the CFL LED used in the lighting system.
- About Charging and Significance of indicators.
- Clear instructions about erection of pole and mounting of PV module (s) and lamp housing assembly on the pole or underground
- Clear instructions on regular maintenance and troubleshooting of the Solar Street Lighting System.
- Name and address of the contact person for repair and maintenance, in case of non-functionality of the solar street lighting system.

SOLAR LIGHTING LED DETAIL PARAMETERS

Item No.	Parameters	Values	Comments
1.	Input Voltage	12V	
2.	LED Efficiency (Lumens/watt)	140 Lumens/Watt	Certificate from LED manufacturer needs to be provided with Datasheet of LED LED used must be of make CREE/Nichia/Osram/ Lumileds

Item No.	Parameters	Values	Comments
3.	Life Expectancy	Above 60,000 Hours with 70 lumens	LED model should have LM80 certificate to prove the LED life is guaranteed for > 75,000. LED manufacturer should provide T21 –Life test report
4.	Color Temperature	5500-6500K	
5.	Working Humidity	10 to 90% RH6	
6.	Working Temperature	5 to 50 degree	
7.	Average Lighting Angle (Beam Angle)	120 Degree	
8.	Make of LED	PHILIPS/ CREE/LUMILEDS/ OSRAM/NICHIA	
9.	Total System Power Consumption (includes LED & drive part) in watts.	Total wattage =15W	
10.	Lamp Starting Time	Instantaneous, Less than 2 Seconds	
11.	System Efficacy (%)	Greater than 90%	
12.	Ingress Protection	IP65	NABL accredited certificate must be provided for IP65
13.	Light Output	Minimum 20 Lux when measured at the periphery of 4 meter diameter from a height of 4 meter. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher Light Output will be preferred	
14.	Power Factor	>0.95	
15.	Protection Function	Open and Short Circuits	

8.00 SPECIFICATION FOR A 11/0.433KV STEP DOWN SUBSTATION

1.0 GENERAL:

1.1. Scope

The work covers construction of 11/0.433kV Step down transformer. The equipment to be supplied includes:

a. Circuit Breakers
b. Disconnecting switches
c. Current Transformers
d. Voltage Transformers
e. Surge Arrestors
f. 11/0.433kV Power Transformer
g. 11kV Metal-Clad Switchgear
h. DC Supply Batteries and Charger
i. Relay and Control Panel
j. Conductors, Cables and Terminals
k. Grounding materials
l. AC Distribution Board
m. DC Distribution Board

1.2 Design conditions:

Altitude a.s.l : datum

11kV Bus-bar rating : 200 A

Frequency : 50Hz

Phases : 3

Highest System Voltage 33kV : 36kV
11kV : 12kV

Nominal Voltage HV : 11kV
LV : 0.433kV

Impulse Withstand :
11kV Outdoor : 95kV
11kV Indoor : 75kV

Neutral Grounding System
11kV : Solid Grounding
0.433kV : Earthing Transformer

DC Control : 110V DC

CT Ratings : 1A

VT Secondary :110V AC

Clearances: 11kV

Between Phases	0.600m
Overhead conductors and Ground	4.25m
Distance for Safety e.g. bottom of bushings	2.40m
Minimum height of support structure	2.40m

1.3 Galvanizing:

Unless specifically mentioned, all iron and steel parts shall be fully galvanized after fabrication is completed.

All galvanizing shall be by hot-dip process in accordance ith the relevant IEC standard and the minimum quantity of Zinc coating shall be 350mg/m^2 for bolts and nuts, 550mg/m^2 for other parts except wires.

1.4 Bolts, Nuts, Washers, Studs:

All Bolts, studs, carriage bolts, nuts, washers and lock washers shall be hot-dip galvanized or made of stainless steel.

1.5 Bus-Bars and Conductors:

The buses must have sufficient mechanical strength to withstand short circuit stresses arising from short circuit power. Busbars and Electrical connectors shall be of Aluminium or Copper and shall be in accordance with relevant IEC standard in respect of current and thermal rating.

The Busbars and connections shall be so arranged and supported so that under no circumstances, including short-circuit conditions, the clearance between live metal and earth or between conductors be less than the relevant standard.

Where dissimilar metals are in contact, approved means shall be provided to prevent electro-chemical action and corrosion.

All the connectors required for the buses shall have a current carrying capacity and strength equal or greater than the buses.

1.6 Interlocking:

Circuit Breakers, disconnecting switches, etc shall be provided with an approved interlocking system which ensures safe operation of the system under all conditions.

Mechanical interlocks shall be employed where practicable and shall be effective at the point of application such that stress cannot be transmitted to parts remote from that point.

Switchyard equipment shall have local control facilities with appropriate interlocking for remote control.

1.7 Locking facilities:

Locking facilities shall be provided for the following:

- Disconnecting switches in both open and closed positions.
- All panel access doors.

For 11kV panels, see the section below.

1.8 Control and Relay Panels:

Relay and control panels shall be indoor, metal enclosed, free standing with front access. The equipment shall be flush mounted and protection class IP33.

The control and relay panels shall have ancillary equipment such as alarm bell, protection devices, fuses, resistors etc whether or not expressly specified. For details see the detailed specification.

The secondary circuits shall be equipped with test blocks, flush type with plug-in system with dust-proof cover. Control switches shall be of discrepancy type.

1.9 Earthing Transformer:

Shall be rated to the service voltage with minimum leakage current (less than 0.1A) at service voltage.

1.10 **11kV Switchgears:**
See detailed specification.

2. DETAILED SPECIFICATION:

2.1 630KVA Power Transformer:

The 11 kV 630KVA Main transformer shall be of 50 Hz, outdoor use, three phase, oil immersed, self- cooled with diaphragm conservator and off-load tap changer and be in accordance with IEC 60076 or equal.

(a) Ratings

Rated primary voltage	: 11kV
Rated secondary voltage	: 0.433kV
Continuous rated capacity	: 630KVA
Type of cooling	: ONAN
Number of phase	: 3
Rated frequency	:50Hz
Tap voltage	:11Kv ±2 x 2.5%,
Number of taps	:5 taps
Step voltage	:2.5%
Winding connection 11kV	: Delta brought out.
11kV	: Star with neutral
Vector Group 11kV	: DY
0.433kV	: n11
Tap changer	:Onload

The capacity ratings specified above shall be obtained on any tap for continuous service on the secondary side under the self-cooled condition. The winding shall be connected in accordance with vector symbol DYn11

The transformer shall be of the highest efficiency .
No –load excitation current under the rated voltage and frequency shall be as small as possible.
The onload tapchanger shall have tap-position indication in mechanical form and another one for electrical remote indication.

(b) **Bushings and terminating Facilities**

All bushings shall be in conformity with the IEC standard. The neutral point of the star winding shall be brought out in the secondary side. The transformer shall have a cable box for connection of 11kV cables.

(c) **Oil Conservators**

Oil conservators to isolate the oil from air with diaphragm or another kind of the device and dehydrating breathers with transparent containers shall be provided.
Oil level indicators, Buchholtz relays, Pressure relief, temperature indicators for Oil and windings, all valves and others necessary for Transformer protection/operation.

(d) **Temperature Rise**

The maximum temperature rise shall not exceed:
(i) 55degrees for oil by thermometer and
(ii) 55degrees for winding by resistance measurement

(e) **Insulating oil**

Insulating oil for the Transformer and any other equipment shall be of the relevant IEC Standard.

(f) **Core and Flux density:**

The magnetic circuit shall be of low loss, cold rolled grain oriented steel. The flux density at any point of the magnetic circuit when the transformer is connected on the principal tapping and operating at nominal voltage and frequency shall not exceed 1.65 tesla.

(g) **Impedance Voltage:**

The impedance voltage at extreme tappings and at principal tapping shall be stated and shall be subject to tolerances in accordance with IEC 60076.

(h) **Bushings:**

Leakage distance of bushings shall not be less than 31 mm/kV, based on operating phase to phase voltage.

(i) **Temperature Gauges:**

Winding temperature indicator with a maximum pointer drag hand type with a resetting knob and two separately adjustable mercury contacts or equal for alarm and trip.

Oil temperature indicator with a maximum pointer drag hand type with a resetting knob and two separately adjustable mercury contacts or equal for alarm and trip .

(j) **Gas Relays**

Transformers shall be provided with a gas and oil actuated relay (Buchholz relay)of double float type with tripping contacts to detect accumulation of gas and sudden changes of oil pressure. Shut off valves and flange couplings shall be provided to facilitate easy removal of the relay without lowering oil level in the main tank. A bleed valve for gas venting, a test valve and a terminal box suitably wired to the marshalling kiosk shall also be provided. The gas venting pipe shall be brought down to a height reachable from ground level and shall be fitted with a gas sampling device at the end. Provision should be made on the relay for simulation of gas and oil surge for testing purposes.

(k) **Pressure Relief Device**

A pressure relief device shall be provided for the main tank, complete with trip contacts suitably wired to the marshalling kiosk.

(l) **Evaluation:**

Transformer losses shall be capitalised at the following rates to facilitate evaluation and comparison of tenders.

Load (copper) losses	US$ 2577 per kW for 35 years
No – load (Iron) losses	US$ 4339 per kW for 35 years

The losses will be capitalised at the above rate and added to the bid evaluated price of the transformer.

(m)Testing

a)Routine tests

The following tests are routinely to be done :

i)Measurement of winding resistance

ii)measurement of voltage ratioand testing of voltage vector relationship.

iii)Mesurement of impedance voltage ,short circuit impedance and load loss.

iv)Measurement of no load loss and current.

v)Dielectric tests

vi)Separate source voltage withstand test

vii)Induced overvoltage withstand test

b)Type tests

i)Temperature rise test

ii)Dielectric tests

iii)Lightning impulse test

c)Special tests

i)Dielectric tests

ii)PD-test

iii)Chopped wave test

iv)Measurement of zero sequence impedance on three phase transformer.

v)Short circuit test

vi)Measurement of sound levels

vii)Measurement of harmonics in the no load current.

viii)Tests of auxillary equipment and wiring .

2.2 11kV Circuit Breaker

The 11kV Circuit Breaker shall be of 50Hz, three pole, outdoor use, porcelain type, charged spring operated. Breaking medium shall be SF6 gas. The Circuit Breaker shall have local closing facilities. The Circuit Breaker shall be operated with a remote control signal from a remote control panel.

(a) Ratings:

Rated voltage	12kV
Rated normal current	100A
Rated short circuit breaking current	25kA 3 sec
Rated operating sequence	O-1min-CO-3min—CO
Interrupting time	Less than 5 cycles
Control Voltage	110V DC

(b) Operating mechanism:
The Circuit Breaker shall be provided with local and remote electrically operated and local manual controls.

(c) Trip free
An electrical and mechanical trip free mechanism which operates accurately shall be provided.

(d) SF6 Pressure relay:
A low pressure lockout relay shall be provided to prevent signals operation of the circuit breaker when the internal gas pressure for operating circuit drops to a value which cannot obtain the rated interrupting capacity.

(f) Accessories

Circuit breaker shall be provided with the following accessories.

- Name plate
- Oil valves and plugs
- Mechanical position indicator
- At least 6 NO and 6 NC Auxiliary contacts.
- Operation counter
- Space heater
- Necessary terminals for primary and secondary circuits

(g) Circuit Breaker Structure:

The tenderer to supply the Structure for mounting the circuit breaker.

2.3 11kV Current transformers

The 11kV current transformers shall be of 50 Hz, outdoor use, single phase, oil filled porcelain type or epoxy resin molded type for 36kV circuit breaker, single core, hermetically sealed and unless specified hereunder, be in accordance with IEC standard.

(a) Ratings

Rated voltage : 12 kV
Rated short time current : 25 kA for 3 seconds
Rated burden : Not less than 15 VA
Primary rating : 100 A
No. of cores : 3
Current Rating:
Primary current : 50 – 100 Ampreres
Secondary : 1 Amperes
Core classes : Core 1 : class 0.2
: Core 2 : class 5p10
: Core 3 : class 5p20

2.4 11kV Disconnectors with/without Earth Switch

The 11kV Disconnector shall be manually operated, 50Hz, three pole, single throw, outdoor use, horizontal double break, center rotating insulator.

For the Disconnector with Earth switch, the Earthing switch shall be manually operated. The Earth switch shall also be provided with mechanical and electrical interlock with the disconnecting switch.

(a) Rating

Rated voltage : 11kV
Rated normal current : 100A
Rated short-time withstand current : 25 kA
Rated duration of short-circuit : 3 seconds

(b) Operating device

The device shall be of a design which can be operated manually by one operator without difficulty.

Operating mechanism shall be provided with a mechanical position indicator.

(c) Accessories

- Name plate
- Mechanical position indicator
- 4 NO and 4 NC Auxiliary contacts
- Manual operating device and handle
- Grounding terminal(s)
- Necessary terminals for primary and secondary circuits
- Other necessary accessories

2.5 Voltage Transformers

The 11kV voltage transformer shall be of 50 Hz, outdoor use, single phase oil-filled, hermatically sealed type or epoxy resin molded type and unless specified hereunder, be in accordance with IEC standard.

(a) Rating

Rated primary voltage	: 11/ √3kV
Rated secondary voltage	: 110/ √3 V
Rated secondary burden	: 50VA
Accuracy class (Secondary) case 1	: 0.2
case 2 : 3p	

(b) Accessories

One set of potential transformer shall be provided with the following accessories.

- Name plate
- Oil valves and plugs (if oil type)
- Grounding terminal(s)
- Necessary terminals for primary circuits
- Other necessary accessories

2.6 11kV Indoor Circuit Breakers

(a) General:

The metal clad switchgear shall be of indoor use, air-insulated, corrosion resistant, vermin proof and be mounted on steel base channels.

Each cubicle shall have hinged doors in front including locks and shall have well considered self-ventilation. Each cubicle shall conform to the relevant IEC standard and provided with the necessary control, measuring, indicating and protective apparatus whether or not expressly specified.

The cubicles to be into two(2) types based on the functions required:

The Circuit breakers shall be SF6 type, Horizontal draw out, trip free in any position.

2.7 Ringmaster 11KV switchgear

The ring unit is to have the following specifications

Rated current	: 100 Amps
Rated voltage	:13.8 Kv
Impulse level	: 9.5 Kv
Type	: metal clad
Breaking current	:21KA
Peak making current	:52.5 KA
Short time withstand(3s)	:21KA
Cable earth switch(3s)	:21KA
Insulating /making medium	:SF6
Internal arc-gas enclosure	:21 KA(1s)
Gas pressure rated	:0.5 BarG
Gas pressure filled	0.8 Bar G
Busbars rating	200 Amps
Enviroment	indoor/outdoor
IP rating	IP54
Operating mechanism	
Indication	Mechanical ON/OFF,Mechanical EARTH/MAIN gas pressure
Auxillary contacts	1NO,2 NC
Test facility	Integral test facility
Cable entry	Bottom
Accessories	Operating handle

Protection and control

IDMT overcurrent and earth fault,self powered relay, VIP300 setting	OC 20A-200A EF 2A-160 20V DC-250V AC
shunt trip coil	
Protection current transformers	200/1A Class X
Metering	
Metering current transformers	200/100/5A
(Red and blue phases)	10VA,class 0.5
Meter	PM 500

2.8 Relay and Control Panels

(a) The Transformer shall have the following (see single line diagram 11kV bay):

- Overcurrent/Earth fault relays of numeric type with digital display flush mounted.
- Memory capability for fault analysis
- Flag Indications for Transformer trips.
- Test terminals for cts
- Alarm annunciator
- Circuit Breaker Control preferably Discrepancy type.
- Status indications for switchyard equipment.
- Meters as per the single line diagram attached.
- Interlockings as necessary.

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2.7 Batteries and Charger

(a) Battery Charger:

The battery shall be of silicon controlled automatic rectifier type designed for continuous use.

The battery charger shall be complete with an automatic voltage regulator, voltmeters, ammeters, relays, alarm panel. It shall have float and boost facilities.

Ratings:

AC Input	: 230V ± 10%
DC Output	: 110V
C Output current	: 15A

An integral DC Distribution board shall be included with the following MCB ratings:

Size:	No.
16 A	2
10A	3
6A	3

(b) Battery:

The battery shall be nickel-cadmium alkaline type. Maintenance free batteries will also be considered.

Ratings:

Output Voltage	: 110V DC
Capacity:	: 60Ah/5hr

The necessary accessories for inter-cell connections and to the charger shall be supplied.

2.8 11kV Surge Arrestors

The 11kV Surge arrestor to shall be 50Hz, metal oxide, outdoor use in accordance with the relevant IEC 99-1.

a) Rating

Rated Voltage	: 12kV
Normal discharge current	: 10kA

2.9 Earthing Transformer

Shall limit the fault current to 400Amps.
Rating:
Service Voltage 11kV Phase to phase
400A for 10 sec
25A Continuous
Less than 0.10A leakage current at service voltage

2.10 11kV Surge Arrestors:

The 11kV Surge arrestor to shall be 50Hz, metal oxide, outdoor use in accordance with the relevant IEC 99-1.

b) Rating

Rated Voltage	: 11kV
Normal discharge current	: 10kA

2.11 Earthing Net

This shall be of hard-drawn stranded copper. Tentatively 95mmsq bare copper approximately 600m. Risers shall be of annealed stranded copper conductor.

2.12 Transformer Room

Scope of client to the Architects specification.

2.13 Power cables 11kV

11kV Power cables XLPE copper 70mmsq 3-phase

2.14 Low voltage cables

a) 600V Cables

Low-tension circuit from station local transformer to AC distribution panel: 600V cable shall be copper conductor, polyvinyl chloride insulated PVC sheathed, 600V 300sqmm x 4-cores.
Low-tension motor circuit from AC distribution panel to each motor:
The sectional area of the 600V cables shall be ample for each motor capacity and shall be decided by the Contractor take into account of the voltage drop for starting current.

b) Control Cables

Control cables shall be copper conductor, of jacket type, 600V, polyvinyl chloride insulated PVC sheathed, single or multi-cores copper. The sectional area of core shall not be less than 2.5sq mm.

The sectional area of core for current transformer circuit control cables shall not be less than 4 sq mm. The control cables must be armoured.

c) Insulated Wire

600 V PVC insulated wire shall be flex stranded copper conductors and used for heaters for indoor wirings.

d) **Cables Drawn into Ducts**

Unless otherwise specified, the Contractor shall provide ducts and pipes. Immediately before pulling the cables, the Contractor is to remove any loose material from the ducts and prove them by drawing through a mandrel of slightly less diameter than the duct. The ducts shall be water and vermin proof sealed and for indoor installations fireproof.

e) **Cables Installed in Concrete Trenches and Road crossings.**

In substations and road crossings, concrete trenches, drilling and cable ducts shall be provided and installed by the Contractor. These trenches shall not be filled with sand. All cable duct entries to buildings, whether or not for cables, shall be against entry of water, oil and vermin with a suitable filling materials' supplied and installed by the Contractor on the approval of the Employer.

All cable routes in concrete trenches shall be suitable supported by means of cleats or racks and raised from the trench floor by means of suitable spacers. All cables shall be run in a neat and orderly manner and the crossing of cables within the trench shall be avoided as far as possible.

The Contractor shall be responsible for removing and replacing the trench covers free of charge during the execution of his work as directed by the Engineer.

f) **Bus Conductors**

Following conductors shall be provided as outdoor bus and jumper conductors:

For 33kV bus and jumper

(i) Pipe bus: Copper pipe – 50mm (diameter) x 5mm (thickness)
(ii) Overhead bus: AAC.150 sq.mm

g) **Galvanized Steel Wires**

Galvanized steel wires of 55 sq.mm (7/3.2 mm) shall be used for overhead ground wires, of which ultimate tensile strength shall be more than 90kg/sq.mm.

h) **Fittings**

Suitable PG clamps terminals and spacers for conductors, suitable terminals for the equipment to conductor, and suitable clamps for galvanized steel wire shall be supplied and installed.
PG clamps shall be free from electrolytic corrosion and designed for bi-materials against the connection between aluminium and copper.

The following tests, as applicable, shall be carried out at the Contractor's plant:

(a) Construction test
(b) Tensile strength test
(c) Elongation test
(d) Resistance test
(e) Insulation resistance test
(f) Withstand voltage test
(g) Characteristics

(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 Contractor at his own expense.

(e) The 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 Contractor shall generally attend on other contractors employed on the project and carry out such electrical tests as may be necessary.

The 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 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.

SECTION E

SCHEDULE OF UNIT RATES

SCHEDULE OF UNIT RATES

1. The tenderer shall insert unit rates against the items in the following schedules and may add such other items as he considers appropriate.

2. The unit rates shall include for supply, transport, insurance, delivery to site, storage as necessary, assembling, cleaning, installing, connecting, profit and maintenance in defects liability and any other obligation under this contract.

3. The unit rates will be used to assess the value of additions or omissions arising from authorised variations to the contract works.

4. Where trade names or manufacturer's catalogue numbers are mentioned in the specification, the reference is intended as a guide to the type of article or quality of material required. Alternative brands of **equal** and **approved** quality will be accepted.

5. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all other taxes applicable at the time of tender.

SCHEDULE OF UNIT RATES
(To be completed by the Tenderer)

NO	DESCRIPTION	QTY	UNIT	UNIT RATE (KSHS)	UNIT RATE (CTS)
1	PVC/SWA/PVC Copper cable:				
	a) 10.0mm sq. 2 core	1	M		
	b) 95.0 mm sq 4core	1	M		
	c) 120.0 mm sq 4 core	1	M		
	d) 240.0 mm sq 4 core	1	M		
	e) 630.0 mm sq 4 core	1	M		
2	IP 65 rated Isolators as KATKO, 3 Phase				
	a) 40A	1	NO		
3	Emergency shutdown switch	1	NO		
4	LED Flood lights:	1	NO		
	a) 30 Watts	1	NO		
	b) 200 Watts	1	NO		
5	Industrial socket outlets, 5 pin:				
	a) 20A	1	NO		
	b) 32A	1	NO		
	c) 40	1	NO		
	d) 63	1	NO		
	e) 100	1	NO		
6	Cables:	1	NO		
	a) Single Core PVC Cables				
	i) 25mm2	1	M		
	ii) 50mm2	1	M		
	iii) 70mm2	1	M		
	iv) 95mm2	1	M		
	v) 120mm2	1	M		
	vi) 150mm2	1	M		
7	MATV system:				
	a) Mast head High gain amplifier (booster) units.	1	NO		
	b) VHF aerial as Ellies or approved equivalent complete with mounting bracket.	1	NO		
	c) UHF aerial as Ellies or approved equivalent complete with mounting bracket	1	NO		
	d) Mast head Combiner unit as Ellies or approved equivalent	1	NO		
	e) Four way splitters as Ellies or approved equivalent	1	NO		
	f) 13 AMP High voltage guard as sollatek or approved equivalent	1	NO		
	g) Security lock box to engineer's approval	1	NO		
	h) 16 SWG, (300 x 300 x 300) mm3 galvanised steel draw box for TV works.	1	NO		
	i) TV outlet point wired in 75-ohm co-axial cables drawn in PVC conduits including outlet plate	1	NO		
	j) Adjustable telescopic antenna mast	1	NO		

NO	DESCRIPTION	QTY	UNIT	UNIT RATE	
				KSHS	CTS
8	Distribution Boards/Consumer unit as Merlin Gerin or an approved equivalent:				
	a) 12 Way TPN Distribution Board	1	NO		
	b) 12way Consumer unit	1	NO		
	c) 4-way consumer unit	1	NO		
	d) 6way consumer unit	1	NO		
9	Rising Mains:				
	i) 450ATPN Rising Mains	1	M		
	ii) 150A TPN Rising Mains	1	M		
	iii) 500ATPN Rising Mains	1	M		
	iv) 600ATPN Rising Mains	1	M		
	v) 750ATPN Rising Mains	1	M		
10	Trunking:				
	a) 250X50mm three compartment powder coated steel trunking manufactured in 14 SWG galvanized mild steel sheet and finished in white powder coating	1	M		
11	Electric Fence				
	a) Energizer that sends safe voltage pulses to the fence wires (8Strand fence of approximate 400Lm) complete with Fence voltage display, Earth voltage monitoring, Pulse synchronization, Selectable zone control, Zone intrusion display, Back-up battery: minimum 8 hours on failure of mains power supply, Power Supply: 240V AC, 50HZ and a dedicated keypad with LCD graphic, back-lit display/keys with soft function. The Energizer is to have facilities for connecting to the burglar alarm system	1	No.		
	b) 8No. strand 1.6mm dia Corrosion proof high tensile steel galvanized Fence lines with a minimum breaking load of 220 Kgf /606N	1	M		
	c) posts of cross-sectional dimensions: 25x25x3mm	1	NO		
	d) corner support posts of 25x25x3mm	1	NO		
	e) UV stabilized in-line insulators	1	NO		
	f) UV stabilized strain insulators	1	NO		
	g) joint clamp	1	NO		
	h) siren and flasher	1	NO		
	i) Lightning diverter kit	1	NO		
	j) Warning sign	1	NO		
12	Lighting Fittings				
	a) Type (8)	1	NO		
	b) Type (10)	1	NO		
	c) Type (17)	1	NO		

SECTION F

BILLS OF QUANTITIES

BILLS OF QUANTITIES

A) PRICING OF PRELIMINARIES ITEMS

Prices will be inserted against item of preliminaries in the Contractor's Bills of Quantities and specification. These Bills are designated as Bill No.1 in this Section. Where the Contractor fails to insert his price in any item he shall be deemed to have made adequate provision for this on various items in the Bills of Quantities. The preliminaries form part of this contract and together with other Bills of Quantities covers for the costs involved in complying with all the requirements for the proper execution of the whole of the works in the contract.

The Bills of Quantities are divided generally into three sections:

(a) Preliminaries – Bill No.1

Contractor's preliminaries are as per those described in section C – Contract Preliminaries and General Conditions of Contract. The Contractor shall study the conditions and make provision to cover their cost in this Bill. The number of preliminary items to be priced by the Tenderer has been limited to tangible items such as site office, temporary works and others. However the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.

(b) Installation Items – Other Bills

(i) The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the contract Drawings, conditions of contract and specifications.

(ii) The unit of measurements and observations are as per those described in clause 1.0 5 of the section C.

(c) Summary

The summary contains tabulation of the separate parts of the Bills of Quantities carried forward with provisional sum, contingencies and any prime cost sums included. The Contract shall insert his totals and enter his grand total tender sum in the space provided below the summary.

This grand total tender sum shall be entered in the Form of Tenderprovided elsewhere in this document.

SPECIAL NOTES TO THE BILLS OF QUANTITIES

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.

2. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all other taxes applicable at the time of tender.

3. All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part.

4. The brief descriptions of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere to. Otherwise alternative brands of **equal** and **approved** quality will be accepted.

   Should the sub-contractor install any material not specified here-in before receiving **approval** from the Project Manager, the sub-contractor shall remove the material in question and, **at his own cost**, install the proper material.

5. The grand total of prices in the price summary page must be carried forward to the **MAIN Summary Page**.

6. Tenderers must enclose, together with their submitted tenders, detailed coloured manufacturer's Brochures detailing Technical Literature and specifications on all the equipment they intend to offer.

PROPOSED OFFICE CLASSROOM BLOCK AT MAMA NGINA UNIVERSITY COLLEGE, GATUNDU - ELECTRICAL WORKS BILLS OF QUANTITIES

CONTRACT PRELIMINARIES

Item	Description	Qnt	Unit	Rate (Kshs)	Cost (Kshs)
1	Samples				
2	Working Drawings				
3	Record Drawings(As Installed)				
4	Maintenance and Operation Manuals				
5	Testing and Inspection				
6	Initial Maintenance				
	Total Carried Forward to Price Summary Page pg15				

PROPOSED OFFICE CLASSROOM BLOCK AT MAMA NGINA UNIVERSITY COLLEGE, GATUNDU - ELECTRICAL WORKS BILLS OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
A.	**GROUND FLOOR - LIGHTING AND POWER INSTALLATION.**				
1.0	**LIGHTING INSTALLATION**				
1.1	Supply and install lighting points using 3 x 1.5mm^2 PVC insulated Copper cables to be drawn in 20mm diameter PVC heavy gauge conduits concealed in the floors, roof and for one way switching but excluding the fittings and switches. Conduits to be laid during floor casting where necessary	No	17		
1.2	As Item 1.1 above but for two way switching.	No	64		
1.3	As Item 1.1 above but for intermediate switching.	No	22		
1.4	Supply and install 10 Amps rated moulded plate screwless switches (white in colour) for flush mounting and as MK, crabtree, clipsal or approved equivalent.				
	(a) One gang one way	No	1		
	(c) Three gang one way	No	1		
	(g) One gang two way	No	1		
	(h) Two gang two way	No	5		
	(i) Three gang two way	No	1		
	(j) Four gang two way	No	3		
	(l) Seven gang two way	No	2		
	(n) Two gang Intermediate	No	1		
1.5	Supply and install the following lighting fittings				
	(a) Type **(1)**.	No	51		
	(b) Type **(6)**.	No	19		
	(c) Type **(7)**.	No	33		
	(d) Type **(15)**.	No	10		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
2.0	**POWER INSTALLATION**				
2.1	Supply and install a heavy gauge PVC conduiting of size 3x50mm diameter from the electrical service duct to the DBs and data/voice reticulation.	M	100		
2.2	Supply and install a heavy gauge PVC conduiting of size 3x38mm diameter for data/voice reticulation.	M	250		
2.3	Supply and install a heavy gauge PVC conduiting of size 3x32mm diameter for data/voice reticulation.	M	300		
2.4	Supply and install an adaptable box 400X400mm for the DBs located using 38mm diameter heavy gauge PVC conduits.	No	5		
2.5	Supply and install recessed 6way TPN distribution board incorporating an incomer MCB rated at 100A (without the MCBs).The DB is to be as Merlin Gerlin / Hager or approved equivalent.	No	1		
2.6	Supply and install rectangular skirting metallic trunking Type B of dimensions 200X50mm 2 compartment along all walls complete with equibonding. Trunking to be powder coated and white in colour.	M	181		
2.7	Supply and install factory manufactured corner rectangular skirting metallic trunking Type B of dimensions 200X50mm three compartment along all walls. Trunking to be powder coated and white in colour.				
	a) Inside Corner Bends	No.	28		
	b) Outside Corner Bends	No.	19		
	c) End Cover	No.	3		
2.8	Supply and install corrosive resistant floor box with provision for 4No. Twin socket outlet points and 4No. twin data outlet points and cover lid to IP65. To be floor mounted, recessed and complete with all other accessories. To be corrosive resistant and colour to be as per engineers direction.	No.	3		
2.9	Supply and install the following miniature circuit breakers (MCB'S) rated at 500Vac for the above Distribution boards.				
	(a) 10A (SP)	No	4		
	(b) 30A (SP)	No	4		
2.10	Supply and install Blanking Plates for covering the spare ways in the distribution boards.	No	10		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
2.11	Supply and install 13Amps twin switched socket outlet point using 3 x 2.5mm2 PVC insulated copper cables drawn in 25mm diameter PVC heavy gauge conduits laid concealed in the floors and walls but without the outlet plates.	No	31		
2.12	Supply and install White 13Amps twin switched screwless socket outlet for the raw power and as MK, CRABTREE/CLIPSAL or approved equivalent.	No	31		
2.13	Supply and install twin data / voice outlet point using 25mm dia PVC heavy gauge conduits complete with a draw wire and blanking plate.	No	13		
2.14	Supply and install television outlet point using 25mm dia PVC heavy gauge conduits.	No	2		
2.15	Supply and install television white faceplate and as MK 3521 or approved equivalent.	No	2		
2.16	Supply and install master aerial TV wiring for four outlets complete with wiring using coaxial cable. Wiring to	No.	1		
2.17	Supply and install twin mounting plates for mounting socket outlet plates on the trunking (200mm x 50 mm)	No	31		
2.18	Supply and install single mounting plates for mounting data and TV outlet plate on the trunking(200mm x 50 mm)	No	15		
2.19	Supply and install Ceiling mounted PIR detector with 360˚view angle and a hard shell spherical lens. The	No	6		
2.20	Supply and install 20A DP with 240V Ac input voltage contactor switch. The contactor switch is to have 6No. auxilliary terminals and as LOVATO 11CM20 or approved equivalent. The contactor switch is to be recessed and inside an enclosure.	No	6		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
3.0	**FIRE ALARM SYSTEM**				
	The stated brand of fire alarm items is for purposes of quality and any other brand may be installed as per engineers approval				
3.1	Supply and install fire alarm manual call point wiring done using fire resistant 2x1.5mm2 PVC copper cables drawn in 20 mm dia PVC heavy gauge conduits but without the manual call point.	No	7		
3.2	As item 3.1 above but for the fire bell outlet	No	5		
3.4	Supply and install a recessed addressable manual call point, as menvier or approved equivalent.	No	7		
3.5	Supply and install an addressable sounder complete with beacon light and all other necessary accessories and for wall mounting and as Menvier or approved equivalent.	No	5		
3.7	Supply and install smoke detector point wiring done using fire resistant 2x1.5mm2 PVC insulated copper cables drawn in 20mm dia PVC heavy gauge conduits but without the smoke detector.	No	13		
3.8	Supply and install a smoke detector- photoelectric addressable type complete with the commonbase and all other necessary accessories and as Menvier or approved equivalent.	No	13		
3.9	Supply and install emergency exit point wiring done using fire resistant 2x1.5mm2 PVC copper cables drawn in 20 mm dia PVC heavy gauge conduits but without the manual call point.	No	11		
3.10	Supply and install 300mm 8w fluorescent emergency exit lighting luminaire with 3hour duration and complete with all other necessary accessories and as MENVIER Recessed Safe Edge Order Code RSEM or approved equivalent.	No	11		
3.11	Supply and install an addressable one loop fire alarm panel flush mounted on wall with 72 hour standby battery, complete with all accessories and as Menvier or approved equivalent.	No	1		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
4.0	**DIGITAL CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM AND ACCESS CONTROL.**				
4.1	Supply and install Digital Color Camera outlet point done using 25mm dia PVC heavy gauge conduit complete with draw wire (wiring to be done by others).	No	12		
4.2	Provide for security alarm sensors, alarm control panel point and panic button points using 25mm dia PVC heavy gauge conduits complete with draw wire and blanking plate (wiring to be done by others).	No	15		
	TOTAL FOR ELECTRICAL WORKS GROUND FLOOR CARRIED FORWARD TO PRICE COLLECTION PAGE F/17				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
B.	**FIRST FLOOR AND TERRACE - LIGHTING AND POWER INSTALLATION.**				
5.0	**LIGHTING INSTALLATION**				
5.1	Supply and install lighting points using 3 x 1.5mm^2 PVC insulated Copper cables to be drawn in 20mm diameter PVC heavy gauge conduits concealed in the floors, roof and for one way switching but excluding the fittings and switches. Conduits to be laid during floor casting where necessary	No	71		
5.2	As Item 5.1 above but for two way switching.	No	38		
5.3	As Item 5.1 above but for intermediate switching.	No	26		
5.4	Supply and install 10 Amps rated moulded plate screwless switches (white in colour) for flush mounting and as MK, crabtree, clipsal or approved equivalent.				
	(a) One gang one way	No	5		
	(b) Two gang one way	No	0		
	(c) Three gang one way	No	6		
	(d) Two gang two way	No	4		
	(e) Three gang two way	No	2		
	(f) Two gang Intermediate	No	3		
	(g) Four gang Intermediate	No	1		
	(h) Pull switch	No	2		
5.5	Supply and install the following lighting fittings				
	(a) Type **(1)**.	No	51		
	(b) Type **(4)**.	No	4		
	(c) Type **(5)**.	No	1		
	(d) Type **(6)**.	No	8		
	(e) Type **(7)**.	No	64		
	(f) Type **(11)**.	No	7		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS

	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
6.0	**POWER INSTALLATION**				
6.1	Supply and install a heavy gauge PVC conduiting of size 3x50mm diameter from the electrical service duct to the DBs and data/voice reticulation.	M	100		
6.2	Supply and install a heavy gauge PVC conduiting of size 3x38mm diameter for data/voice reticulation.	M	250		
6.3	Supply and install a heavy gauge PVC conduiting of size 3x32mm diameter for data/voice reticulation.	M	300		
6.4	Supply and install an adaptable box 400X400mm for the DBs located using 38mm diameter heavy gauge PVC conduits.	No	5		
6.5	Supply and install recessed 9way TPN distribution board incorporating an incomer MCB rated at 125A (without the MCBs).The DB is to be as Merlin Gerlin / Hager or approved equivalent.	No	1		
6.6	Supply and install rectangular skirting metallic trunking Type B of dimensions 200X50mm 2 compartment along all walls complete with equibonding. Trunking to be powder coated and white in colour.	M	242		
6.7	Supply and install factory manufactured corner rectangular skirting metallic trunking Type B of dimensions 200X50mm three compartment along all walls. Trunking to be powder coated and white in colour.				
	a) Inside Corner Bends	No.	41		
	b) Outside Corner Bends	No.	18		
	c) End Cover	No.	6		
6.8	Supply and install corrosive resistant floor box with provision for 4No. Twin socket outlet points and 4No. twin data outlet points and cover lid to IP65. To be floor mounted, recessed and complete with all other accessories. To be corrosive resistant and colour to be as per engineers direction.	No.	6		
6.9	Supply and install the following miniature circuit breakers (MCB'S) rated at 500Vac for the above Distribution boards.				
	(a) 10A (SP)	No	12		
	(b) 20A (SP)	No	5		
	(c) 30A (SP)	No	7		
6.10	Supply and install Blanking Plates for covering the spare ways in the distribution boards.	No	2		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS

	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
6.11	Supply and install 13Amps twin switched socket outlet point using 3 x 2.5mm2 PVC insulated copper cables drawn in 25mm diameter PVC heavy gauge conduits laid concealed in the floors and walls but without the outlet plates.	No	42		
6.12	Supply and install White 13Amps twin switched screwless socket outlet for the raw power and as MK, CRABTREE/CLIPSAL or approved equivalent.	No	42		
6.13	Supply and install air extract fans circuits wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 25mm diameter PVC heavy gauge conduits but excluding the 20 Amps DP switch.	No	3		
6.14	Supply and install hand drier wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 25mm diameter PVC heavy gauge conduits but excluding the 20A DP switch.	No	2		
6.15	Supply and install flush mounted 20Amps DP switch complete with a pilot lamp and as MK CatNo 5423WHI,CRABTREE or approved equivalent.	No	5		
6.16	Supply and install twin data / voice outlet point using 25mm dia PVC heavy gauge conduits complete with a draw wire and blanking plate.	No	20		
6.17	Supply and install twin mounting plates for mounting socket outlet plates on the trunking (200mm x 50 mm)	No	40		
6.18	Supply and install single mounting plates for mounting data and TV outlet plate on the trunking(200mm x 50 mm)	No	20		
6.19	Supply and install disabled toilet emergency system (disabled person alarm kit) complete with buzzer and the indicator lamp	Item	1		
6.20	Supply and install Ceiling mounted PIR detector with 360˚view angle and a hard shell spherical lens. The sensor/detector should have a minimum adjustable range of 15 metres.	No	9		
6.21	Supply and install 20A DP with 240V Ac input voltage contactor switch. The contactor switch is to have 6No. auxilliary terminals and as LOVATO 11CM20 or approved equivalent. The contactor switch is to be recessed and inside an enclosure.	No	9		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS

	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
7.0	**FIRE ALARM SYSTEM**				
	The stated brand of fire alarm items is for purposes of quality and any other brand may be installed as per engineers approval				
7.1	Supply and install fire alarm manual call point wiring done using fire resistant 2x1.5mm2 PVC copper cables drawn in 20 mm dia PVC heavy gauge conduits but without the manual call point.	No	11		
7.2	As item 7.1 above but for the fire bell outlet	No	4		
7.4	Supply and install a recessed addressable manual call point complete with all necessary accessories and as menvier or approved equivalent.	No	11		
7.5	Supply and install an addressable sounder complete with beacon light and all other necessary accessories and for wall mounting and as Menvier or approved equivalent.	No	4		
7.7	Supply and install smoke detector point wiring done using fire resistant 2x1.5mm2 PVC insulated copper cables drawn in 20mm dia PVC heavy gauge conduits but without the smoke detector.	No	13		
7.8	Supply and install a smoke detector- photoelectric addressable type complete with the commonbase and all other necessary accessories and as Menvier or approved equivalent.	No	13		
7.9	Supply and install a Heat detector point wiring done using fire resistant 2x1.5mm2 PVC insulated copper cables drawn in 20mm dia PVC heavy gauge conduits but without the Heat detector.	No	0		
7.10	Supply and install addressable heat detector (rate of rise type) complete with the common base and as MENVIER or approved equivalent.	No	0		
7.11	Supply and install emergency exit point wiring done using fire resistant 2x1.5mm2 PVC copper cables drawn in 20 mm dia PVC heavy gauge conduits but without the manual call point.	No	13		
7.12	Supply and install 300mm 8w fluorescent emergency exit lighting luminaire with 3hour duration and complete with all other necessary accessories and as MENVIER Recessed Safe Edge Order Code RSEM or approved equivalent.	No	13		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS

	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
8.0	**DIGITAL CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM AND ACCESS CONTROL.**				
8.1	Supply and install Digital Color Camera outlet point done using 25mm dia PVC heavy gauge conduit complete with draw wire (wiring to be done by others).	No	15		
8.2	Provide for security alarm sensors, alarm control panel point and panic button points using 25mm dia PVC heavy gauge conduits complete with draw wire and blanking plate (wiring to be done by others).	No	15		
	TOTAL FOR ELECTRICAL WORKS FIRST FLOOR AND TERRACE CARRIED FORWARD TO PRICE COLLECTION PAGE F/17				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
9.0	**POWER RETICULATION AND DISTRIBUTION**				
	Supply and install and commission underground cables rated at 600/1000 volts to BS 6346:1989 stardards and as East African Cables Ref:6944X:- or approved equivalent				
9.1	4 core 16mm sq PVC/SWA/PVC armoured copper cable from the main switchboard on Lower ground switchroom to the Distribution Boards on the respective floors from the L.V sub board and laid on cable trays in the cable duct				
	a)To Ground floor (DB(01))	m	15		
	b)To First floor (DB(11))	m	20		
9.2	Supply and install cable glands for item 9.1 above	No.	4		
9.3	2core 4mm sq PVC/SWA/PVC armoured copper cable from the L.V sub board on ground floor to the hosereel pump and laid on cable trays in the cable duct	m	15		
9.4	Supply and install cable glands for item 9.3 above	No.	2		
9.5	Supply and install a 20A DP IP65 surface mounted isolator rated at 240Vac for isolation of permanently connected equipment.As MK switch disconnector or approved equivalent.	No	1		
9.6	4 core 35mm2 square PVC/SWA/PVC armoured copper cable from the main switchboard in the switchroom drawn in underground duct to the following;				
	a)To L.V Sub Board	m	70		
9.7	Supply and install cable glands for item 9.6 above	No.	2		
9.8	Provide for cable trenching inclusive being the following for items:-				
	a) Trenching to a depth of a minimum of 600mm	m	70		
	b) Tiling with 'HATARI 'tiles	m	70		
	c) Back filling of the trenches and reinstating the ground	m	70		
	d) 1 x 160mm HG ducts laid on a sand bed and with sand surround for Power reticulation from switchroom to Classroom block	m	70		
9.9	Supply and install cable markers for the electrical power reticulation cable	No.	4		
9.10	1000mm x 1000mm manhole with minimum depth of 600mm complete with airtight concrete cover for Power reticulations	No.	6		
9.11	Supply and install 200x50 mm galvanized heavy duty cable tray complete with cross members and all other accessories for cable management as power technics Flexi-Tech or equivalent and approved.	m	15		
9.12	Supply, install, test, configure and commission fire man's switch at the main clasroom entrance complete with wiring and all necessary accessories.	Item	1		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
	TOTAL BROUGHT FORWARD FROM THE PREVIOUS PAGE				
9.13	Supply and install the main L.V sub board this being a self supporting switchboard constructed out of 16 SWG mild steel metal with powder coating with 200Amps TPN busbars. On it is to be mounted switchgear; 1No. 200A TPN mains incomer MCCB with current adjustable of 0.5I-1.0I and electronic shunt trip unit, 3No. 63A TP MCCB, 1No. 20A DP MCCB, a panel mounted 3Φ digital metering (Kwh, KVA, KW, P.F, Amps) equpiment with logging capability, 1No. 3Φ Electronic Kwh meters 3No. TPN spareways for future expansion and complete with all accesories as shown on the schematic layout and approved by the Engineer.	Item	1		
9.14	Supply, install, test, configure and commission 150A TP-MCCB mains current adjustable of 0.5I-1.0I outgoing at the existing main L.V board at the switchboard for the new classrom block complete with all necessary accessories. The MCCB to be compatible with the existing L.V board switchgear.	Item	1		
9.15	Supply and install earthing comprising of :-				
	(a) Earthing Matt lattice measuring 1m x 1m built in 25mm x 3mm thick pure electrolytic copper bars riveted with copper rivets. The earth matt to be treated by merchonite to obtain reading <1.0ohms.				
	(b) TCA clamp, made from gunmetal - 1No				
	(c) 25mm x 3mm thick pure electrolytic copper bar/tape-8m				
	(d) 300x300x300mm precast earthing manhole with a removable concrete cover-1No				
	(e)20mm dia PVC heavy gauge conduit drop for earth lead - 8m	Item	1		
10.0	**LIGHTNING PROTECTION**				
10.1	Supply and install 1000mm tapered Air terminal rods with multiple points. Rod material to be made of copper diameter of 15mm. As Furse Cat No. RA225 or approved equivalent.	No	3		
10.2	Supply and install terminal base complete with fixing screws. As Furse Cat No. SD105 or approved equivalent.	No	3		
10.3	Supply and install DC tape clips to fasten copper strips onto walls. As Furse Cat No. CP205 or approved	No	109		
10.4	Supply and install bare copper tape 20mm x 3mm. As Furse Cat No. TC020 or approved equivalent.	m	146		
10.5	Supply and install earthing rods 1500mm length complete with clamps. As Furse Cat No. RB110. Earth rod to be enclosed in a water proof manhole with a removal cover as Furse or approved equivalent.	No	3		
10.6	Supply and install screwdown test clamp. As Furse Cat No. CT305 or approved equivalent.	No	3		
	TOTAL FOR POWER RETICULATION AND LIGHTNING PROTECTION CARRIED FORWARD TO PRICE COLLECTION PAGE F/17				

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
11.0	**PRICE COLLECTION PAGE**				
11.1	Total for **Ground Floor** electrical lighting and power installation brought forward from page **F/9**				
11.2	Total for **First Floor and Terrace** electrical lighting and power installation brought forward from page **F/14**				
11.3	Total for Power Reticulation and lightning protection installation brought forward from page **F/16**				
	TOTAL FOR ELECTRICAL WORKS CARRIED FORWARD TO PRICE SUMMARY PAGE F/18				

PRICE SUMMARY SCHEDULE

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	KSHS
1.0	Preliminaries and general conditions	Item			
2.0	Total for Electrical Installation works carried over from the grand summary page **F/17**	Item			
3.0	Allow a Provisional Sum of Kenya Shillings Kshs. 1,200,000/- contingency to be used at the discretion of the Project Engineer	Item			**1,200,000**
	TOTAL PRICE FOR ELECTRICAL INSTALLATION WORKS (CARRIED FORWARD TO MAIN PRICE SUMMARY PAGE OF TENDER)				

TOTAL AMOUNT IN WORDS ..……...……

……

…

TENDERER'S NAME &
STAMP……

SIGNATURE ……. DATE……

P.I.N No.,…….. V.A.T CERTIFICATE No……

WITNESS……. ADDRESS……

SIGNATURE OF WITNESS……. DATE……

SECTION G

TECHNICAL SCHEDULE

OF

ITEMS TO BE SUPPLIED

TECHNICAL SCHEDULE

1. The technical schedule shall be submitted by tenderers to facilitate and enable the Project Manager to evaluate the tenders, especially where the tenderer intends to supply or has based his tender sum on equipment which differs in manufacture, type or performance from the specifications indicated by the Project Manager.

2. The filling of this schedule forms part of Technical Evaluation of the tenders, and bidders shall therefore be required to indicate the type/make and country of origin of all the materials and equipment they intend to offer to the employer in this schedule.

3. This schedule shall form part of the technical evaluation criterion, and tenderers are therefore advised to complete the schedule as they shall be considered responsive.

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

Item	Description	TYPE/MAKE	MODEL No.	COUNTRY OF ORIGIN
1	**Lighting Fittings**			
2	**Accessories** (Switches, Sockets, TV outlet plates etc)			
3	**Cables** i) Copper Armoured cable ii) Single Core PVC insulated Cables iii) Fire Resistant Cable			
4	**Trunking** i) Metal ii) PVC			
5	**L.V Switchboard**			
6	**Distribution Board/ Consumer Unit**			
7	**Fire Alarm System (Addressable Type)** i) Manual Call Point ii) Heat Detector iii) Smoke Detector iv) Fire Alarm Panel v) Repeater Panel vi) Fire Beacon Light			
8	**PVC Heavy Gauge Conduit**			
9	**Lightning Protection System** i) Copper Tape ii) Air Termination Spike iii) Earth Rod			
10	**Street Lighting Pole**			
11	**100W, 12V Mono-Crystalline Silicon cells PV Modules**			
12	**Solar Battery**			
13	**Streetlighting LED Luminaire**			
14	**Timer Switch**			
15	**Contactor**			
16	**TPN & SPN Isolating Switches**			
17	**Circuit Breakers** i) MCB ii) MCCB			
18	**Motion Sensor**			
19	**Transformer**			
20	**Power Factor Correction bank**			
21	**Ring Mains Unit**			
22	**Electronic protection relay offering overcurrent and earth fault protection**			
23	**11Kv ring mains unit**			

SECTION H

STANDARD FORMS

CONTENTS OF SECTION H

NOTE:

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

2.0 Any tender returned with **Unfilled Standard Forms** shall be considered **Non-Responsive and shall automatically be Disqualified.**

KEY PERSONNEL

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

POSITION	NAME	HIGHEST QUALIFICATION *(Attach proof)*	YEARS OF EXPERIENCE (GENERAL)	YEARS OF EXPERIENCE IN PROPOSED POSITION
1. 2. 3. 4. 5. 6. 7.				

I certify that the above information is correct.

…….. …… ……

Title Signature Date

CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

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

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

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

……. …… …….

Title Signature Date

SCHEDULE OF ON-GOING PROJECTS

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

PROJECTNAME	*NAME OF CLIENT*	CONTRACT SUM	% COMPLETE	COMPLETION DATE

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

……. …… …….

Title Signature Date

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

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

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

1. .....

2. .....

3. .....

4. .....

5. .....

6. .....

7. .....

8. .....

9. .....

10. .....

VOLUME IV: STRUCTURED CABLING AND PA SYSTEM INSTALLATION WORKS

PHASE 1

TENDER SPECIFICATIONS AND BILLS OF

QUANTITIES FOR SUPPLY, INSTALLATION, TESTING

AND COMMISSIONING OF STRUCTURED CABLING

AND PA SYSTEM INSTALLATION WORKS

TABLE OF CONTENTS

SECTION A

INSTRUCTIONS TO TENDERERS

INSTRUCTIONS TO TENDERERS

CONTENTS

Note: The tenderer, who shall be domestic subcontractor to the Main Contractor upon award of the tender, must comply with the following conditions and instructions failure to which the tender shall be rejected.

TENDER EVALUATION CRITERIA

After tender opening, the tenders will be evaluated in 2 stages, namely:

1. Preliminary Evaluation;
2. Technical Evaluation;

STAGE 1: PRELIMINARY EVALUATION

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

These conditions shall include the following:

i) Company Certificate of incorporation/registration;
ii) Current National Construction Authority Registration Certificate (NCA 4 and above in Structured Cabling and telecommunication, security surveillance, PA system Works);
iii) Provide Current National Construction Authority Annual Contractors Practicing License;
iv) Current Class of Licenses with the Communication Authority of Kenya (CAK).
v) Valid Tax Compliance Certificate;
vi) Compliance with Technical Specifications;

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

STAGE 2: TECHNICAL EVALUATION

The tenderer shall be required to fill Standard Forms Provided in the bid document for the purpose of providing information to assess their experience and personnel capacity in carrying out the works defined in the bid document. The tenderers may also attach the required information if they so desire;

The award of points considered in this section shall be as shown below:

PARAMETER	MAXIMUM POINTS
(i) Key personnel	20
(ii) Contract Completed in the last Five (5) years	18
(iii) Schedules of on-going projects	5
(iv) Schedules of contractor's equipment	9
(v) Litigation History	3
TOTAL	55

The pass-mark under the Technical Evaluation is 40 Points.

The detailed scoring plan shall be as shown in table 1.

TABLE 1: Assessment for Eligibility

Item	Description	Points Scored	Max. Point	
1.	Key Personnel (Attach evidence)			20
	Director of the firm - Holder of degree in relevant Engineering field---------- 5 - Holder of diploma in relevant Engineering field----------4 - Holder of certificate in relevant Engineering field----------3 - Holder of trade test certificate in relevant Engineering field-------2 - No relevant certificate----------1		5	
	At least 1No. degree/diploma holder of key personnel in relevant field - With over 10 years relevant experience----------5 - With over 5 years relevant experience----------3 - With under 5 years relevant experience ----------2		5	
	At least 1No certificate holder of key personnel in relevant field - With over 10 years relevant experience---------- 5 - With over 5 years relevant experience ---------- 3 - With under 5 years relevant experience ----------2		5	
	At least 2No artisan (trade test certificate in relevant field) - Artisan with over 10 years relevant experience----------2.5 - Artisan with under 10 years relevant experience ----------2 - Non skilled worker with over 10 years relevant experience-----1		5	

Item	Description	Points Scored	Max. Point
2.	Contracts completed in the last five (5) years (Max of 3No. Projects)- Provide Evidence - Project of similar nature, complexity or magnitude----------6 - Project of similar nature but of lower value than the one in consideration----------4 - No completed project of similar nature----------0		18
3.	On-going projects – Provide Evidence - No Project of similar nature, complexity and magnitude ------- 5 - Three and below Projects of similar, nature complexity and magnitude –----------4 - Four and above Projects of similar nature, complexity and magnitude ---------- 2		5
4.	Schedule of contractor's relevant equipment (at least 6No.) - Has relevant equipment for work being tendered----------1.5 - No relevant equipment for work being tendered----------0		9
5.	Litigation History - Filled, Signed and Stamped ----------3 - Not filled ----------0		3
	TOTAL		55

Any bidder who scores 40 points and above shall be considered for further evaluation.

SECTION B

GENERAL SPECIFICATIONS

OF

MATERIALS AND WORKS

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

1. General
2. Standard of Materials
3. Workmanship
4. Procurement of Materials
5. Record Drawings
6. Regulations and Standards
7. Setting out Works
8. Testing on Site

1. GENERAL

1.1. This specification is to be read in conjunction with any other information herein issued with it. Bills of quantities and schedule of unit rates shall be the basis of all additions and omissions during the progress of the works.

2. STANDARD OF MATERIALS

2.1. Where the material and equipment are specifically described and named in the Specification followed by approved equal, they are so named or described for the purpose of establishing a standard to which the contractor shall adhere.

2.2. Should the contractor install any material not specified herein before receiving approval from the proper authorities, the Engineer shall direct the contractor to remove the material in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.

2.3. All materials condemned by the Engineer as not approved for use, are to be removed from the premises and suitable materials delivered and installed in their place at the expense of the Contractor. All materials required for the works shall be from branded manufacturers, and shall be new and the best of the respective kind and shall be of a uniform pattern.

3. WORKMANSHIP

3.1. The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman and to the satisfaction of the Engineer. Helpers shall have qualified supervision.

3.2. Any work that does not in the opinion of the Engineer conform to the best standard practice will be removed and reinstated at the contractor's expense.

3.3. Permits, Certificates or Licences must be held by all tradesmen for the type of work; in which they are involved where such permits, certificates or licences exist under Government legislation.

4. PROCUREMENT OF MATERIALS

4.1. The contractor is advised that no assistance can be given in the procurement or allotment of any materials or products to be used in and necessary for the construction and completion of the work.

4.2. Contractors are warned that they must make their own arrangements for the supply of materials and/or products specified or required.

5. RECORD DRAWINGS

5.1. These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

5.2. The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

5.3. Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

5.4. One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

6. REGULATIONS AND STANDARDS

6.1. All work executed by the contractor shall comply with the current edition of the "Regulations" for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, Electric Power Act, Kenya Bureau of Standards (KeBS), Institution of Electrical Engineers (I.E.E) Wiring Regulations, Current recommendation of CCITT and CCIR, and with the Regulations of the Local Electricity Authority and the Communications Authority of Kenya (CAK)

6.2. Where the sets of regulations appear to conflict, they shall be clarified with the Engineer.

7. SETTING OUT WORK

7.1. The contractor, at his own expenses, is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail to the Engineer before proceeding and must allow in his tender for all such modifications and for the provision of any such sketches or drawings related thereto.

8. TESTING ON SITE

8.1. The contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specifications No. 1 and No.2, Electric Supply Company's By-Laws, Communications Authority of Kenya (CAK) requirements or any other supplementary Regulations as may be produced by the engineer.

8.2. Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation shall be rectified by the contractor at his own expense.

SECTION C

SCHEDULE OF CONTRACT DRAWINGS

SCHEDULE OF CONTRACT DRAWINGS

DRAWING NO.	DRAWING TITLE
As shall be issued by the Engineer	

SECTION D

PARTICULAR AND TECHNICAL SPECIFICATIONS OF

MATERIALS AND WORKS

PARTICULAR AND TECHNICAL SPECIFICATIONS OF MATERIALS AND WORKS FOR STRUCTURED CABLING WORKS

TELECOMMUNICATIONS DISTRIBUTION SYSTEM – STRUCTURED CABLING

A. GENERAL TECHNICAL SPECIFICATIONS

a. Section Includes: Equipment, materials, labor, and services to provide data distribution system including but not limited to:

1. Data cabling terminations
2. Optical fiber and terminations
3. Data/voice outlets
4. Terminal blocks/cross-connect systems
5. Equipment racks and cabinets
6. System testing
7. Documentation and submissions
8. Surface trunking, cable ladder
9. Core switch, edge switches

b. Provide all equipment, materials, labor, and services, not specifically mentioned or shown, which may be necessary to complete or perfect all parts of the installation. Ensure that they are in compliance with requirements stated or reasonably inferred by the contract documents.

1. REFERENCES

a. Design, manufacture, test, and install telecommunications cabling networks per manufacturer's requirements and in accordance with NFPA-70 (National Electrical Code®)/IEE Regulations, state codes, local codes, requirements of authorities having jurisdiction, and particularly the following standards: ANSI/NECA/BICSI-568 -- Standard for Installing Commercial Building Telecommunications Cabling ANSI/TIA/EIA Standards.

1) ANSI/TIA/EIA-568-B.1 -- Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements

2) ANSI/TIA/EIA-568-B.2 -- Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components

3) ANSI/TIA/EIA-568-B.3 -- Optical Fiber Cabling Components Standard

4) ANSI/TIA/EIA-569-A -- Commercial Building Standard for Telecommunications Pathways and Spaces

5) ANSI/TIA/EIA-606(A) -- The Administration Standard for the Telecommunications
Infrastructure of Commercial Buildings

6) ANSI/TIA/EIA-607(A) -- Commercial Building Grounding and Bonding
Requirements for Telecommunications

7) ANSI/TIA/EIA-526-7 -- Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant

8) ANSI/TIA/EIA-526-14A -- Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant

(9) ANSI/TIA/EIA-758(A) -- Customer-Owned Outside Plant Telecommunications Cabling Standard

(10) ISO/IEC 1101 Amendment 2

b. Local codes, rules, regulations, and ordinances governing the work, are as fully part of the specifications as if herein repeated or hereto attached. If the contractor should note items in the drawings or the specifications, construction of which would be code violations, promptly call them to the attention of the Project Manager in writing. Where the requirements of other sections of the specifications are more stringent than applicable codes, rules, regulations, and ordinances, the specifications shall apply.

1. PERMITS, FEES, AND CERTIFICATES OF APPROVAL

a. The Contractor to include the cost of application and pay for building permit.
b. As prerequisite to final acceptance, supply to the client certificates of inspection from an inspection agency acceptable to the owner and approved by local municipality and utility company serving the Project Manager.

3. SUBMITTALS

a. Submit to the P.M shop drawings, product data (including cut sheets and catalog information), and samples required by the contract documents. Submit shop drawings, product data, and samples with such promptness and in such sequence as to cause no delay in the work or in the activities of separate contractors. The engineer will indicate approval of shop drawings, product data, and samples submitted to the engineer by stamping such submittals "APPROVED" with a stamp. Submitted shop drawings shall be initialed or signed by the contractor, showing the date and the contractor's legitimate firm name.

1) By submitting shop drawings, product data, and samples, the contractor represents that he or she has carefully reviewed and verified materials, quantities, field measurements, and field construction criteria related thereto. It also represents that the contractor has checked, coordinated, and verified that information contained within shop drawings, product data, and samples conform to the requirements of the work and of the contract documents. The engineer/designer remains responsible for the design concept expressed in the contract documents as defined herein.

2) The P.M approval of shop drawings, product data, and samples submitted by the contractor shall not relieve the contractor of responsibility for deviations from requirements of the contract documents, unless the contractor has specifically informed the engineer/designer in writing of such deviation at time of submittal, and the engineer/designer has given written approval of the specific deviation. The contractor shall continue to be responsible for deviations from requirements of the contract documents not specifically noted by the contractor in writing, and specifically approved by the engineer in writing.

3) The P.M approval of shop drawings, product data, and samples shall not relieve the contractor of responsibility for errors or omissions in such shop drawings, product data, and samples.

4) The P.M review and approval, or other appropriate action upon shop drawings, product data, and samples, is for the limited purpose of checking for conformance with information given and design concept expressed in the contract documents. The engineer's review of such submittals is not conducted for the purpose of determining accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the contractor as required by the contract documents.

The review shall not constitute approval of safety precautions or of construction means, methods, techniques, sequences, or procedures. The P.M approval of a specific item shall not indicate approval of an assembly of which the item is a component.

b. Shop drawings: Submit the following:

Coordinate with Part 2.

1) Backbone (riser) diagrams
2) System block diagram, indicating interconnection between system components and subsystems
3) Interface requirements, including connector types and pin-outs, to external systems and systems or components not supplied by the contractor
4) Fabrication drawings for custom-built equipment

c. Product Data -- Provide catalog cut sheets and information for the following:

Coordinate with Part 2.

1) Wire, cable, and optical fiber
2) Outlets, jacks, faceplates, and connectors
3) All metallic and nonmetallic raceways, including surface raceways, outlet boxes, and fittings
4) Terminal blocks and patch panels
5) Enclosures, racks, and equipment housings
6) Over-voltage protectors
7) Splice housings

d. Samples-- Submit samples as required by the Engineer.

e. Project record drawings:

1) Submit project record drawings at conclusion of the project and include:

(a) Approved shop drawings.
(b) Plan drawings indicating locations and identification of work area outlets, nodes, data cabinet rooms, and backbone (riser) cable runs.
(c) Cross-connect schedules including entrance point, main cross-connects, intermediate cross-connects, and horizontal cross-connects.
(d) Labeling and administration documentation.
(e) Warranty documents for equipment.
(f) Copper certification test result printouts and diskettes.
(g) Optical fiber power meter/light source test results.
(h) Operation and maintenance manuals:

4. QUALITY ASSURANCE

2.1 The contractor shall have worked satisfactorily for a minimum of five (5) years on systems of this type and size.

2.2 Upon request by the P.M, furnish a list of references with specific information regarding type of project and involvement in providing of equipment and systems.

2.3 Equipment and materials of the type for which there are independent standard testing requirements, listings, and labels, shall be listed and labeled by the independent testing laboratory.

2.4 Where equipment and materials have industry certification, labels, or standards (i.e., NEMA - National Electrical Manufacturers Association), this equipment shall be labeled as certified or complying with standards.

2.5 Material and equipment shall be new, and conform to grade, quality, and standards specified. Equipment and materials of the same type shall be a product of the same manufacturer throughout.

2.6 Subcontractors shall assume all rights and obligations toward the contractor that the contractor assumes toward the client and P.M.

5. WARRANTY

5.1 Unless otherwise specified, unconditionally guarantee in writing the materials, equipment, and workmanship for a period of not less than fifteen (15) years from date of commissioning of the project for active components.

5.2 Transfer manufacturer's warranties to the owner in addition to the General System Guarantee. Submit these warranties on each item in list form with shop drawings. Detail specific parts within equipment that are subject to separate conditional warranty. Warranty proprietary equipment and systems involved in this contract during the guarantee period. Final payment shall not relieve you of these obligations.

6. DELIVERY, STORAGE, AND HANDLING

6.1 Protect equipment during transit, storage, and handling to prevent damage, theft, soiling, and misalignment. Coordinate with the client for secure storage of equipment and materials. Do not store equipment where conditions fall outside manufacturer's recommendations for environmental conditions. Do not install damaged equipment; remove from site and replace damaged equipment with new equipment.

7. SEQUENCE AND SCHEDULING

7.1 Submit schedule for installation of equipment and cabling. Indicate delivery, installation, and testing for conformance to specific job completion dates. As a minimum, dates are to be provided for bid award, installation start date, completion of station cabling, completion of riser cabling, completion of testing and labeling, cutover, completion of the final punch list, start of demolition, owner acceptance, and demolition completion.

8. USE OF THE SITE

8.1 Access to building wherein the work is performed shall be as directed by the P.M. The client will occupy the premises during the entire period of construction for conducting his or her normal business operations. Cooperate with the client to minimize conflict and to facilitate the owner's operations.

Schedule necessary shutdowns of plant services with the main contractor, and obtain written permission from the client.

Proceed with the work without interfering with ordinary use of streets, aisles, passages, exits, and operations of the client.

PRODUCTS

1. MANUFACTURERS
   Provide products of manufacturers as named in individual articles. Where no manufacturer is specified, provide products of manufacturers in compliance with requirements.

2. FABRICATION
   Fabricate custom-made equipment with careful consideration given to aesthetic, technical, and functional aspects of equipment and its installation.

3. SUITABILITY
   Provide products that are suitable for intended use, including, but not limited to environmental, regulatory, and electrical.

4. VOICE/DATA TELECOMMUNICATIONS SERVICE BACKBONE CABLE
   a. Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP) backbone cable, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.2

   b. Multimode 62.5/125 μm diameter tight-buffered optical fiber, with fiber counts as indicated on drawings, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.3

5. VOICE TELECOMMUNICATIONS STATION CABLE
   a. Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP) Category 6A cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 up to 100 MHz.

6. DATA STATION CABLE (Copper)
   a. Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP) Category 6A cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 up to 100 MHz.

   b. Solid copper, 24 AWG, 100 Ω balanced twisted-pair, screened (ScTP) cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 (Annex K) up to 100 MHz.

7. DATA STATION CABLE (Optical Fiber)
   a. Multimode 62.5/125 μm diameter tight-buffered optical fiber, with the required number of fiber counts, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.3

8. UNDERGROUND TELECOMMUNICATIONS CABLE (Copper)
   If you have copper cables installed outside between buildings, be certain to specify overvoltage protectors on both ends of the cable. See article, OVERVOLTAGE PROTECTORS.

   Solid copper, 24 AWG 100 Ω balanced twisted-pair, gel-filled duct cable, in sizes as indicated on the drawings, which meet or exceed the mechanical and transmission performance specifications listed in ANSI/TIA/EIA-568-B.2 and ANSI/TIA/EIA-758(A).

9. UNDERGROUND TELECOMMUNICATIONS CABLE (Optical Fiber)
   Singlemode 8.7 μm to 10 μm diameter, armored, gel-filled optical fiber, with number of

usable fibers as shown on drawings, which meet or exceed the mechanical and transmission performance specifications listed in ANSI/TIA/EIA-568-B.3 and ANSI/TIA/EIA-758(A).

10. VOICE/DATA – COPPER & OPTICAL FIBER WORK AREA OUTLETS
Edit for items that will actually be used on the project.
Pick a color for the faceplate and each type of jack, or make them all one color.

Determine which pinning standard is to be used, T568A, T568B, or USOC. If not otherwise specified, specify T568A. Use either 10c with SC connectors or 10d (1) for ST connectors. SC connectors are preferred. Use ST connectors to match existing cable plant if required.

Single-gang mounting plate with two (2) openings containing the following devices:
a. Data Outlet - 8-pin modular, category 6A, unkeyed, black, pinned to either T568 (A or B) standards.
b. Optical Fiber Connectors – simplex ST - ST adapter.
Provide two optical fiber adapters for each faceplate

11. VOICE/DATA WORK AREA OUTLETS (Copper only)
Single-gang mounting plate with four (4) openings containing the following devices:
Data Outlet - 8-pin modular, Category 6A, unkeyed, black, pinned to either T568 (A or B) standards.

12. VOICE ONLY WORK AREA OUTLET
Single-gang faceplate with 8-pin modular, category 6A, unkeyed, ivory telephone jack, pinned to either T568 (A or B) standards

13. TERMINATION BLOCKS
For items that will actually be used on the project: Coordinate with MC, IC and HC layout drawing.
a. Product(s) as approved by the P.M: Wiring blocks are to be in following configurations:
1) List dimensional configurations
2) ER – List pairs categorized for PABX portion of ER and pairs field terminated for backbone and CO portion of ER
Provide wiring troughs between ER frame sections.

14. PATCH PANELS
Specification Note: Alter quantities to match job requirements.
19 in. rack mountable, 24-port 8-pin modular to insulation displacement connector (IDC) meeting Category 6A performance standards, and pinned to either T568 (A or B) standards. Typical examples of IDC connections are the 110, BIX, and Krone.

15. WALL MOUNTED OPTICAL FIBER PATCH PANELS
Specification Note: Alter quantities to match job requirements
Wall-mounted optical fiber termination panel with 12-fiber capacity, hinged door, cable strain relief, slack storage, and two 6-port SC or approved alternative connector panels with adapters and provisions for two splice trays.

16. RACK MOUNTED OPTICAL FIBER TERMINATION PANEL
Specification Note: Alter size to match job requirements. Coordinate with connector type.
19 in. rack mounted 72-port rack-mounted optical fiber termination panel with cable strain relief, grounding lugs, slack storage and three 12-port duplex SC or approved alternative connector panels with adapters and provisions for six (6) splice trays.

17. SPLICE TRAYS

Sized for single mode and multimode fibers, nonmetallic with clear plastic cover, 12-fiber splice capacity, compatible with splice enclosure and splicing method.

18. OPTICAL FIBER CONNECTORS
Ceramic tipped field installed 568SC connectors, which meet or exceed the performance specifications in ANSI/TIA/EIA-568-B.3. Various alternative field installed connector designs, which meet or exceed the performance specifications in ANSI/TIA/EIA-568-B.3 (Annex A).

19. OPTICAL FIBER JUMPERS
Dual 62.5/125-μm (and/or single mode) optical fiber jumper cable, 1 m long with 3.0 mm Duplex 568SC optical fiber connectors on each end.
Dual 62.5/125-μm (and/or single mode) optical fiber jumper cable, 1 m long with approved alternative duplex optical fiber connectors on each end.

20. OPTICAL FIBER PIGTAILS
62.5/125 μm (and/or single mode) optical fiber pigtail 1 m long with 3.0 mm single 568 SC optical fiber connectors on one end

21. OPEN FRAME EQUIPMENT RACK
Open frame, 19 in. equipment rack, 7 foot 6 in. overall height with flange base, mounting rails drilled front and back and tapped to EIA standards, and a front-rack mountable 10 outlet multiple outlet electrical strip or 42u enclosed glazed.

22. EQUIPMENT RACKS/CABINETS
Specification Note: Use 19 in. or change to 23 in. as required. If using wall-mounted racks or cabinets, add required specifications here. Add and delete features as required.
a. The 19 in. equipment rack shall have the following minimum requirements:
- 77 in. (44 rack spaces) of panel space
- Welded frame construction
- Locking front and rear doors
- Adjustable front and back equipment mounting rails drilled and tapped to EIA standards
- 10 position electrical outlet strip
- Removable side panels
- Top mounted, thermostatically controlled exhaust fan
- Smoked acrylic front door.

23. LISTED BUILDING ENTRANCE PROTECTORS
Use when copper cables are run outside of building.
Use appropriate protector modules.
Building entrance terminal utilizing a two (2) foot fuse link between the outside cable plant splice and the protector module with IDC type input and output terminals, 100-pair capacity and female mounting base, equipped with 230-volt solid state protector modules. Provide sufficient protector modules to completely populate all building entrance terminals.

24. SPLICE HOUSING
Use this or something else. Delete splice modules if used for optical fiber cables.
a. Encapsulated, re-enterable splice housing, sized as required with bonding straps, accessories, end caps and encapsulant as required
b. Splice modules (such as 710 series or MS^2) for use within splice housing

25. SPARES

Change quantities to suit job size. Edit to match that which is actually specified.

a. Furnish the following spare equipment and parts:

Terminal block connectors, if required
Test set cords, if required
Install one test cord set in each telecommunications closet
Five (5) percent of base bid quantity of each type of jack shall be provided
Five (5) percent of base bid quantity of each type of outlet

Five thousand (5000) ft of each type of station cable
One thousand (1000) ft of one-pair cross-connect wire for each telecommunications closet
One thousand (1000) ft of two-pair cross-connect wire for each telecommunications closet
Five (5) percent of base bid quantity of protector modules

EXECUTION

1. PRE-INSTALLATION SITE SURVEY

a. Prior to start of systems installation, meet at the project site with the P.M and representatives of trades performing related work to coordinate efforts. Review areas of potential interference and resolve conflicts before proceeding with the work. Facilitation with the Client will be necessary to plan the crucial scheduled completions of the equipment room and telecommunications closets.

b. Examine areas and conditions under which the system is to be installed. Do not proceed with the work until satisfactory conditions have been achieved.

2. HANDLING AND PROTECTION OF EQUIPMENT AND MATERIALS

a. Be responsible for safekeeping of your own, such as equipment and materials, on the job site. The client assumes no responsibility for protection of above named property against fire, theft, and environmental conditions.

3. PROTECTION OF OWNER'S FACILITIES

a. Effectively protect the client's facilities, equipment, and materials from dust, dirt, and damage during construction.

b. Remove protection at completion of the work.

4. INSTALLATION

Receive, check, unload, handle, store, and adequately protect equipment and materials to be installed as part of the contract. Store in areas as directed by the owner's representative. Include delivery, unloading, setting in place, fastening to walls, floors, ceilings, or other structures where required, interconnecting wiring of system components, equipment alignment and adjustment, and other related work whether or not expressly defined herein.

Install materials and equipment in accordance with applicable standards, codes, requirements, and recommendations of national, state, and local authorities having jurisdiction, and National Electrical Code® (NEC) and with manufacturer's printed instructions.

Adhere to manufacturer's published specifications for pulling tension, minimum bend radii, and sidewall pressure when installing cables.

1) Where manufacturer does not provide bending radii information, minimum-bending radius shall be 15 times cable diameter. Arrange and mount equipment and materials in a manner acceptable to the P.M and the client.

e. Penetrations through floor and fire-rated walls shall utilize intermediate metallic conduit (IMC) or galvanized rigid conduit (GRC) sleeves and shall be fire stopped after installation and testing, utilizing a fire stopping assembly approved for that application.

f. Install station cabling to the nearest telecommunications room (TR), unless otherwise noted.

g. Installation shall conform to the following basic guidelines:
1) Use of approved wire, cable, and wiring devices
2) Neat and uncluttered wire termination

h. Attach cables to permanent structure with suitable attachments at intervals of 1200-1500mm. Support cables installed above removable ceilings.

i. Install adequate support structures for 10 foot of service slack at each TR.

j. Support riser cables every floor and at top of run with cable grips.
1) Limit number of four-pair data riser cables per grip to fifty (50)

k. Install cables in one continuous piece. Splices shall not be allowed except as indicated on the drawings or noted below:

l. Provide over voltage protection on both ends of cabling exposed to lightning or accidental contact with power conductors.

Specification Note: Insert any other specific installation requirements here, such as hook and latch fasteners instead of cable ties, etc.

5. GROUNDING

a. Grounding shall conform to ANSI/TIA/EIA 607(A) - Commercial Building Grounding and Bonding Requirements for Telecommunications, National Electrical Code®, ANSI/NECA/BICSI-568 and manufacturer's grounding requirements as minimum.

b. Bond and ground equipment racks, housings, messenger cables, and raceways.

c. Connect cabinets, racks, and frames to single-point ground which is connected to building ground system via #6 AWG green insulated copper grounding conductor.

6. LABELING

Use 6d if the type of termination block permits labels. Otherwise use 6e.
Use 6g if the owner does not have a standard for outlet numbering.
Use 6h if required. Alter time as requested.

Labeling shall conform to ANSI/TIA/EIA-606(A) standards. In addition, provide the following:

a. Label each outlet with permanent self-adhesive label with minimum 3/16 in. high characters.

b. Label each cable with permanent self-adhesive label with minimum, 1/8 in. high characters, in the following locations:

1) Inside receptacle box at the work area.
2) Behind the communication closet patch panel or punch block.

c. Use labels on face of data patch panels. Provide facility assignment records in a protective cover at each telecommunications closet location that is specific to the facilities terminated therein.

d. Use color-coded labels for each termination field that conforms to ANSI/TIA/EIA-606(A) standard color codes for termination blocks.

e. Mount termination blocks on color-coded backboards.

f. Labels shall be machine-printed. Hand-lettered labels shall not be acceptable.

g. Label cables, outlets, patch panels, and punch blocks with room number in which outlet is located, followed by a single letter suffix to indicate particular outlet within room, i.e., S2107A, S2107B. Indicate riser cables by an R then pair or cable number.

h. Mark up floor plans showing outlet locations, type, and cable marking of cables. Turn these drawings over to the owner two (2) weeks prior to move in to allow the owner's personnel to connect and test owner-provided equipment in a timely fashion.

i. Three (3) sets of as-built drawing shall be delivered to the owner within four (4) weeks of acceptance of project by the owner. A set of as-built drawings shall be provided to the owner in magnetic media form (3.5" floppy disks) and utilizing CAD software that is acceptable to the owner. The magnetic media shall be delivered to the owner within six (6) weeks of acceptance of project by owner.

7. TESTING

Testing shall conform to ANSI/TIA/EIA-568-B.1 standard. Testing shall be accomplished using level IIe or higher field testers.

Test each pair and shield of each cable for opens, shorts, grounds, and pair reversal. Correct grounded, and reversed pairs. Examine open and shorted pairs to determine if problem is caused by improper termination. If termination is proper, tag bad pairs at both ends and note on termination sheets.

1) Perform testing of copper cables with tester meeting ANSI/TIA/EIA-568-B.1 requirements.
2) If copper backbone cable contains more than one (1) percent bad pairs, remove and replace entire cable.

Use 2 or 3 as required.

3) If copper cables contain more than the following quantity of bad pairs, or if outer sheath damage is cause of bad pairs, remove and replace the entire cable:

CABLE SIZE	MAXIMUM BAD PAIRS
<100	1
101 to 300	1 – 3
301 to 600	3 – 6
>601	6

4) If horizontal cable contains bad conductors or shield, remove and replace cable.
Initially test optical cable with a light source and power meter utilizing procedures as stated in ANSI/TIA/EIA-526-14A: OFSTP-14A Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant and ANSI/TIA/EIA-526-7 Measurement of Optical Power Loss of Installed Single mode Fiber Cable Plant. Measured results shall be plus/minus 1 dB of submitted loss budget calculations. If loss figures are outside this range, test cable with optical time domain reflectometer to determine cause of variation. Correct improper splices and replace damaged cables at no charge to the owner.

1) Cables shall be tested at 850 and 1300 nm for multimode optical fiber cables. Cables shall be tested at 1310 and 1550 nm for single mode optical fibers.
2) Testing procedures shall utilize "Method B" – One jumper reference.
3) Bi-directional testing of optical fibers is required.

d. Perform optical time domain reflectometer (OTDR) testing on each fiber optic conductor. Measured results shall be plus/minus 1 dB of submitted loss budget calculations.
1) Submit printout for each cable tested.
2) Submit 3.5 in. disks with test results and program to view results.

e. Where any portion of system does not meet the specifications, correct deviation and repeat applicable testing at no additional cost.

FIELD QUALITY CONTROL

a. Employ job superintendent during the course of the installation to provide coordination of work of this specification and of other trades, and provide technical information when requested by other trades. This person shall maintain current RCDD® (Registered Communications Distribution Designer) registration and shall be responsible for quality control during installation, equipment set-up, and testing.

b. At least 30 percent of installation personnel shall be BICSI Registered Telecommunications Installers. Of that number, at least 15 percent shall be registered at the Technician Level, at least 40 percent shall be registered at the Installer Level 2, and the balance shall be registered at the Installer Level 1.
Specification Note: Use this or insert manufacturer's requirements for installer qualifications to meet extended warranty program requirements.
c. Installation personnel shall meet manufacturer's training and education requirements for implementation of extended warranty program.

B. PARTICULAR SPECIFICATIONS

PART 1
PARTICULAR SPECIFICATIONS FOR STRUCTURED CABLING WORKS

1.0 SITE LOCATION

The site of the proposed works is located mama Ngina Univesity college ,Gatundu,

2.0 DESCRIPTION OF THE PROJECT

The works to be carried out comprise the following;

i) Proposed supply, installation, testing and commissioning of a structured cabling system to cater for computer data points and telephone points.
ii) Configure and set up the structured cabling system to be used on LAN,
iii) Produce test result, warranty certification, reports and as installed drawings. The Network will be capable of supporting approximately 82 data/voice points.

3.0 REGULATIONS

The contractor shall, in execution and completion of the works in the detailed design for which he is responsible, comply with the provisions of the following as necessary and relevant;

a) ISO/IEC, CCK, ATM CENELEC 11801
b) ANSI/EIA/TIA 56
c) Latest Edition of IEE Regulation
d) Kenya Bureau of Standards
e) Electric Power Act and Rules made there under.

4.0 WORKING DRAWINGS

The Contractor shall submit to the Project Manager working drawings for the proposed system for approval. The drawings will show the locations of and identifiers for all cable routing and terminations, telecommunication outlets/connectors. Location of core switch and Edge switches.

5.0 NETWORK CABINETS

a) To be located on each floor in designated rooms as indicated in the electrical drawings.
b) Must be metallic (appropriately sized as specified in the BQ) with a front clear glass, freestanding, complete with lock and key and the following accessories;

- Cable Management channel rack
- Cable support hooks
- Cable support rings and straps
- Cable duct cover
- Feed through cable panels
- Vented equipment shelving
- Blank filler panels
- Hinged wall mounted brackets
- Glass viewing window
- Colored Designation strips

- Management lock and key
- Cooling extractor fans
- Caster wheels
- Inbuilt 2-gang power socket outlet

6.0 ACTIVE CONTROL EQUIPMENTS AT THE NETWORK CORE

The active control equipment at the core should have the following features:

a. Backplane/switch fabric Bandwidth Capacity of 150 GBPS or more.
b. IEEE 802.3 compliant for power over Ethernet
c. IEEE 802.1 based security compliant
d. SNMP compliant for security
e. Layer 2/3/4 switch
f. Should support Gigabit Ethernet to the desktop
g. At least 10-slots or higher chassis
h. At least 2 No. Long Range X2 Modules
i. At least 1 No.12 Port SFP Module
j. At least 1 No. 48 Port 10/100/1000 Module
k. The core switches should have two links to each floor configured in active/active configuration. The links should deliver 2GBPS throughput when all ports are active.
l. The core switch should have redundant power supply, redundant fan tray and redundant CPU/ supervisor engine installed
m. Fiber cable linking stacks on each floor to the core should be connected to 1000Base X(GBIC) port on the core switch.
n. Should be installed with the latest version of system software at the time of delivery.
o. Should support Quality of service for various applications.

7.0 ACTIVE CONTROL EQUIPMENTS AT THE LAN EDGE

Active control equipment at the LAN Edge should have the following features

a) Active control equipment at the LAN Edge should support 10/100/1000 MBPS on all ports (RJ45) and Gigabit to the desktop connectivity
b) The equipment should have at least two 1000BaseXGigabit uplink ports for terminating backbone Fiber.
c) The equipment should support layer 3 routing.
d) Should support IEEE 802.1, SSH, SNMP.
e) IEEE 802.3 compliant for power over Ethernet
f) Switch Fabric forwarding Bandwidth of 64GBPS or more.
g) More than 12,000MAC addresses should be available on each switch.
h) The switches should have 24/48 ports of 10/100/1000 MBPS.
i) Each stack on the edge will have two links of Fiber to the core switch, totaling two fiber terminations from the core switch to the stack.
j) Should support Jumbo frames.
k) Total stack throughput bandwidth of 64 GBPS or more.
l) Integrated wireless access points controller
m) Active equipment at the LAN Edge should be quoted with a minimum of One year of warranty covering free replacement of parts and units.

8.0 NTU Specifications

Type:	HDSL
Max Data Transfer Rate:	2Mbps
Mode of Operation:	DCE

Connector:	DB37
Interface Cable:	DB37-DB15

9.0 NETWORK MANAGEMENT SYSTEM

Bidders must propose the manufacturers Network Management system for centralized configuration, maintenance and troubleshooting of active equipments. Third party standalone systems should not be offered as part of the solution. Features and functionalities of the system should include the following:

a) Should be compatible with Microsoft windows/Linux operating systems
b) Graphical User Interface for central Management and network viewing
c) Network discovery and inventory management
d) VLAN, multicast, security and load-balancing/fail over configuration
e) Downloading and saving of log file from the device flash memory
f) Centralized upgrade/backup and archiving of active devices
g) Export of network topology to JPEG or other standard formats.

10.0 CABLES

10.1) UTP CABLE

The UTP cable must be category 6A compliant UTP cable, with the following specifications;

a) 4-pair cables with 100-ohm impedance.
b) Compliant to standards such as TIA/EIA – 268-B. 2-1 and IEC 61156-5
c) Made of polyethylene insulation
d) Pulling force should support up to 50N/mm2
e) Low Smoke Zero Halogen outer sheath

10.2) OPTICAL FIBRE CABLE

The fibre cable must be 8 core multimode fibre with the following specifications: -

a) Cable size: 8 core.
b) Termination: SC Duplex connectors.
c) Graded Index: Nominal 62.5/125 micro. m

11.0 CAT 6A PATCH PANELS

The Contractor shall provide factory made patch panels, Cat 6A complete with cable management and front designation strips, 110 PCB mounted connectors and integral RJ mounted jack sockets.

12.0 FIBER PATCH PANELS

All Backbone Fiber links to individual floors should be terminated on Fiber Patch Panels. Connector interfaces should support ST, Sc simplex, Sc duplex, FC, LC or MT-RJ.

13.0 BACK BONE

Backbone cabling inclusive of switches and all necessary accessories shall be carried out in readiness for the termination of edge switches.
The Backbone cabling shall be flexible and allow for easy 'add on's' for future expansions. Hence enough capacity shall be allowed for future expansion.

14.0 EDGE/FLOOR SWITCHES

These shall be per floor/wing and have enough capacity for expansion

15.0 COMPLETION COMMISSIONING OF STRUCTURED CABLING WORKS

15.1 Upon completion of the installation, all cabling links must be tested for the following parameters, using Level Three testers: -

a) Category 6A Cable Tests

1. Wire Map
2. Length
3. Insertion Loss (Attenuation)
4. NEXT Loss
5. PSNEXT Loss
6. ELFEXT Loss, pair-to-pair
7. PSELFEXT Loss
8. Return Loss
9. ACR (Attenuation to crosstalk ratio)
10. PSACR
11. Propagation Delay
12. Delay Skew

b) Fibre Optic Cable Tests

1. Link attenuation (insertion loss)
2. Length

Any failing link must be diagnosed and corrected. The corrective action shall be followed with a new test to prove that the corrected link meets the performance requirements.

The results should be recorded in one or several measure books showing test results of the cable components. In addition, the measurements must be recorded on two soft copies (CD-ROM).

15.2 All components must be tested and a Completion Certificate issued stating the following:

a. Number of outlets
b. Type of cable
c. Date completed
d. Type of Warranty

In addition, an "as-built" package must be submitted with the following information

a. Updated floor plans
b. Wire/cable routing schematic
c. Facility assignment records
d. Horizontal cable test results
e. Fibre Backbone test results

16.0 Documentation

The contractor shall avail documentation (2 copies) detailing the layout and devices or components of the system and must include all information for maintenance technicians to run, service, extend or maintain the network. In particular, the documentation must be structured and contain the following:

a. Synopsis of the cabling (primary and secondary)
b. Charts of the distribution highlighting the details of the elements that have been installed
c. Detailed map of socket layout (2 Soft copies on USB 3.0 Flash Drive should be availed)
d. Reports on measurements (2 Soft copies on USB 3.0 Flash Drive should be availed)

The USB 3.0 Flash Drive provided shall include the software tools required to view, inspect and print any selection of test reports.

17.0 Warranty and Support

3.1 The Contractor will be required to give a per link warranty of at least fifteen (15) years for the structured cabling infrastructure and must provide a site certification certificate from the manufacturer of the cabling infrastructure not more than 30 days after completion of tests.

3.2 In the event of failure of the core switch, the contractor will be required to deliver any necessary parts on the next business day after determining that parts replacement is required, during the standard work week (8 hours a day, 5 days a week). This support will be carried out by a field engineer and will run for a period of Twenty Four months from the date of commissioning of the LAN.

3.3 The contractor will be required to provide a sixty months warranty on the edge switches from the date of commissioning of the LAN.

18.0 ADDITIONAL NOTES

Tenderers should take note of the following

a) The network should be capable of carrying data, voice and video. QOS should be considered as part of installation and configuration of the network.
b) All active LAN equipments should be from the same manufacturer for seamless integration, management and maintenance.
c) Each floor should have a telecommunication Closet to house the necessary structured cabling components and active equipments.

19.0 BROCHURES AND TECHNICAL LITERATURE

Tenderers must enclose together with their submitted bids brochures detailing technical Literature and specifications of the active components of the structured cabling system. The brochures shall be used to evaluate the suitability of these components.

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

PART 2

PARTICULAR AND TECHNICAL SPECIFICATIONS – PA SYSTEM EQUIPMENT

Lecture Hall Sound System

This high-performance Lecture Hall Sound System supplies powerful intelligible audio with the simplistic operation and long-term reliability. Ideal for medium to large lecture halls, conference rooms and educational spaces, this system includes two 12-inch VXS5 and eight VXS8 8-inch enhanced sound-quality surface mount speakers positioned around the room for uniform sound, an XMV4280 power amplifier with YDIF digital audio format with an XP7000 2-channel power amplifier, an MTX3 multi-zone matrix mixer with a signal processor for versatile processing functions, a DCP4V4S wall mount digital volume control panel for streamline day-to-day operation, as well as 400M speaker wire for installation. With exceptional sound quality, a straightforward installation process, and effortless operation,

VXS5 12" Loudspeakers

The VXS5Speaker features a Uni-Phase design complete with a 12” woofer and 3” high-frequency compression driver to deliver optimum audio performance. It is switchable between single-amp and bi-amp operations and the woof cones are specially treated for water resistance, ensuring durability in a variety of operating environments. The driver features a one-piece titanium dome for superior sound and long term reliability. The speaker includes 2 parallel-wired Neutrik NL4s and 1 barrier strip connector to facilitate wiring in monitor applications. The VXS5 also includes a rotatable horn for maximum freedom and flexibility, handles for comfortable moving and pole-mount sockets for flexible rigging.

VXS8 8" Wall Mount Speakers

VXS8 Speakers feature customized transducers with large, powerful magnetic circuits to increase driving and braking force substantially. It sports an 8” cone woofer and a 1” soft dome tweeter. Both models come with a versatile bracket for trouble-free mounting on both walls and ceilings. An external hexagonal grille design improves sound clarity by raising the aperture ratio, and a smooth curved cabinet enables the speakers to pan and tilt to target service areas. The VXS speakers also comes with paintable bodies, grilles and brackets, not only filling your room with premium sound, but enhancing the interior design.

XMV4280 Power Amplifiers

The XMV4280 Amplifier is equipped with YDIF digital audio format for easy setup, operating in both high-impedance (70V/100V line) or low-impedance (4Ω/8Ω) modes simultaneously, eliminating the need for separate amplifiers. Additionally, the 70V or 100V mode can be assigned to every pair of channels without affecting the number of available output channels. It features an innovative circuit that increases the output-stage efficiency level to over 90%, and Power Factor Correction, which ensures harmonic control and dramatically decreases current draw while maintaining output power – making circuit breakers less prone to shutting down. Automatic protection functions ensure peak performance and reliable operation with XP7000 Amplifier delivers top-class sound quality and unmatched clarity at 700 Watts per Channel @ 8 Ohms, 20Hz-20kHz. It features anti-vibration measures to deliver tight and solid lows, extraordinary mid-range, and precisely defined highs, as well as a XLR and Euroblock input terminal with Speakon, and a 5-way binding post output terminal, suitable for any professional sound application. The XP7000 can be used to drive 70V lines for high-impedance multi-speaker systems, and can operate in 3 modes: stereo, parallel (dual mono), and bridge mode. Made with lead-free parts, this high-performance amplifier has unrivaled value.

Feedback suppressor

The MTX3 Matrix Processor is equipped with flexible processing functions that are essential to a wide variety of applications such as classrooms, lecture halls or auditoriums. Responsible for the primary processing functions at the heart of your lecture room system's design, the MTX3 allows you to configure, program, and manage your entire sound solution via the intuitive interface of the accompanying MTX Editor software application. The MTX3 features an SD card slot for playback, a 16 channel YDIF digital I/O with an 8-channel mic/line input and an 8-channel analog output, and can also be controlled on Wi-Fi by smartphone app, making it a truly hassle-free device.

DCP4V4S Wall Mount Volume Control

The DCP4V4S Wall Mount Volume Control for MTX Series is a 4 volume 4 switch equipped wall mount, supplying flexible external control of several system functions including easy volume adjustment and preset selection. The four buttons and rotary controls of the DCP4V4S give teaching staff headache-free, comprehensive control over the system for centralized day-to-day function that won't disrupt the flow of class. By touching a single control, the system can be instantly reconfigured for a range of uses, and utilizes a simple connection by CAT5 carrying RS485 and power. A maximum of 8 DCPs can be connected to 1 MTX Matrix Mixer.

SECTION E

SCHEDULE OF UNIT RATES

SCHEDULE OF UNIT RATES

1. The tenderer shall insert unit rates against the items in the following schedules and may add such other items as he considers appropriate.

2. The unit rates shall include for supply, transport, insurance, delivery to site, storage as necessary, assembling, cleaning, installing, connecting, profit and maintenance in defects liability and any other obligation under this contract.

3. The unit rates will be used to assess the value of additions or omissions arising from authorised variations to the contract works.

4. Where trade names or manufacturer's catalogue numbers are mentioned in the specification, the reference is intended as a guide to the type of article or quality of material required. Alternative brands of equal and approved quality will be accepted.

5. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all all taxes applicable at the time of tender.

SCHEDULE OF UNIT RATES

(To be completed by the Tenderer)

SECTION F

BILLS OF QUANTITIES

BILLS OF QUANTITIES

A) PRICING OF PRELIMINARIES ITEMS

Prices will be inserted against item of preliminaries in the Contractor's Bills of Quantities and specification. These Bills are designated as Bill No.1 in this Section. Where the Contractor fails to insert his price in any item he shall be deemed to have made adequate provision for this on various items in the Bills of Quantities. The preliminaries form part of this contract and together with other Bills of Quantities covers for the costs involved in complying with all the requirements for the proper execution of the whole of the works in the contract.

The Bills of Quantities are divided generally into three sections:

(a) Preliminaries – Bill No.1

Contractor's preliminaries are as per those described in section C – Contract Preliminaries and General Conditions of Contract. The Contractor shall study the conditions and make provision to cover their cost in this Bill. The number of preliminary items to be priced by the Tenderer has been limited to tangible items such as site office, temporary works and others. However, the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.

(b) Installation Items – Other Bills

(i) The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the contract Drawings, conditions of contract and specifications.

(ii) The unit of measurements and observations are as per those described in clause 1.0 5 of the section C.

(c) Summary

The summary contains tabulation of the separate parts of the Bills of Quantities carried forward with provisional sum, contingencies and any prime cost sums included. The Contract shall insert his totals and enter his grand total tender sum in the space provided below the summary.

This grand total tender sum shall be entered in the Form of Tender provided elsewhere in this document.

SPECIAL NOTES TO THE BILLS OF QUANTITIES

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.

2. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all all taxes applicable at the time of tender.

3. All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part.

4. The brief descriptions of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere to. Otherwise alternative brands of equal and approved quality will be accepted.

   Should the sub-contractor install any material not specified here-in before receiving approval from the Project Manager, the sub-contractor shall remove the material in question and, at his own cost, install the proper material.

5. The grand total of prices in the price summary page must be carried forward to the MAIN Summary Page.

6. Tenderers must enclose, together with their submitted tenders, detailed coloured manufacturer's Brochures detailing Technical Literature and specifications on all the equipment they intend to offer e.g. Standby Battery and UPS, Data Switches, Routers and IP-PBX.

   The brochures are to be used to ascertain the suitability of the components offered by the bidders. Bidders not complying with this requirement shall be considered technically non-responsive and shall subsequently be disqualified.

SECTION H

STANDARD FORMS

CONTENTS OF SECTION H

NOTE:

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

2. Any tender returned with unfilled Standard Forms shall be considered non-Responsive and shall automatically be disqualified.

KEY PERSONNEL

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

POSITION	NAME	HIGHEST QUALIFICATION (Attach proof)	YEARS OF EXPERIENCE (GENERAL)	YEARS OF EXPERIENCE IN PROPOSED POSITION
1. 2. 3. 4. 5. 6. 7.				

I certify that the above information is correct.

…….. …… ……

Title Signature Date

CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

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

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

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

…… …… ……

Title Signature Date

SCHEDULE OF ON-GOING PROJECTS

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

PROJECT NAME	NAME OF CLIENT	CONTRACT SUM	% COMPLETE	COMPLETION DATE

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

…… …… ……

Title Signature Date

H-3

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

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

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

1. .....

2. .....

3. .....

4. .....

5. .....

6. .....

7. .....

8. .....

9. .....

10. .....

QUANTITIES FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF STRUCTURED CABLING AND PA SYSTEM INSTALLATION WORKS

SCHEDULE 1: STRUCTURED CABLING

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply, install, configure, test, set to work, and commission the following. Where trade names are given, they are an indicator of the type and quality of the items. Equal and approved products are acceptable				
1	**LC SFP transceiver** The SFP **Must** be compatible to the 48 Port Switch (m/s) • SFP (mini- GBIC) transceiver - 1000 base - LX . 1000Base LH - LC single-mode fiber-optic link spans of up to 10 km - plug-in module, • Item Dimensions LxWxH 3 x 2 x 1 inches, • GLC-LH-SMD Compatible SFP Module 1GbE Single Mode Fiber Optic Transceiver • Maximum data rates up to 1.25Gbps • Delivers reliable Gigabit Ethernet connections for 1000Base-LX/LH compliant networks	8	No		
2	**Copper RJ-45 100m Traansceiver Module** The SFP **Must** be compatible the 48 Port Switch (m/s) • GLC-TE 1000BASE-T Standard SFP Transceiver Module • Terminated RJ45 Connectors Allow 1G Bandwidth	4	No		
3	**48 Port Switch** Supply, deliver, install, test and commission the following switch to the 15u cabinet (m/s) supplied with its accessories including SFPs and UPS C9200L 48-port PoE+ 4x1G - rack - mountable + SMARTNET + DNA License	2	No		
4	**Indoor Access Point** Supply, deliver, install, test and commission NanoHD Compact 802.11ac Wave2 MU-MIMO Enterprise Access point to the switch (m/s).	9	No		
5	**Outdoor Access Point**	2	No		

	Supply, deliver, install, test and commission UAP-AC-M Mesh Outdoor WiFi Access point to the switch (m/s).				
6	**<u>Projector</u>** **<u>Supply, deliver, install, test and commission the following projector. Mounted on the ceiling and connected using an HDMI cable to the HDMI Socket.</u>** a) 3,700 lumens projector, WXGA resolution, 16,000 : 1 contrast ratio 16:10 native aspect ratio, 1.2 zoom, 2W speaker, USB 2.0 Type B, RS-232C, Wired Network, Wireless LAN a/n (5GHz) (optional), VGA in (2x), VGA out, HDMI in, Composite in, Stereo mini jack audio out, Stereo mini jack audio in (2x), Cinch audio in, USB 2.0 Type A	8	No		
	b) A cage that is Directly compatible with the projector RPA & RPM, projector mount, Accommodates roll, pitch and yaw adjustments, Hinged door.	8	No		
	d) Universal Adjustable Ceiling Projector Mount for Regular and Mini Projectors with Extending Arms, White,	8	No		
	f) 40mm Padlock Y120/40 With 3 Keys • Body Material: Solid brass • Boron Long Shackle • A medium-sized padlock with three keys • Steel hardened shackle, single turnkey High-quality security padlock, rust resistant	8	No		
	h) 10 pieces of 10m High-Speed HDMI 4K60Hz Cable, as 'Vention AAMBQ HDMI Cable' or approved equivalent	8	No		
	j) White HDMI A-Jack Shielded HDMI Wall Socket a. HDMI wall plate 2 ports with HDMI to LAN and has plug-in installation on both sides of the plate therefore no soldering required. b. Supports all HDMI 2.0b functions including 18Gbps transfer speed, 4K, UHD, 3D, 48-Bit Deep Color c. installs dual port: 2 HDMI ports with gold	8	No		

	h) Wireless LAN Module ELPAP10 • Compliant with 802.11 b/g/n standards • Uses USB type A connector • Compatible with s/m • Able to transmit audio _____	8	No		
7	**Megapixel Turbo 5-Inch Outdoor Speed Dome PTZ Camera** **Supply, deliver, install, test and commission the following outdoor PTZ Camera to the switch.** • 1/2.8" HD progressive scan CMOS	4	No		

	• 1920 × 1080 resolution • 32× optical zoom, 16× digital zoom • 120 dB true WDR (Wide Dynamic Range) • 3D intelligent positioning • Switchable TVI/AHD/CVI/CVBS video outputs • Turbo HD • Lens Size: 32X • Voltage: 24vAC • Power Consumption: Max. 24 W				
8	**TV 43 Inch Full HD Smart TV** Supply, deliver, test, commission and mount the TV in the Security Office. • Panel size: 43 Inch • Panel type:LED • Panel resolution: 1920 x 1080 pixels • Audio playback: 10W + 10W • Wireless LAN: WiFi Direct, DLNA, Bluetooth 4.0 • HDMI port: 2 ports; HDMI 1.4 ARC • USB port: 2 ports; USB 2.0 • VGA, pc audio in • 3*HDMI input • TV wall brackets • 14 Months warranty • With surge protection gadget	2	No		
9	**4 MP Outdoor IR Varifocal Dome Camera** **Supply, deliver, install, test and commission the following Dome Camera to the switch**. • Camera with Night Vision, Focal Length 2.8 to 12mm, Weatherproof Camera. • Minimum Illumination: Color: 0.018 lux @ (f/1.6, AGC on), 0 Lux with IR • 2688 x 1520 Resolution @ 30 fps • 2.8 to 12 mm Motorized Varifocal Lens • H.265+, H.265, H.264+, H.264 • Main Stream: 30 fps (2688 × 1520, 2560 × 1440, 2304 × 1296, 1920 × 1080) • EXIR 2.0 range of up to 100 ft (30 m). • • 12 VDC and PoE (802.3af)	3	No		

10	**4 MP Indoor Varifocal Network Dome Camera** **Supply, deliver, install, test and commission the following Dome Camera to the switch.** • Ultra-Low Light, 0.002 Lux (with f/1.2 Lens), Darkfighter Technology • Up to 2560 x 1440 Resolution @ 30 fps • 2.8 to 12 mm Motorized Varifocal Lens • H.265+, H.265, H.264+, H.264 • Main Stream: 30 fps (2560 × 1440, 1920 × 1080, 1280 × 720) • EXIR 2.0 with up to 100 ft (30 m) IR Range • 12 VDC and PoE (802.3af)	21	No		
11	**Rack mount smart - UPS 1500VA** **Supply, deliver, install, test and commission the following UPS to the switch cabinet(m/s)** Rack mount APC smart - UPS 1500VA USB & Serial 230 V. input 230V / output 230 V interface port DB9-RS-232 Smart Slot USB 230 V interface port DB9-RS-232 Smart Slot USB	2			
12	**Equipment Cabinet** **Supply, deliver, install, test and commission the following Cabinet complete with all the accessories including top fan** 22U 600mm x 800mm, Free Standing Cabinet ,22U HU Metal lockable, central glass door, ventilations, 4 power points and Earth Clamp	2	No		
13	**Patch panel** Supply, deliver, install, test and commission Patch Panel 24port cat 6 T568A/B wiring, 1U complete with 24 high density RJ 45 certified front termination in switch cabinet (m/s)	4	No		
14	**Cable Manager** Supply, deliver, install and organize patch cables in the switch cabinet • Cable Manager, 1U with Metal Cover • Rack mountable	4	No		
15	**UTP Patch cords (1m)** Supply, deliver and patch the cables Cat 6, 1M patch cable (RJ45 - RJ45) double-ended, 4 - pair modular stranded cord jacket with colored boot, T568A/B wiring	82	No		

16	**Data outlets** **Supply, deliver, install, test and commission the following dual data outlets in the trunks.** Cat 6 dual data outlets, unscreened, with two, Angled module with T568A/ B wiring includes a protective rubber door	35	No		
17	**Lan cable** **Supply, deliver, install and use fluke device to test and report. Pull Horizontal cable, data Termination of both end of cables for all Modules**. Category 6 UTP - 4 - PAIR Cable - EMEA, 4 PR, SoLID, UTP 24WG, 350 MHZ, 100 OHM, 305m Drum	17	Drum		
18	**Fiber optics patch panel (ODF)** Supply, deliver, install, test and commission the following ODF into the switch cabinet. Splicing of fiber should be done here. Rack mount Fiber connect panel with sliding mechanism, 24 ports, 1HU with Optic fiber connectors	2	No		
19	**Jumpers** Supply, deliver, install, test and commission the following jumpers a) PATCH CORDS, 1M Single mode Duplex jumpers LC - SC	7	No		
	c) Fiber patch code MM LC-LC 1M patch code	2	No		
20	**Fiber cable** Supply, deliver, install, test and commission fiber cable below .Pulling of Fiber optic cable in the PVC pipe . Perform Fluke test report after splicing. a) Optic fiber cable - 12 - Core single mode armoured out - door fibre cable (m)	300	m		
	c) Terminating Fiber Optic Cable end to end (20 Pairs)	20	pairs		
21	**Single knock-out plate** Supply, deliver, install, test and commission the following plates into the trunks. Single knock - out plate for 100mm x 50mm trunking	35	No		

22	**PVC pipe** Supply, deliver, install the PVC pipe.Escavate trenches average depth 600mm and lay the PVC Pipe and backfill Heavy Gauge Waste Pipes 3 Inches Grey in colour 4 Meters Long	16	No		
	Cable Route Marker Supply, deliver, and install Concrete Cable Route Marker 150x150x450 mm painted as appropriate	4	No		
23	**Manholes** Construction of masonry manholes with metallic cover lids (500x600x1000)	2	No		
	STRUCTURE CABLING SUBTOTAL				
	SCHEDULE 2: PA SYSTEM				
ITEM	**DESCRIPTION**	**QTY**	**UNIT**	**RATE**	**AMOUNT**
	Supply, install, configure, test, set to work, and commission the following. Where trade names are given, they are an indicator of the type and quality of the items. Equal and approved products are acceptable				
24	Wall mount VXS8 speakers complete with the speaker mounted and all accessories	2	No		
25	VXS5 speaker complete with speaker mount and all accessories.	2	No		
26	4 Volume & 4 Switch equipped Wall Mount Control panel for MTX Series DCP4V4S controller complete with all accessories	1	No		
27	Rack mounted XMV4280 amplifier with feedback suppressor, XP7000 Amplifier and all accessories.	1	No		
28	**Cables with all cable connectors** 2 core 2.5mm 02N15 flexible Speaker cable	400	meters		
	100m 02N6E balanced Signal cable and xrl jacks	400	meters		
	Category 6 UTP - 4 - PAIR Cable - EMEA, 4 PR, SoLID, UTP 24WG, 350 MHZ, 100 OHM, 305m Drum	1	drum		
29	Wearable microphone as lapel ew 100 G4 ME2 complete with body transmitter rechargeable batteries, charger, windscreen durable pouch, with wall mount antitheft cage and all the necessary accessories	2	No		

30	6U Equipment rack450mm by 600mm black steel side panels with release handles and locks,2 and 4 fan trays, mounting rails castors, and 4stands top panels with rack mounts and all accessories.	1	No		
31	Rack mounted(s/m) 8-way13 amps 2000w Power sequencer and as described in the particular specifications complete with all accessories	1	No		
32	1KVA smart ups as APC or approved equivalent	1	No		
	TOTAL				

PROPOSED TUITION BLOCK PHASE 1
AT MAMA NGINA UNIVERSITY COLLEGE ON
LR NO: NGENDA/MUTOMO/T.316

For

MAMA NGINA UNIVERSITY COLLEGE (MNUC),
P.O. BOX 444 - 01030,
GATUNDU

GRAND SUMMARY (VOL. 1 - 4)

VOL.	ELEMENT	AMOUNT Ksh.
1	VOLUME ONE: BUILDER'S WORK	
2	VOLUME TWO: MECHANICAL INSTALLATIONS	
3	VOLUME THREE: ELECTRICAL INSTALLATIONS	
4	VOLUME FOUR: STRUCTURED CABLING AND PA SYSTEMS	
5	Contingency Sums	3,000,000.00
	GRAND TOTAL (Ksh.) TUITION BLOCK - PHASE 1	

Amount in Words: Kenya Shillings .....

.....

.....

Contractor's Name:.....

Contractor's Signature:.....

Witness's Name:.....

Witness's Signature:.....

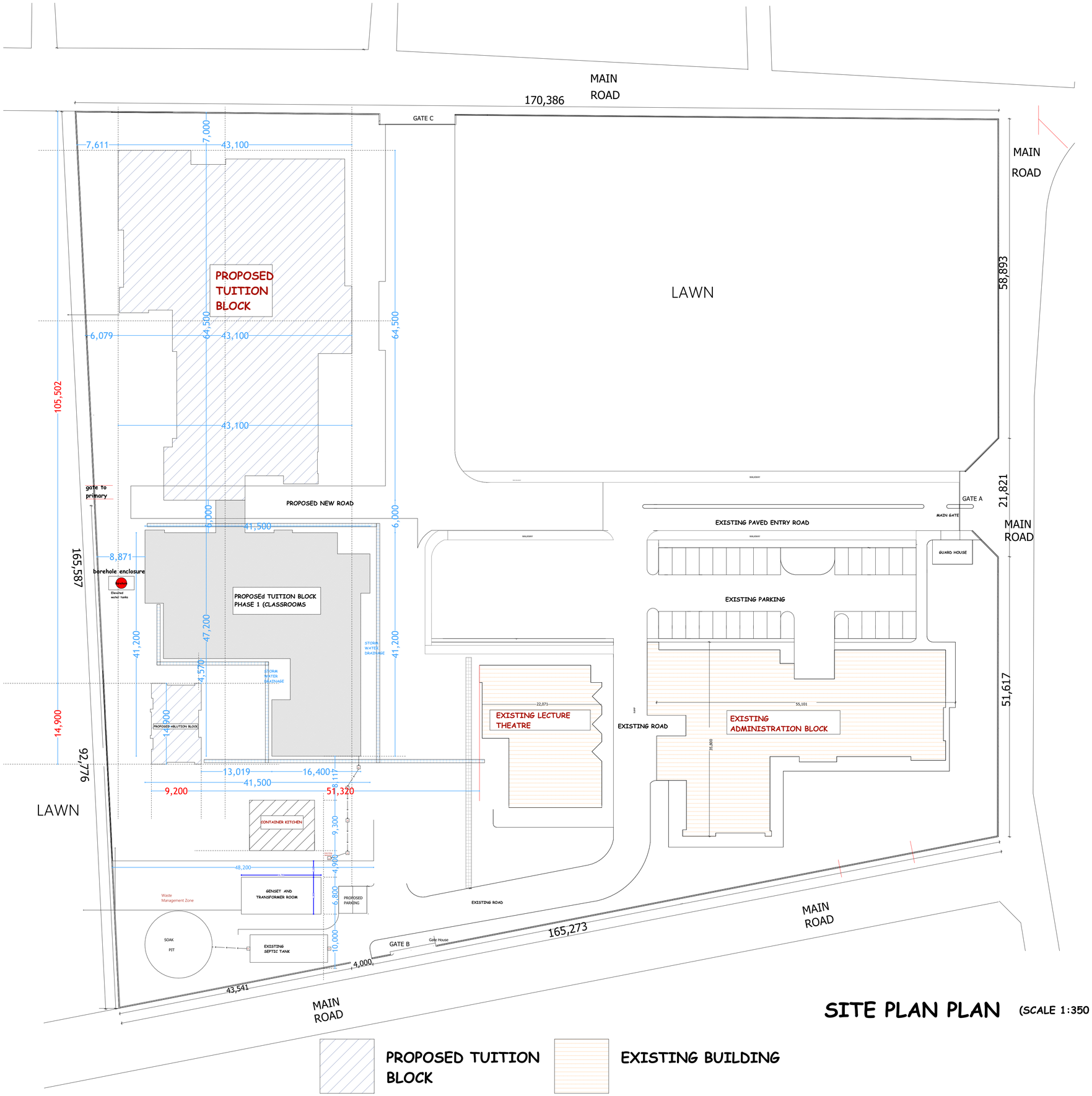
REPUBLIC OF KENYA

MAMA NGINA UNIVERSITY COLLEGE

PROPOSED CONSTRUCTION OF TUITION BLOCK (PHASE 1) AT MAMA NGINA UNIVERSITY COLLEGE

APPENDIX TO TENDER DOCUMENT TENDER NO: MNUC/TO3/2022-2023

TABLE OF CONTENTS:



SITE PLAN PLAN (SCALE 1:350

PROPOSED TUITION BLOCK

EXISTING BUILDING

NOTES:

-Dimensions should always be read.DO NOT SCALE. Contractor to cross check all dimensions and report any descrepancy to the Architect before work is commenced.

-all dimensions are in millimetres unless otherwise stated

-Permanent ventilation (pv) to be provided over all openings except bathroom doors.

-all manhole covers in the drive and parking to be provided with heavy duty and air tight covers.

-all drain pipes under building,parking and driveway to be encased into 150mm thick concrete.

-all rc works to structural engineer's detail.

-Electrical works to be done by a qualified technician and to be done in accordance with KPLCo. regulations

-Mechanical work to MoH and Local Authority's regulations and specifications.

-Water meter to be 300mm minimum above ground level.

-Provide DPC under all walls at ground floor level.

-Provide 1000 gauge polythene DPM under ground floor conc floor slab

-S.V.P. to be provided on all stack pipes.

FIRE NOTES (Applicable in office,ware houses and godowns)

1] Provide 4,500 Litres of water with booster pump.

2] Provide 30metres long horse reel on each floor

3] Provide 1x9 Litres water CO2 Fire Extinguisher at each fire point

4] Provide manual/electrical fire alarm system

5] Provide emergency lighting with independent power systems

AREAS

GROUND FLOOR PLAN = 1,136 SQM

FIRST FLOOR PLAN = 1,136 SQM

TERRACE FLOOR PLAN = 390 SQM

TOTAL FLOOR PLAN = 2,662 SQM

REVISIONS:

prefix	description	date

PROJECT:

PROPOSED TUITION BLOCK (PHASE 1) AT MAMA NGINA UNIVERSITY COLLEGE ON LR NO: NGENDA/MUTOMO/T.316

CLIENT:

MAMA NGINA UNIVERSITY COLLEGE (MNUC)
P.O.BOX 444-01030,
GATUNDU.

DRAWING TITLE:

ARCHITECT:

ARCH.M.MWANGI

Architect's Sign..... Date.....

DRAWN: **A.N**

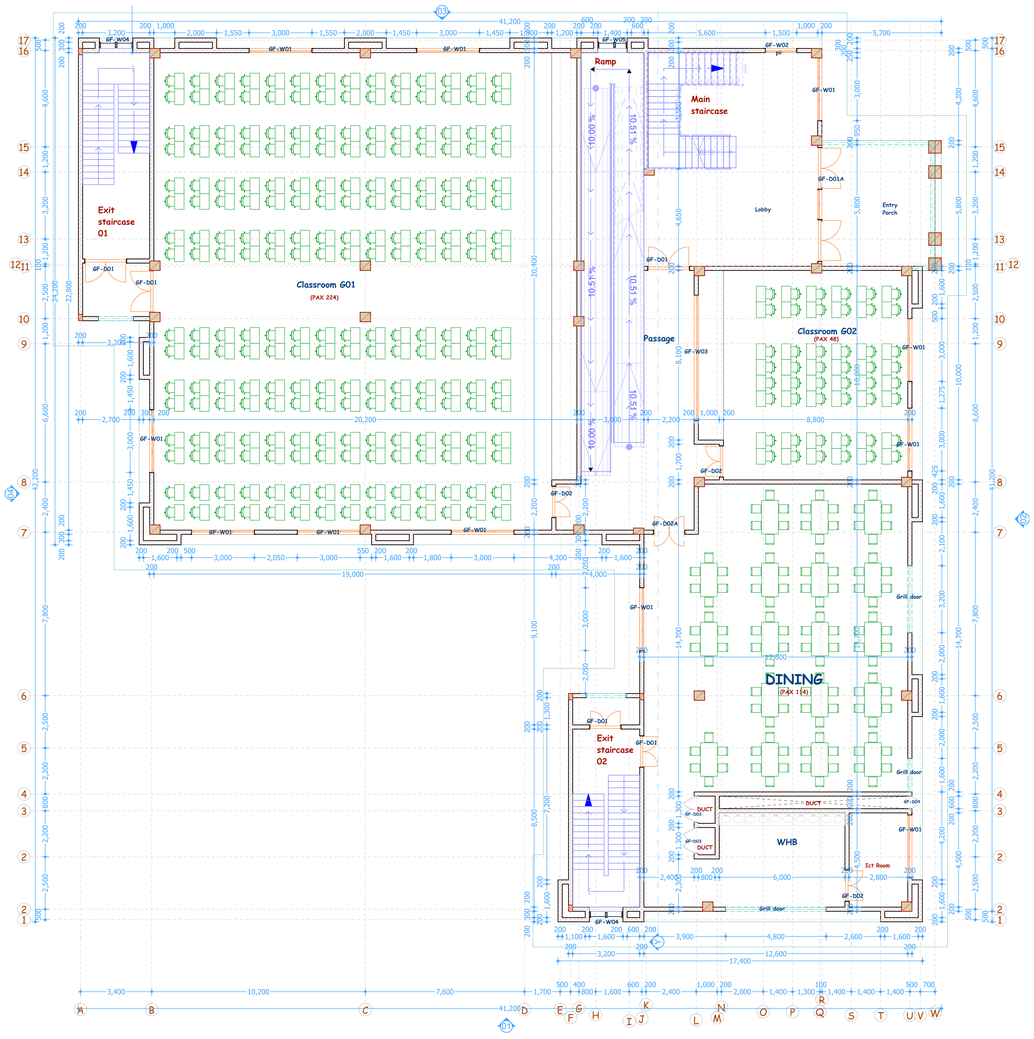
SCALE: **AS SHOWN**

DATE: **FEBRUARY 2023**

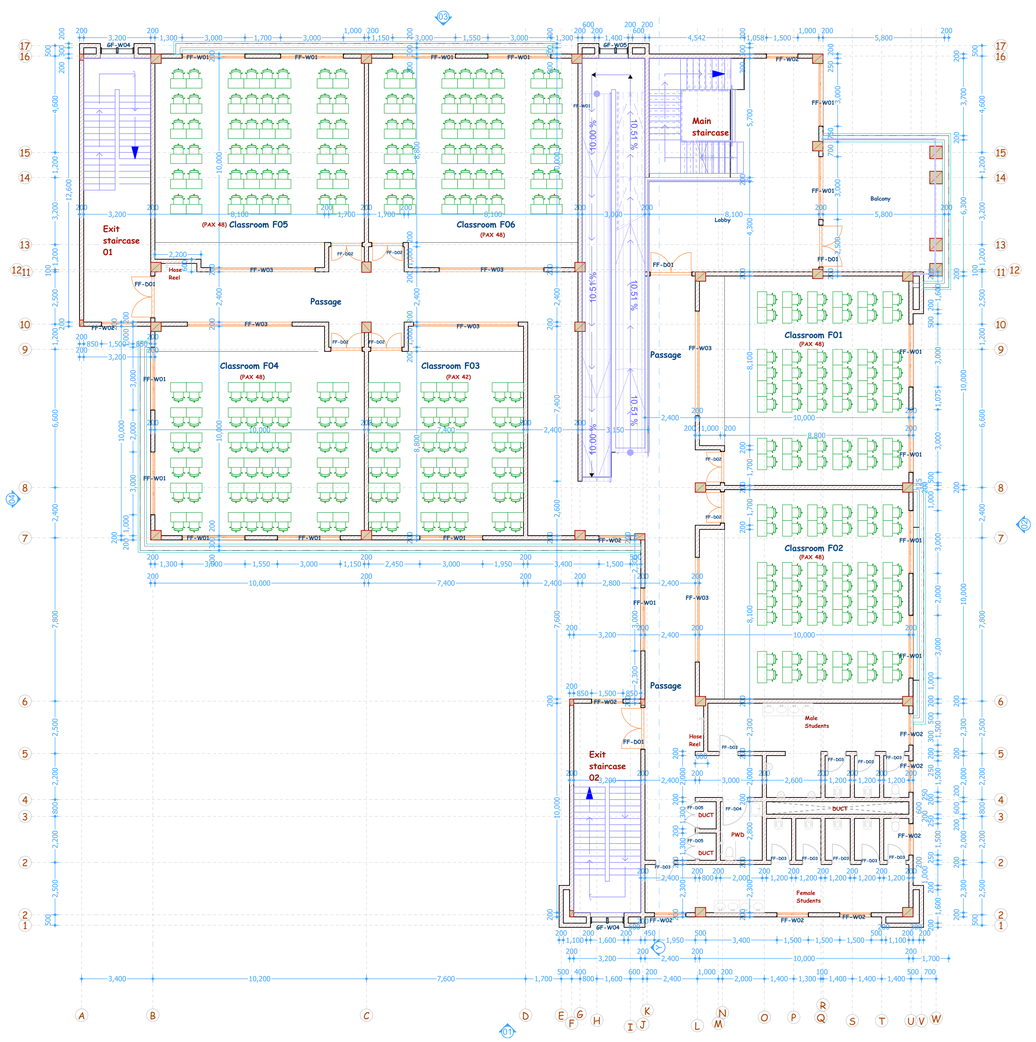
CHECKED: **ARCH.M.MWANGI**

PROJECT NO.: **02203 MNUC**

SHEET NO.: **04**



GROUND FLOOR PLAN



FIRST FLOOR PLAN

NOTES:

-Dimensions should always be read.DO NOT SCALE. Contractor to cross check all dimensions and report any descrepancy to the Architect before work is commenced.

-all dimensions are in millimetres unless otherwise stated

-Permanent ventilation (pv) to be provided over all openings except bathroom doors.

-all manhole covers in the drive and parking to be provided with heavy duty and air tight covers.

-all drain pipes under building,parking and driveway to be encased into 150mm thick concrete.

-all rc works to structural engineer's detail.

-Electrical works to be done by a qualified technician and to be done in accordance with KPLCo. regulations

-Mechanical work to MoH and Local Authority's regulations and specifications.

-Water meter to be 300mm minimum above ground level.

-Provide DPC under all walls at ground floor level.

-Provide 1000 gauge polythene DPM under ground floor conc floor slab

-S.V.P. to be provided on all stack pipes.

FIRE NOTES (Applicable in office,ware houses and godowns)

1] Provide 4,500 Litres of water with booster pump.

2] Provide 30metres long horse reel on each floor

3] Provide 1x9 Litres water CO2 Fire Extinguisher at each fire point

4] Provide manual/electrical fire alarm system

5] Provide emergency lighting with independent power systems

AREAS

GROUND FLOOR PLAN = 1,136 SQM

FIRST FLOOR PLAN = 1,136 SQM

TERRACE FLOOR PLAN = 390 SQM

TOTAL FLOOR PLAN = 2,662 SQM

REVISIONS:

prefix	description	date

PROJECT:

PROPOSED TUITION BLOCK (PHASE 1) AT MAMA NGINA UNIVERSITY COLLEGE ON LR NO: NGENDA/MUTOMO/T.316

CLIENT:

MAMA NGINA UNIVERSITY COLLEGE (MNUC) P.O.BOX 444-01030, GATUNDU.

DRAWING TITLE:

ARCHITECT:

ARCH.M.MWANGI

Architect's Sign..... Date.....

DRAWN: **A.N**

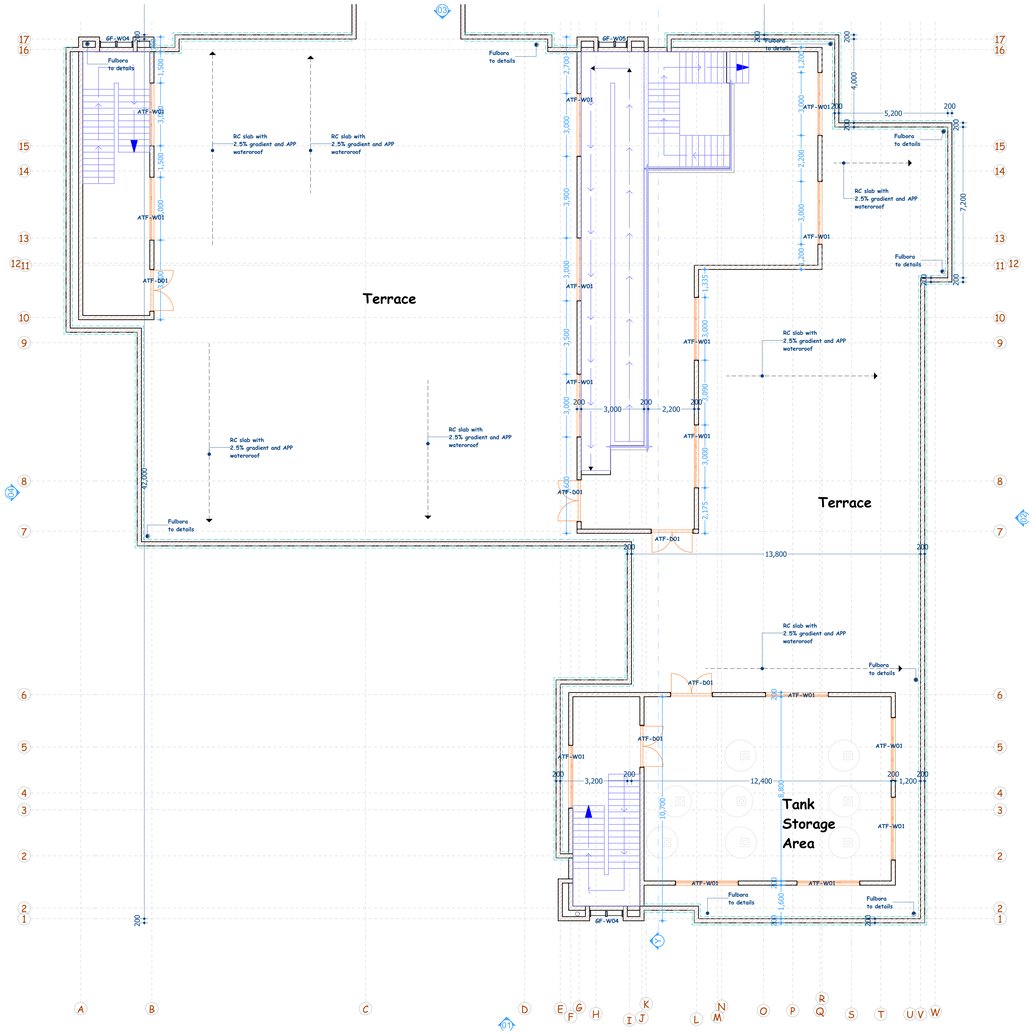
SCALE: **AS SHOWN**

DATE: **FEBRUARY 2023**

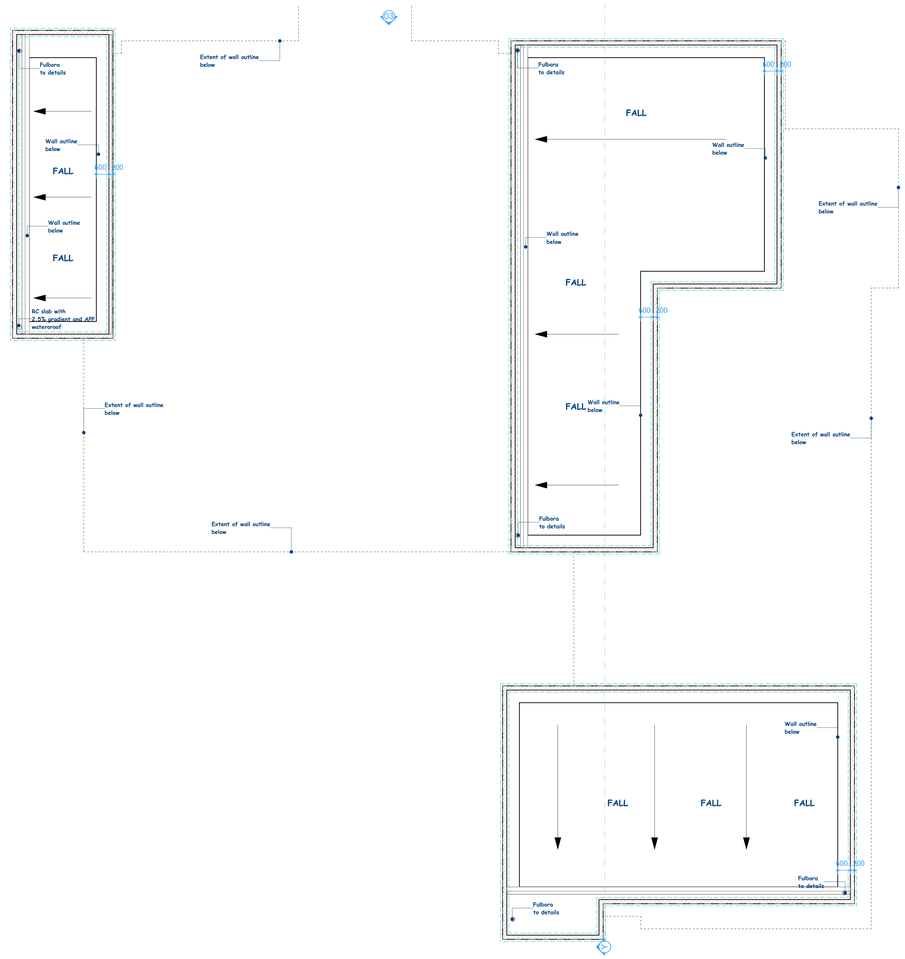
CHECKED: **ARCH.M.MWANGI**

PROJECT NO.: **02203 MNUC**

SHEET NO.: **01**



SLAB ROOF PLAN



STAIRCASE AND RAMP CANOPY ROOF PLAN

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AREAS

GROUND FLOOR PLAN = 1,136 SQM

FIRST FLOOR PLAN = 1,136 SQM

TERRACE FLOOR PLAN = 390 SQM

TOTAL FLOOR PLAN = 2,662 SQM

REVISIONS:

prefix	description	date

PROJECT:

PROPOSED TUITION BLOCK (PHASE 1)
AT MAMA NGINA UNIVERSITY COLLEGE ON LR NO: NGENDA/MUTOMO/T.316

CLIENT:

MAMA NGINA UNIVERSITY COLLEGE (MNUC)
P.O.BOX 444-01030,
GATUNDU.

DRAWING TITLE:

ARCHITECT:

ARCH.M.MWANGI

Architect's Sign..... Date.....

DRAWN: **A.N**

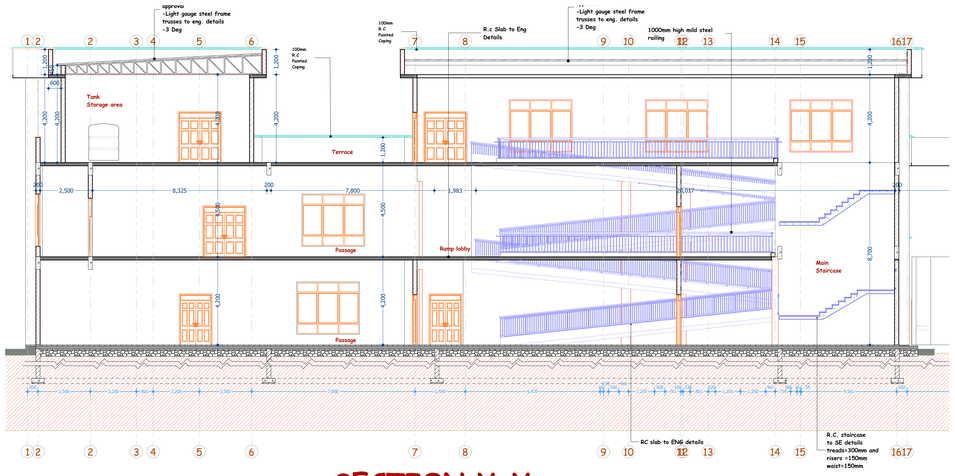
SCALE: **AS SHOWN**

DATE: **FEBRUARY 2023**

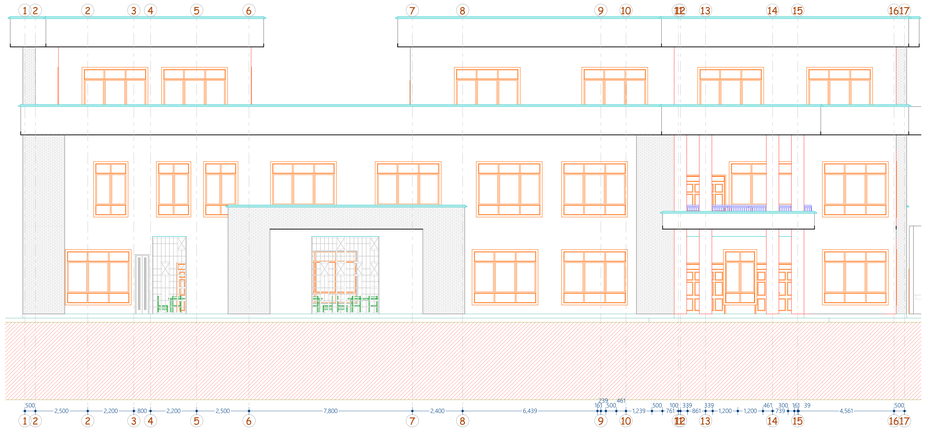
CHECKED: **ARCH.M.MWANGI**

PROJECT NO.: **02203 MNUC**

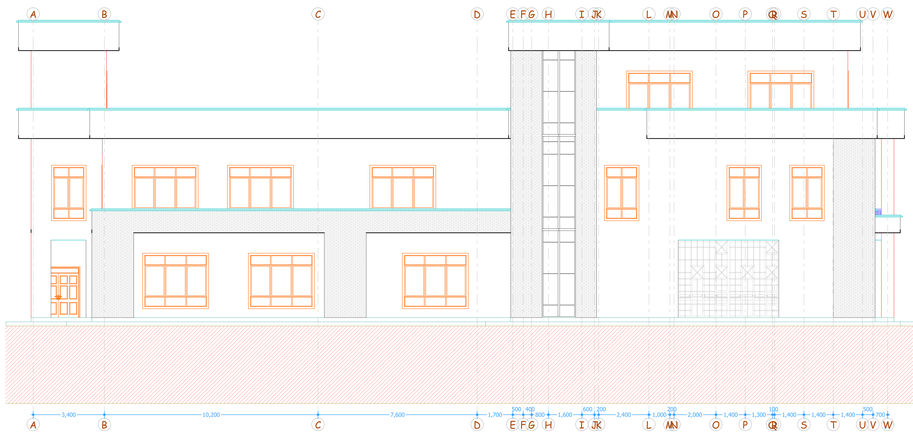
SHEET NO.: **02**



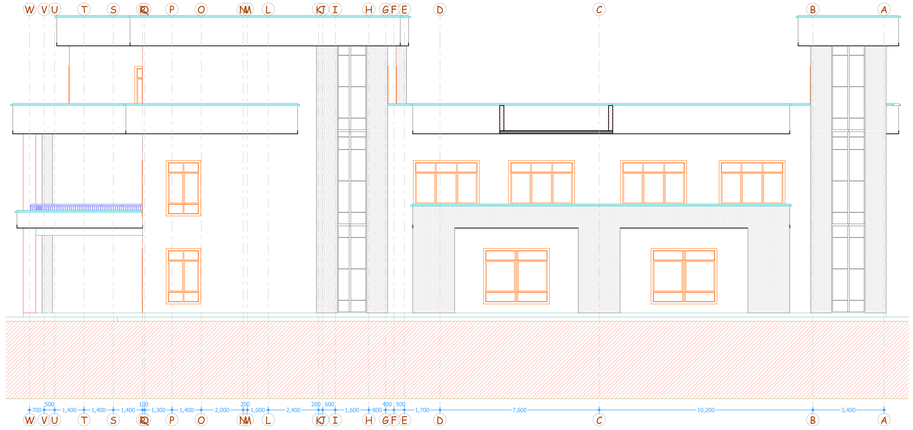
SECTION Y-Y



ELEVATION 02



ELEVATION 01



ELEVATION 03

ELEVATION 04

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FIRST FLOOR PLAN = 1,136 SQM

TERRACE FLOOR PLAN = 390 SQM

TOTAL FLOOR PLAN = 2,662 SQM

REVISIONS:

prefix	description	date

PROJECT:

PROPOSED TUITION BLOCK (PHASE 1) AT MAMA NGINA UNIVERSITY COLLEGE ON LR NO: NGENDA/MUTOMO/T.316

CLIENT:

MAMA NGINA UNIVERSITY COLLEGE (MNUC)
P.O.BOX 444-01030,
GATUNDU.

DRAWING TITLE:

ARCHITECT:

ARCH.M.MWANGI

Architect's Sign..... Date.....

DRAWN: **A.N**

SCALE: **AS SHOWN**

DATE: **FEBRUARY 2023**

CHECKED: **ARCH.M.MWANGI**

PROJECT NO.: **02203 MNUC**

SHEET NO.: **03**