



**JARAMOGI OGINGA ODINGA
UNIVERSITY OF SCIENCE AND TECHNOLOGY**

TENDER DOCUMENT

TENDER NO: JOOUST/ONT/B1/32/2019-2020

FOR

**SUPPLY, INSTALLATION AND COMMISSIONING OF
ELECTRICAL WORKS FOR TUITION BLOCKS AT
JARAMOGI ODINGA OGINGA UNIVERSITY OF SCIENCE
AND TECHNOLOGY, ACHIEGO CAMPUS**

CLOSING DATE: 23RD JULY 2020

OPENING DATES: 5TH AUGUST 2020

Table of Contents

SECTION I: INVITATION TO TENDER.....	4
FORM OF TENDER	4
FORM OF TENDER SECURITY	6
SECTION II: INSTRUCTIONS TO TENDERERS.....	7
1. <i>General/Eligibility/Qualifications/Joint venture/Cost of tendering</i>	7
2. <i>Tender Documents</i>	9
3. <i>Preparation of Tenders</i>	10
4. <i>Submission of Tenders</i>	13
5. <i>Tender Opening and Evaluation</i>	14
6. <i>Award of Sub-Contract</i>	16
7. <i>Corrupt and Fraudulent practices</i>	17
SECTION III: APPENDIX TO INSTRUCTIONS TO TENDERERS	18
SECTION IV: TENDER EVALUATION CRITERIA	19
1. Preliminary evaluation	19
2. Technical evaluation	20
3. Financial Evaluation.....	22
4. Due Diligence and Recommendation for Award	22
SECTION V: CONDITIONS OF SUB-CONTRACT	23
SECTION VI – APPENDIX TO CONDITIONS OF SUB-CONTRACT	46
SECTION VII SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS.....	48
APPENDIX TO SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS	76
SECTION VIII GENERAL SPECIFICATIONS OF MATERIALS AND WORKS.....	77
APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS	99
SECTION IX PARTICULAR SPECIFICATIONS OF MATERIALS AND WORKS	100
SPECIFICATIONS FOR ELECTRICAL INSTALLATION WORKS	101
General Requirements	102
Electrical Distribution System	104
Electrical Services Associated with Mechanical Services Installation	105
Power Factor Correction Equipment	106
Lighting and Power Installation.....	107
Lightning Protection System	108
ICT and Structured Cabling.....	109
Fire Alarm and Detection System.....	110
Standby Generator	112

SECTION X: SCHEDULE OF UNIT RATES	124
SECTION XI BILLS OF QUANTITIES	125
SPECIAL NOTES TO BILLS OF QUANTITIES	126
BILLS OF QUANTITIES	127
SECTION XII: TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED.....	159
SECTION XIII SCHEDULE OF SUB-CONTRACT DRAWINGS.....	161
SECTION XIV – STANDARD FORMS.....	162
LETTER OF ACCEPTANCE	163
FORM OF AGREEMENT.....	164
PERFORMANCE BANK GUARANTEE.....	166
QUALIFICATION INFORMATION.....	167
TENDER QUESTIONNAIRE	171
CONFIDENTIAL BUSINESS QUESTIONNAIRE.....	172
DETAILS OF SUB-CONTRACTORS.....	174
LETTER OF NOTIFICATION OF AWARD.....	176
REQUEST FOR REVIEW.....	177
ANTI-CORRUPTION DECLARATION COMMITMENT/PLEDGE	Error! Bookmark not defined.
NON-DEBARMENT STATEMENT	178
STATEMENT OF COMPLIANCE	181
DETAILS OF LITIGATIONS OR ARBITRATION PROCEEDINGS	182

SECTION I: INVITATION TO TENDER

TENDER NO: JOOUST/ONT/B1/32/2019-2020

TENDER NAME: SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS FOR THE PROPOSED TUITION COMPLEX AT ACHIEGO

- 1.1 **Jaramogi Oginga Odinga University of Science & Technology** invites sealed tenders from eligible tenderers for supply, installation, testing and commissioning of medium, low and extra low voltage electrical works at the proposed Tuition Complex at Achiego Campus.
- 1.2 Tender documents containing detailed specifications can be downloaded free of charge at University website www.jooust.ac.ke and **Public Procurement Information Portal www.tenders.go.ke**. Tenderers who download the tender document and intend to submit a bid are required to submit their particulars to **JOOUST** through **Email: proc@jooust.ac.ke** for the purpose of receiving any further clarification and/or addendum
- 1.3 **THERE SHALL BE A MANDATORY SITE VISIT TO BE HELD ON 9TH JULY 2020 FROM 10.00AM AT THE TUITION BLOCK SITE AT ACHIEGO**
- 1.4 Prices quoted should be net inclusive of all taxes, and delivery costs, must be in Kenya Shillings and shall remain valid for (120) days from the closing date of the tender.
- 1.5 Dully filled tender documents are to be enclosed in plain sealed envelopes, marked with the tender number, tender description **and bearing no indication of the applicant**, clearly /marking each “**ORIGINAL TENDER**” and “**COPY OF TENDER**” should be deposited in the tender box at Jaramogi Oginga Odinga University of Science and Technology or be addressed to:-

The Vice Chancellor,
Jaramogi Oginga Odinga University of Science and Technology,
P.O. Box 210-40601
BONDO.

The tender documents should reach on or before **23nd July 2020**.

- 1.6 Due to Covid-19 the application documents will be opened on **5th August 2020** at the Assembly Hall, Main Campus in the presence of the candidates or their representatives who choose to attend

NB: Due to Ministry of Health Instructions on social distancing the number of bidders/Representatives will be limited.

- 1.7 **BIDDERS MUST SERIALIZE THE BID DOCUMENT.THE UNIVERSITY SHALL NOT BEAR RESPONSIBILITY FOR THE LOSS OF ANY DOCUMENT.**

FORM OF TENDER

TO: _____ [Name of Employer] _____ [Date]
_____ [Name of Contract]

Dear Sir,

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, install and complete such Works and remedy any defects therein for the sum of KShs _____ [Amount in figures]
Kenya Shillings _____ (Amount in words)
2. We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Project Manager's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Appendix to Conditions of Contract.
3. We agree to abide by this tender until _____ [Insert date], and it shall remain binding upon us and may be accepted at any time before that date.
4. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this _____ day of _____ 20_____

Signature _____ in the capacity of

Duly authorized to sign tenders for and on behalf of

[Name of Employer]

[Address of Employer]

Witness; Name _____

Address _____

Signature _____

Date _____

FORM OF TENDER SECURITY

Whereas (Hereinafter called “the Tenderer”) has submitted his tender dated for the construction of
..... (Name of Contract) Know all people by these presents that we having our registered office at (Hereinafter called “the Bank”), are bound unto (Hereinafter called “the Employer”) in the sum of KShs for which payment well and truly to be made to the said Employer, the Bank binds itself, its successors and assigns by these presents sealed with the Common Seal of the said Bank this Day of20.....

The conditions of this obligation are:

1. If after tender opening the tenderer withdraws his tender during the period of tender validity specified in the instructions to tenderers
Or
2. If the tenderer, having been notified of the acceptance of his tender by the Employer during the period of tender validity:
 - a. Fails or refuses to execute the form of Agreement in accordance with the Instructions to Tenderers, if required; or
 - b. Fails or refuses to furnish the Performance Security, in accordance with the Instructions to Tenderers;

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including thirty (30) days after the period of tender validity, and any demand in respect thereof should reach the Bank not later than the said date.

[Date] _____

[Signature of the Bank] _____

[Witness] _____

[Seal]

SECTION II: INSTRUCTIONS TO TENDERERS

1. *General/Eligibility/Qualifications/Joint venture/Cost of tendering*

- 1.1. The Employer as defined in the Appendix to Conditions of Sub-Contract invites tenders for Sub- contract Works as described in the tender documents. The successful tenderer will be expected to complete the Works by the Intended Completion Date specified in the tender documents.
- 1.2. All tenderers shall provide the Qualification Information, a statement that the tenderer (including all members of a joint venture and Sub-Contractors) is not associated, or has not been associated in the past, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications, and other documents for the project or being proposed as Project Manager for the Sub-Contract. A firm that has been engaged by the Employer to provide consulting Services for the preparation or supervision of the Works, and any of its affiliates, shall not be eligible to tender.
- 1.3. All tenderers shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.
- 1.4. In the event that pre-qualification of potential tenderers has been undertaken, only tenders from pre-qualified tenderers will be considered for award of Sub-Contract. These qualified tenderers should submit with their tenders any information updating their original pre-qualification applications or, alternatively, confirm in their tenders that the originally submitted pre-qualification information remains essentially correct as of the date of tender submission.
- 1.5. Where no pre-qualification of potential tenderers has been done, all tenderers shall include the following information and documents with their tenders, unless otherwise stated:
 - (a) Copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the tender to commit the tenderer:
 - (b) Total monetary value of construction work performed for the last three years:
 - (c) experience in works of similar nature and size for the last five years, and details of work under way or contractually committed; and names and addresses of clients who may be contacted for further information on these Sub-Contracts;
 - (d) Major items of construction equipment proposed to carry out the Sub-Contract and an undertaking that they will be available for the Sub-Contract.

- (e) Qualifications and experience of key site management and technical personnel proposed for the Sub-Contract and an undertaking that they shall be available for the Sub-Contract.
- (f) Reports on the financial standing of the tenderer, such as profit and loss statements and auditor's reports for the past five years;
- (g) Evidence of adequacy of working capital for this Sub-Contract (access to line(s) of credit and availability of other financial resources);
- (h) Authority to seek references from the tenderer's bankers;
- (i) information regarding any litigation, current or during the last five years, in which the tenderer is involved, the parties concerned and disputed amount; and
- (j) Proposals for Sub-Contracting components of the Works amounting to more than 10 percent of the Sub-Contract Price.

1.6. Tenders submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated:

- (a) The tender shall include all the information listed in clause 1.5 above for each joint venture partner;
- (b) The tender shall be signed so as to be legally binding on all partners;
- (c) All partners shall be jointly and severally liable for the execution of the Sub-Contract in accordance with the Sub-Contract terms;
- (d) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of all partners of the joint venture; and
- (e) The execution of the entire Sub-Contract, including payment, shall be done exclusively with the partner in charge.

1.7. To qualify for award of the Sub-Contract, tenderers shall meet the following minimum qualifying criteria;

- (a) Annual volume of construction work of at least 2.5 times the estimated annual cash flow for the Sub-Contract;
- (b) Experience as a Sub-Contractor in the construction of at least Two works of similar nature and complexity to the proposed Works,
- (c) Over the last 5 years (to comply with this requirement, works cited should be at least 70 percent complete);
- (d) Proposals for the timely acquisition (own, lease, hire, etc.) of the essential equipment listed as required for the Works;
- (e) A Sub-Contract manager with at least five years' experience in works of an equivalent nature and volume, including no less than three years as Manager; and
- (f) Liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Sub-Contract, of

no less than 4 months of the estimated payment flow under this Sub-Contract.

- 1.8. The figures for each of the partners of a joint venture shall be added together to determine the tenderer's compliance with the minimum qualifying criteria of clause 1.7 (a) and (e); however, for a joint venture to qualify, each of its partners must meet at least 25 percent of minimum criteria 1.7 (a), (b) and (e) for an individual tenderer, and the partner in charge at least 40 percent of those minimum criteria.

Failure to comply with this requirement will result in rejection of the joint venture's tender. Sub-Contractors' experience and resources will not be taken into account in determining the tenderer's compliance with the qualifying criteria, unless otherwise stated.

- 1.9. Each tenderer shall submit only one tender, either individually or as a partner in a joint venture. A tenderer who submits or participates in more than one tender (other than as a Sub-Contractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the tenderer's participation to be disqualified.
- 1.10. The tenderer shall bear all costs associated with the preparation and submission of his tender, and the Employer will in no case be responsible or liable for those costs.
- 1.11. The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the Works and its surroundings, and obtain all information that may be necessary for preparing the tender and entering into a Sub-Contract for construction of the Works. The costs of visiting the Site shall be at the tenderer's own expense.
- 1.12. 1.12 The procuring entity's employees, committee members, board members and their relative (spouse and children) are not eligible to participate in the tender.

2. *Tender Documents*

- 2.1. The complete set of tender documents comprises the documents listed below and any addenda issued in accordance with Clause 2.4.
- (a) Invitation to tender
 - (b) Form of tender
 - (c) Form of tender security
 - (d) Instructions to tenderer.
 - (e) Tender evaluation criteria.
 - (f) Conditions of subcontract.

- (g) Specifications of materials and works
 - (h) Bill of quantities
 - (i) Standard Forms
- 2.2. The tenderer shall examine all Instructions, Forms to be filled and Specifications in the tender documents. Failure to furnish all information required by the tender documents, or submission of a tender not substantially responsive to the tendering documents in every respect will be at the tenderer's risk and may result in rejection of his tender.
- 2.3. A prospective tenderer making an inquiry relating to the tender documents may notify the Employer in writing or by cable, telex or facsimile at the address indicated in the letter of invitation to tender. The Employer will only respond to requests for clarification received earlier than seven days prior to the deadline for submission of tenders. Copies of the Employer's response will be forwarded to all persons issued with tendering documents, including a description of the inquiry, but without identifying its source.
- 2.4. Before the deadline for submission of tenders, the Employer may modify the tendering documents by issuing addenda. Any addendum thus issued shall be part of the tendering documents and shall be communicated in writing or by cable, telex or facsimile to all tenderers. Prospective tenderers shall acknowledge receipt of each addendum in writing to the Employer.
- 2.5. To give prospective tenderers reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend, as necessary, the deadline for submission of tenders, in accordance with Clause 4.2 here below.

3. *Preparation of Tenders*

- 3.1. All documents relating to the tender and any correspondence shall be in English language.
- 3.2. The tender submitted by the tenderer shall comprise the following:
- (a) These Instructions to Tenderers, Form of Tender, Conditions of Sub-Contract, Appendix to Conditions of Contract and Specifications.
 - (b) Tender Security;
 - (c) Priced Bill of Quantities;
 - (d) Qualification Information Form and Documents;
 - (e) Alternative offers where invited; and

- (f) Any other materials required to be completed and submitted by the tenderers.
- 3.3. The tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items for which no rate or price is entered by the tenderer will not be paid for when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities. All duties, taxes, and other levies payable by the Sub-Contractor under the Sub-Contract, or for any other cause relevant to the Sub-Contract, as of 30 days prior to the deadline for submission of tenders, shall be included in the tender price submitted by the tenderer.
- 3.4. The rates and prices quoted by the tenderer shall only be subject to adjustment during the performance of the Sub-Contract if provided for in the Appendix to Conditions of Sub-Contract and provisions made in the Conditions of Sub-Contract.
- 3.5. The unit rates and prices shall be in Kenya Shillings.
- 3.6. Tenders shall remain valid for a period of sixty (90) days from the date of submission. However, in exceptional circumstances, the Employer may request that the tenderers extend the period of validity for a specified additional period. The request and the tenderers' responses shall be made in writing. A tenderer may refuse the request without forfeiting the Tender Security. A tenderer agreeing to the request will not be required or permitted to otherwise modify the tender, but will be required to extend the validity of Tender Security for the period of the extension, and in compliance with Clause 3.7 - 3.11 in all respects.
- 3.7. The tenderer shall furnish, as part of the tender, a Tender Security in the amount and form specified in the appendix to invitation to tenderers. This shall be in the amount not exceeding 2 percent of the tender price
- 3.8. The format of the Tender Security should be in accordance with the form of Tender Security included in Section G - Standard forms or any other form acceptable to the Employer. Tender Security shall be valid for 30 days beyond the validity of the tender.
- 3.9. Any tender not accompanied by an acceptable Tender Security shall be rejected. The Tender Security of a joint venture must define as "Tenderer" all joint venture partners and list them in the following manner: a joint venture consisting of",", "", and ".....".
- 3.10. The Tender Securities of unsuccessful tenderers will be returned within 28 days of the end of the tender validity period specified in Clause 3.6.

- 3.11. The Tender Security of the successful tenderer will be discharged when the tenderer has signed the Sub-Contract Agreement and furnished the required Performance Security.
- 3.12. The Tender Security may be forfeited
- (a) If the tenderer withdraws the tender after tender opening during the period of tender validity;
 - (b) If the tenderer does not accept the correction of the tender price, pursuant to Clause 5.7;
 - (c) In the case of a successful tenderer, if the tenderer fails within the specified time limit to
 - (i) Sign the Agreement, or
 - (ii) Furnish the required Performance Security.
- 3.13. Tenderers shall submit offers that comply with the requirements of the tendering documents, including the basic technical designs as indicated in the Drawings and Specifications. Alternatives will not be considered, unless specifically allowed in the invitation to tender. If so allowed, tenderers wishing to offer technical alternatives to the requirements of the tendering documents must also submit a tender that complies with the requirements of the tendering documents, including the basic technical design as indicated in the Drawings and Specifications.
- In addition to submitting the basic tender, the Tenderer shall provide all information necessary for a complete evaluation of the alternative, including design calculations, technical specifications, breakdown of prices, proposed construction methods and other relevant details. Only the technical alternatives, if any, of the lowest evaluated tender conforming to the basic technical requirements shall be considered.
- 3.14. The tenderer shall prepare one original of the documents comprising the tender documents as described in Clause 3.2 of these Instructions to Tenderers, bound with the volume containing the Form of Tender, and clearly marked "ORIGINAL". In addition, the tenderer shall submit copies of the tender, in the number specified in the invitation to tender, and clearly marked as "COPIES OF ORIGINAL". In the event of discrepancy between them, the ORIGINAL shall prevail.
- 3.15. The original and all copies of the tender shall be typed or written in indelible ink and shall be signed by a person or persons duly organized to sign on behalf of the tenderer, pursuant to Clause 1.5 (a) or 1.6 (b), as the case may be. All pages of the tender where alterations or additions have been made shall be initialed by the person or persons signing the tender.

- 3.16. Clarification of tenders shall be requested by the tenderer to be received by the procuring entity not later than 7 days prior to the deadline for submission of tenders.
- 3.17. The procuring entity shall reply to any clarifications sought by the tenderer within 3 days of receiving the request to enable the tenderer to make timely submission of its tender.
- 3.18. The tender security shall be in the amount of 2 per cent of the tender price.

4. *Submission of Tenders*

- 4.1. The tenderer shall seal the original and all copies of the tender in two inner envelopes and one outer envelope, duly marking the inner envelopes as “**ORIGINAL**” and “**COPIES**” of the original as appropriate. The inner and outer envelopes shall:
 - (a) be addressed to the Employer at the address provided in the invitation to tender;
 - (b) bear the name and identification number of the Sub-Contract as defined in the invitation to tender; and
 - (c) provide a warning not to open before the specified time and date for tender opening.
- 4.2. Tenders shall be delivered to the Employer at the address specified above not later than the time and date specified in the invitation to tender. However, the Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Sub-Clause 2.5 in which case all rights and obligations of the Employer and the tenderers previously subject to the original deadline will then be subject to the new deadline.
- 4.3. Any tender received after the deadline prescribed in clause 4.2 will be returned to the tenderer un-opened.
- 4.4. Tenderers may modify or withdraw their tenders by giving notice in writing before the deadline prescribed in clause 4.2. Each tenderer’s modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with clause 3.13 and 4.1, with the outer and inner envelopes additionally marked “**MODIFICATION**” and “**WITHDRAWAL**”, as appropriate. No tender may be modified after the deadline for submission of tenders.
- 4.5. Withdrawal of a tender between the deadlines for submission of tenders and the expiration of the period of tender validity specified in the

invitation to tender or as extended pursuant to Clause 3.6 may result in the forfeiture of the Tender Security pursuant to Clause 3.11.

- 4.6. Tenderers may only offer discounts to, or otherwise modify the prices of their tenders by submitting tender modifications in accordance with Clause 4.4 or be included in the original tender submission.

5. *Tender Opening and Evaluation*

- 5.1. The tenders will be opened by the Employer, including modifications made pursuant to Clause 4.4, in the presence of the tenderers' representatives who choose to attend at the time and in the place specified in the invitation to tender. Envelopes marked "**WITHDRAWAL**" shall be opened and read out first. Tenderers' and Employer's representatives who are present during the opening shall sign a register evidencing their attendance.
- 5.2. The tenderers' names, the tender prices, the total amount of each tender and of any alternative tender (if alternatives have been requested or permitted), any discounts, tender modifications and withdrawals, the presence or absence of Tender Security, and such other details as may be considered appropriate, will be announced by the Employer at the opening. Minutes of the tender opening, including the information disclosed to those present will be prepared by the Employer.
- 5.3. Information relating to the examination, clarification, evaluation, and comparison of tenders and recommendations for the award of Sub-Contract shall not be disclosed to tenderers or any other persons not officially concerned with such process until the award to the successful tenderer has been announced. Any effort by a tenderer to influence the Employer's officials, processing of tenders or award decisions may result in the rejection of his tender.
- 5.4. To assist in the examination, evaluation, and comparison of tenders, the Employer at his discretion, may ask any tenderer for clarification of the tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, telex or facsimile but no change in the price or substance of the tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered in the evaluation of the tenders in accordance with Clause 5.7.
- 5.5. Prior to the detailed evaluation of tenders, the Employer will determine whether each tender (a) meets the eligibility criteria defined in Clause 1.7; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the tendering documents. A substantially responsive tender is one which

conforms to all the terms, conditions and specifications of the tendering documents, without material deviation or reservation.

A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the works; (b) which limits in any substantial way, inconsistent with the tendering documents, the Employer's rights or the tenderer's obligations under the Sub-Contract; or (c) whose rectification would affect unfairly the competitive position of other tenderers presenting substantially responsive tenders.

- 5.6. If a tender is not substantially responsive, it will be rejected, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.
- 5.7. The Employer will evaluate and compare only the tenders determined to be substantially responsive in accordance with Clause 5.5.
- 5.8. The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the tender documents or otherwise result in unsolicited benefits for the Employer will not be taken into account in tender evaluation.
- 5.9. The tenderer shall not influence the Employer on any matter relating to his tender from the time of the tender opening to the time the Sub-Contract is awarded. Any effort by the Tenderer to influence the Employer or his employees in his decision on tender evaluation, tender comparison or Sub-Contract award may result in the rejection of the tender.
- 5.10. Firms incorporated in Kenya where indigenous Kenyans own 51% or more of the share capital shall be allowed a 10% preferential bias provided that they do not Sub-Contract work valued at more than 50% of the Sub-Contract Price excluding Provisional Sums to a non-indigenous Sub-Contractor
- 5.11. Where Sub-Contract price variation is allowed, the valuation shall not exceed 15% of the original Sub-Contract price.
- 5.12. Price variation request shall be processed by the procuring entity within 30 days of receiving the request.
- 5.13. The procuring entity may at any time terminate procurement proceedings before Sub-Contract award and shall not be liable to any person for the termination.

- 5.14. The procuring entity shall give prompt notice of the termination to the tenderers and on request give its reasons for termination within 14 days of receiving the request from any tenderer.
- 5.15. A tenderer who gives false information in the tender document about its qualification or who refuses to enter into a Sub-Contract after notification of Sub-Contract award shall be considered for debarment from participating in future public procurement.

6. *Award of Sub-Contract*

- 6.1. Subject to Clause 6.2, the award of the Sub-Contract will be made to the tenderer whose tender has been determined to be substantially responsive to the tendering documents and who has offered the lowest evaluated tender price, provided that such tenderer has been determined to be (a) eligible in accordance with the provision of Clauses 1.2, and (b) qualified in accordance with the provisions of clause 1.7 and 1.8
- 6.2. Notwithstanding clause 6.1 above, the Employer reserves the right to accept or reject any tender, and to cancel the tendering process and reject all tenders, at any time prior to the award of Sub-Contract, without thereby incurring any liability to the affected tenderer or tenderers or any obligation to inform the affected tenderer or tenderers of the grounds for the action.
- 6.3. The tenderer whose tender has been accepted will be notified of the award prior to expiration of the tender validity period in writing or by cable, telex or facsimile. This notification (hereinafter and in all Sub-Contract documents called the “Letter of Acceptance”) will state the sum (hereinafter and in all Sub-Contract documents called the “Sub-Contract Price”) that the Employer will pay the Sub-Contractor in consideration of the execution, completion, and maintenance of the Works by the Sub-Contractor as prescribed by the Sub-Contract. At the same time the other tenderers shall be informed that their tenders have not been successful.

The Sub-Contract shall be formed on the parties signing the Sub-Contract.

- 6.4. The Agreement will incorporate all agreements between the Employer and the successful tenderer. Within 14 days of receipt the successful tenderer will sign the Agreement and return it to the Employer.
- 6.5. Within 21 days after receipt of the Letter of Acceptance, the successful tenderer shall deliver to the Employer a Performance Security in the amount stipulated in the Appendix to Conditions of Sub-Contract and in the form stipulated in the Tender documents. The Performance Security shall be in the amount and specified form

- 6.6. Failure of the successful tenderer to comply with the requirements of clause 6.5 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Tender Security.
- 6.7. Upon the furnishing by the successful tenderer of the Performance Security, the Employer will promptly notify the other tenderers that their tenders have been unsuccessful.
- 6.8. Preference where allowed in the evaluation of tenders shall not be allowed for Sub-Contracts not exceeding one year (12 months)
- 6.9. The tender evaluation committee shall evaluate the tender within 30 days of the validity period from the date of opening the tender.
- 6.10. The parties to the Sub-Contract shall have it signed within 30 days from the date of notification of Sub-Contract award unless there is an administrative review request.
- 6.11. Sub-Contract price variations shall not be allowed for Sub-Contracts not exceeding one year (12 months)
- 6.12. Where Sub-Contract price variation is allowed, the valuation shall not exceed 15% of the original Sub-Contract price.
- 6.13. Price variation request shall be processed by the procuring entity within 30 days of receiving the request.
- 6.14. The procuring entity may at any time terminate procurement proceedings before Sub-Contract award and shall not be liable to any person for the termination.
- 6.15. The procuring entity shall give prompt notice of the termination to the tenderers and on request give its reasons for termination within 14 days of receiving the request from any tenderer.
- 6.16. A tenderer who gives false information in the tender document about its qualification or who refuses to enter into a Sub-Contract after notification of Sub-Contract award shall be considered for debarment from participating in future public procurement.

7. *Corrupt and Fraudulent practices*

- 7.1. The procuring entity requires that tenderers observe the highest standards of ethics during procurement process and execution of Sub-Contracts. A tenderer shall sign a declaration that he has not and will not be involved in corrupt and fraudulent practices.

SECTION III: APPENDIX TO INSTRUCTIONS TO TENDERERS

INSTRUCTION S TO TENDERERS	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERERS
1.1	The employer is the Vice Chancellor , Jaramogi Oginga Odinga University of Science and Technology.
1.7	Qualification criteria as set out in the tender evaluation criteria
1.8	N/A
1.9	Joint venture or individual tenderers only.
1.13	N/A
2.3	Or through email address: proc@jooust.ac.ke
3.2.(e)	N/A
3.4	N/A
3.6	Validity period of 90 days
3.8	Tender surety shall be valid for 30 days beyond the validity of tender from the date of tender opening.
3.12 (b)	N/A
3.14	One original and a copy of the original
3.18	Bid security of 2% OF THE TENDER SUM from a reputable bank recognized by the Central Bank of Kenya
5.2	Alternative bids not allowed
5.7	N/A: PPAD 2015 Applies
5.9	N/A
5.12	N/A
6.5	Successful tenderer to provide performance security of 10% of the Sub-Contract sum from reputable bank recognized by Central Bank of Kenya prior to Sub-Contract signing.
6.8	N/A
6.12	-The word “valuation” should read “variation” -Variation shall apply as prescribed by the Public Procurement and Asset Disposal Act, 2015
6.13	Shall be 60 days from the date of receipt of the request
8.0	Due diligence shall be conducted before award in accordance with the Public Procurement and Asset Disposal Act, 2015
9.0	Tenderer shall be required to provide litigation history which may be subjected to due diligence to ascertain the possibility of negatively affecting performance

SECTION IV: TENDER EVALUATION CRITERIA

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

- (i) Mandatory evaluation,
- (ii) Technical Evaluation
- (iii) Financial Evaluation; and
- (iv) Due diligence

1. Preliminary evaluation

S/N	Mandatory requirement
1	Must provide National Construction Authority (NCA) Category 5 and above registration certificate under the category of Electrical Installations. In the event of a joint venture, the certificate maybe submitted by any one of the members of the venture.
2	Must provide Copy of current annual contractors practicing license from National Construction Authority (NCA). In the event of a joint venture, the certificate will be submitted by the holder of the NCA registration certificate.
3	Must provide Detailed Company profile.
4	Must provide certified copy of Certificate of Incorporation. If joint venture, ALL member of the venture shall submit their respective certificates.
5	Must attach proof of certified Company Ownership (CR12).
6	Must attach certified copy of Single Business Permit for the year 2020
7	Must provide valid Certificate of Tax Compliance from Kenya Revenue Authority; (certified copy). If joint venture, ALL member of the venture shall submit their respective certificates.
8	Must Dully fill, sign and stamp the Form of Tender.
9	Must attach Certified Audited financial reports prepared by registered Auditors for the last three consecutive years for the years ended 2017, 2018 and 2019.
10	Must Dully fill, sign and stamp the Confidential Business Questionnaire
11	Academic/Professional Certificates for Technical Personnel.
12	Must Provide Dully filled, signed and stamped Non-Debarment Declaration Form.
13	Must Provide Dully signed and signed/stamped Litigation Declaration Form.)
14	Site visit/ pre-tender conference is mandatory (as indicated in the advertisement)
15	Must provide a bid bond of 2% of the tender amount from a commercial bank recognized by CBK and must be valid for 120 days from the date of tender closing.
16	Must provide Manufacturers letter of Authority for the specified equipment
17	Must dully fill sign and stamp the Anti-corruption declaration form
18	Must Provide proof of Power of attorney of Tender Signatory in the event of a joint

Tender Document submitted without ANY of the above-mentioned Mandatory documents shall be rejected by the **Jaramogi Oginga Odinga University of Science and Technology's** Tender Evaluation Committee and will therefore not proceed to the technical and financial Evaluation.

N.B The employer may seek further clarification/confirmation if necessary, to confirm authenticity/compliance of any condition of the tender.

2. Technical evaluation

Award of points for the Technical Evaluation shall be as shown in Table 1 below:

Item	Description	Points Scored	Max Points	Total Points
1.	Key Personnel (Attach evidence)			25
	a) Project Engineer qualification <ul style="list-style-type: none"> • Holder of Degree ----- 5 marks • Holder of Diploma ----- 3marks • Holder of Certificate ----- 0 marks 		5	
	b) Project Engineer's experience <ul style="list-style-type: none"> • Over ten (10) year relevant experience -- 5 marks • Five (5) to ten (10) years relevant experience ----- 4 marks • Under five (5) years relevant experience ---- 2 marks • No experience ----- 0 marks 		5	
	c) Works Inspector Qualification <ul style="list-style-type: none"> • Holder of Degree in electrical engineering ----- 5 marks • Holder of Diploma in electrical engineering ----- 3 marks • Holder of Certificate in relevant engineering ----- 1 mark • No Qualification ----- 0 marks 		5	
	d) Works Inspector's Experience <ul style="list-style-type: none"> • Over 10 years' relevant experience----- 5 marks • Five (5) to ten (10) years' relevant experience ----- - 3 marks • Under 5 years' relevant experience ----- 1 marks • No experience -----0 marks 		5	
	e) Experience of Site Technicians with minimum of certificate qualification in relevant Engineering field <ul style="list-style-type: none"> • Over 10 years' relevant experience ----- 5 marks • Five (5) to ten (10) relevant experience ----- 3 marks • Under 5 years' relevant experience ----- 1mark • No relevant experience ----- 0 marks 		5	
2.	Contracts completed in the last five (5) years; a max of 5 No. projects (Attach evidence in form of completion certificates or letters from clients/consultants.)		25	25

Item	Description	Points Scored	Max Points	Total Points
	<ul style="list-style-type: none"> Project of similar nature, complexity and magnitude of equal or higher value. ----- 5 marks each Project of similar nature and complexity but of lower magnitude than the one in consideration ----- 3 marks each No completed project of similar nature ---- 0 marks 			
3	<p>On-going projects (A max of 2 No. projects) (Attach evidence; Letters of Award/ Interim certificates/ Contracts)</p> <ul style="list-style-type: none"> Project of similar nature, complexity and magnitude ----- 5 marks each Project of similar nature, but of lower value than the one in consideration ----- 2.5 marks each No ongoing project of similar nature ----- 0 marks 		10	10
5.	Evidence of business physical address. (Offices/Workshops). Provide copies of ownership or lease agreement documents.		5	5
6.	<p>Financial report Audited financial report (last three [3] years) - 2017-2019</p> <ul style="list-style-type: none"> Average Annual Turnover equal or higher than to Kshs. 40.0 Million ----- 15 Marks Average Annual Turnover between Kshs. 20 Million and Kshs 39.9 Million ----- 10 Marks Average Annual Turnover between Kshs. 10 Million and Kshs 19.9 Million ----- 5 Marks Average Annual Turnover below Kshs 10 Million ----- 0 Marks 		15	15
7.	<p>Evidence of financial resources (cash in hand, lines of credit, overdraft facility etc.)</p> <ul style="list-style-type: none"> Amount equivalent to or above 25% of submitted tender sum ----- 20 Marks Amount equivalent to 20% but below 25% of submitted tender sum ----- 15 Marks Amount equivalent to 15% but below 20% of submitted tender sum ----- 10 Marks Amount equivalent to 10% but below 15% of submitted tender sum ----- 5 Marks Amount below 10% of submitted tender sum ----- 0 		20	20

Item	Description	Points Scored	Max Points	Total Points
	Mark			
	TOTAL			100

Any tenderer who scores 70 points and above in this Technical Evaluation shall be considered for further evaluation.

3. Financial Evaluation

Only tenderer's who score 70% and above of the overall marks on the technical evaluation shall qualify for financial evaluation.

This will be carried out only for those tenders that have passed BOTH mandatory requirements and Technical evaluation. The client will;

1. Undertake price comparison and ranking of prices.
2. The prices shall be compared and checked for completeness including all local taxes.

4. Due Diligence and Recommendation for Award

Particulars of post – qualification if applicable. The Client may inspect the premises due diligence to seek further clarification/confirmation if necessary, to confirm authenticity/compliance of any condition of the tender/qualifications of the tenderer in line with Section 83 of the Public Procurement and Asset Disposal Act, 2015.

The tenderer shall not be awarded the Sub-Contract if they fail to pass the compliance test. The second lowest tenderer shall be considered for due diligence.

Award Criteria: The firm achieving the lowest evaluated price will be awarded the Sub-Contract in line with Section 86 of the Public Procurement and Disposal Act, 2015

Particulars of performance security; 10% of Sub-Contract sum

SECTION V: CONDITIONS OF SUB-CONTRACT

1. Definitions

1.1. In this Sub-Contract, except where context otherwise requires, the following terms shall be interpreted as indicated;

“**Bill of Quantities**” means the priced and completed Bill of Quantities forming part of the tender.

“**Compensation Events**” are those defined in Clause 24 hereunder.

“**Completion Date**” means the date of completion of the Works as certified by the Project Manager, in accordance with Clause 31.

“**Days**” are calendar days; “**Months**” are calendar months.

“**Defect**” is any part of the Works not completed in accordance with the Sub-Contract.

“**Defects Liability Certificate**” is the certificate issued by Project Manager upon correction of defects by the Sub-Contractor.

“**Defects Liability Period**” is the period named in the Sub-Contract Data and calculated from the Completion Date.

“**Drawings**” include calculations and other information provided or approved by the Project Manager for the execution of the Sub-Contract.

“**Day works**” are Work inputs subject to payment on a time basis for labour and the associated materials and plant.

“**Employer**”, or the “**Procuring entity**” as defined in the Public Procurement Regulations (i.e. Central or Local Government administration, Universities, Public Institutions and Corporations, etc.) is the party who employs the Sub-Contractor to carry out the Works.

“**Equipment**” is the Sub-Contractor’s machinery and vehicles brought temporarily to the Site for the execution of the Works.

“**Intended Completion Date**” is the date on which it is intended that the Sub-Contractor shall complete the Works. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.

“Materials” are all supplies, including consumables, used by the Sub-Contractor for incorporation in the Works.

“Plant” is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.

“Project Manager” is the person named in the Appendix to Conditions of Sub-Contract (or any other competent person appointed by the Employer and notified to the contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Sub-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.

“Site” is the area defined as such in the Appendix to Condition of Sub-Contract.

“Site Investigation Reports” are those reports that may be included in the tendering documents which are factual and interpretative about the surface and subsurface conditions at the Site.

“Specifications” means the Specifications of the Works included in the Sub-Contract and any modification or addition made or approved by the Project Manager.

“Start Date” is the latest date when the Sub-Contractor shall commence execution of the Works. It does not necessarily coincide with the Site possession date(s).

“Sub-Contractor” is a person or corporate body who has a Sub-Contract with the contractor to carry out a part of the Work in the contract, which includes Work on the Site.

“Sub-Contract” means the agreement entered into between the Employer and the Sub-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,

“Sub-Contractor’s Tender” is the completed tendering document submitted by the Sub-Contractor to the Employer.

“Sub-Contract Price” is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Sub-Contract.

2. Interpretation

- 2.1. In interpreting these Conditions of Sub-Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning in English Language unless specifically defined. The Project Manager will provide instructions clarifying queries about these Conditions of Sub-Contract.
- 2.2. If sectional completion is specified in the Appendix to Conditions of Sub-Contract, reference in the Conditions of Sub-Contract to the Works, the Completion Date and the Intended Completion Date apply to any section of the Works (other than references to the Intended Completion Date for the whole of the Works).
- 2.3. The following documents shall constitute the Sub-Contract documents and shall be interpreted in the following order of priority;
 - (1) Agreement,
 - (2) Letter of Acceptance,
 - (3) Sub-Contractor's Tender,
 - (4) Appendix to Conditions of Sub-Contract,
 - (5) Conditions of Sub-Contract,
 - (6) Specifications,
 - (7) Drawings,
 - (8) Bill of Quantities,
 - (9) Any other documents listed in the Appendix to Conditions of Sub-Contract as forming part of the Sub-Contract.

Immediately after the execution of the Sub-Contract, the Project Manager shall furnish both the Employer and the Sub-Contractor with two copies each of all the Sub-Contract documents. Further, as and when necessary the Project Manager shall furnish the Sub-Contractor [always with a copy to the Employer] with three [3] copies of such further drawings or details or descriptive schedules as are reasonably necessary either to explain or amplify the Sub-Contract drawings or to enable the Sub-Contractor to carry out and complete the Works in accordance with these Conditions.

3. Language and Law

- 3.1. Language of the Sub-Contract and the law governing the Sub-Contract shall be English language and the Laws of Kenya respectively unless otherwise stated.

4. Project Manager's Decisions

- 4.1. Except where otherwise specifically stated, the Project Manager will decide contractual matters between the Employer and the Sub-Contractor in the role representing the Employer.

5. Delegation

- 5.1. The Project Manager may delegate any of his duties and responsibilities to others after notifying the Sub-Contractor.

6. Communications

- 6.1. Communication between parties shall be effective only when in writing. A notice shall be effective only when it is delivered.

7. Sub-Contracting

- 7.1. The Sub-Contractor may Sub-Contract with the approval of the Project Manager, but may not assign the Sub-Contract without the approval of the Employer in writing. Sub-Contracting shall not alter the Sub-Contractor's obligations.

8. Other Sub-Contractors

- 8.1. The Sub-Contractor shall cooperate and share the Site with other Sub-Contractors, public authorities, utilities etc. as listed in the Appendix to Conditions of Sub-Contract and also with the Employer, as per the directions of the Project Manager. The Sub-Contractor shall also provide facilities and services for them. The Employer may modify the said List of Other Sub-Contractors etc., and shall notify the Sub-Contractor of any such modification.

9. Personnel

- 9.1. The Sub-Contractor shall employ the key personnel named in the Qualification Information, to carry out the functions stated in the said Information or other personnel approved by the Project Manager. The Project Manager will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Qualification Information. If the Project Manager asks the Sub-Contractor to remove a person who is a member of the Sub-Contractor's staff or work force, stating the reasons, the Sub-Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the Work in the Sub-Contract.

10. Works

- 10.1. The Sub-Contractor shall construct and install the Works in accordance with the Specifications and Drawings. The Works may commence on the Start Date and shall be carried out in accordance with the Program

submitted by the Sub-Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.

11. Safety and Temporary Works

- 11.1. The Sub-Contractor shall be responsible for the design of temporary works. However before erecting the same, he shall submit his designs including specifications and drawings to the Project Manager and to any other relevant third parties for their approval. No erection of temporary works shall be done until such approvals are obtained.
- 11.2. The Project Manager's approval shall not alter the Sub-Contractor's responsibility for design of the Temporary works and all drawings prepared by the Sub-Contractor for the execution of the temporary or permanent Works, shall be subject to prior approval by the Project Manager before they can be used.
- 11.3. The Sub-Contractor shall be responsible for the safety of all activities on the Site.

12. Discoveries

- 12.1. Anything of historical or other interest or of significant value unexpectedly discovered on Site shall be the property of the Employer. The contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.

13. Work Program

- 13.1. Within the time stated in the Appendix to Conditions of Sub-Contract, the Sub-Contractor shall submit to the Project Manager for approval a program showing the general methods, arrangements, order, and timing for all the activities in the Works. An update of the program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining Work, including any changes to the sequence of the activities.
- 13.2. The Sub-Contractor shall submit to the Project Manager for approval an updated program at intervals no longer than the period stated in the Appendix to Conditions of Sub-Contract. If the Sub-Contractor does not submit an updated program within this period, the Project Manager may withhold the amount stated in the said Appendix from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue program has been submitted. The Project Manager's approval of the program shall not alter the Sub-Contractor's obligations.

13.3. The Sub-Contractor may revise the program and submit it to the Project Manager again at any time. A revised program shall show the effect of Variations and Compensation Events.

14. Possession of Site

14.1. The Employer shall give possession of all parts of the Site to the Sub-Sub-Contractor. If possession of a part is not given by the date stated in the Appendix to Conditions of Sub-Contract, the Employer will be deemed to have delayed the start of the relevant activities, and this will be a Compensation Event.

15. Access to Site

15.1. The Sub-Contractor shall allow the Project Manager and any other person authorized by the Project Manager, access to the Site and to any place where work in connection with the Sub-Contract is being carried out or is intended to be carried out.

16. Instructions

16.1. The Sub-Contractor shall carry out all instructions of the Project Manager which are in accordance with the Sub-Contract.

17. Extension or Acceleration of Completion Date

17.1. The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a variation is issued which makes it impossible for completion to be achieved by the Intended Completion Date without the Sub-Contractor taking steps to accelerate the remaining Work, which would cause the Sub-Contractor to incur additional cost. The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Sub-Contractor asking the Project Manager in writing for a decision upon the effect of a Compensation Event or variation and submitting full supporting information. If the Sub-Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay caused by such failure shall not be considered in assessing the new (extended) Completion Date.

17.2. No bonus for early completion of the Works shall be paid to the Sub-Contractor by the Employer.

18. Management Meetings

18.1. A Sub-Contract management meeting shall be held monthly and attended by the Project Manager and the Sub-Contractor. Its business shall be to review the plans for the remaining Work and to deal with matters raised in accordance with the early warning procedure. The Project Manager shall record the minutes of management meetings and provide copies of the same to those attending the meeting and the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

19. Early Warning

19.1. The Sub-Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the Work, increase the Sub-Contract Price or delay the execution of the Works. The Project Manager may require the Sub-Contractor to provide an estimate of the expected effect of the future event or circumstance on the Sub-Contract Price and Completion Date. The estimate shall be provided by the Sub-Contractor as soon as reasonably possible.

19.2. The Sub-Contractor shall cooperate with the Project Manager in making and considering proposals on how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the Work and in carrying out any resulting instructions of the Project Manager.

20. Defects

20.1. The Project Manager shall inspect the Sub-Contractor's work and notify the Sub-Contractor of any defects that are found. Such inspection shall not affect the Sub-Contractor's responsibilities. The Project Manager may instruct the Sub-Contractor to search for a defect and to uncover and test any Work that the Project Manager considers may have a defect. Should the defect be found, the cost of uncovering and making good shall be borne by the Sub-Contractor, However, if there is no defect found, the cost of uncovering and making good shall be treated as a variation and added to the Sub-Contract Price.

20.2. The Project Manager shall give notice to the Sub-Contractor of any defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the Appendix to Conditions of Sub-Contract. The Defects Liability Period shall be extended for as long as defects remain to be corrected.

- 20.3. Every time notice of a defect is given, the Sub-Contractor shall correct the notified defect within the length of time specified by the Project Manager's notice. If the Sub-Contractor has not corrected a defect within the time specified in the Project Manager's notice, the Project Manager will assess the cost of having the defect corrected by other parties and such cost shall be treated as a variation and be deducted from the Sub-Contract Price.

21. Bills of Quantities

- 21.1. The Bills of Quantities shall contain items for the construction, installation, testing and commissioning of the Work to be done by the Sub-Contractor. The Sub-Contractor will be paid for the quantity of the Work done at the rate in the Bills of Quantities for each item.
- 21.2. If the final quantity of the Work done differs from the quantity in the Bills of Quantities for the particular item by more than 25 percent and provided the change exceeds 1 percent of the Initial Sub-Contract price, the Project Manager shall adjust the rate to allow for the change.
- 21.3. If requested by the Project Manager, the Sub-Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bills of Quantities.

22. Variations

- 22.1. All variations shall be included in updated programs produced by the Sub-Contractor.
- 22.2. The Sub-Contractor shall provide the Project Manager with a quotation for carrying out the variations when requested to do so. The Project Manager shall assess the quotation, which shall be given within seven days of the request or within any longer period as may be stated by the Project Manager and before the Variation is ordered
- 22.3. If the work in the variation corresponds with an item description in the Bills of Quantities and if in the opinion of the Project Manager, the quantity of work is not above the limit stated in Clause 21.2 or the timing of its execution does not cause the cost per unit of quantity to change, the rate in the Bills of Quantities shall be used to calculate the value of the variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the variation does not correspond with items in the Bills of Quantities, the quotation by the Sub-Contractor shall be in the form of new rates for the relevant items of Work.

- 22.4. If the Sub-Contractor's quotation is unreasonable, the Project Manager may order the variation and make a change to the Sub-Contract price, which shall be based on the Project Manager's own forecast of the effects of the variation on the Sub-Contractor's costs.
- 22.5. If the Project Manager decides that the urgency of varying the Work would prevent a quotation being given and considered without delaying the Work, no quotation shall be given and the variation shall be treated as a Compensation Event.
- 22.6. The Sub-Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.
- 22.7. When the Program is updated, the Sub-Contractor shall provide the Project Manager with an updated cash flow forecast.

23. Payment Certificates, Currency of Payments and Advance Payments

- 23.1. The Sub-Contractor shall submit to the Project Manager monthly applications for payment giving sufficient details of the Work done and materials on Site and the amounts which the Sub-Contractor considers himself to be entitled to. The Project Manager shall check the monthly application and certify the amount to be paid to the Sub-Contractor within 14 days. The value of Work executed and payable shall be determined by the Project Manager.
- 23.2. The value of Work executed shall comprise the value of the quantities of the items in the Bills of Quantities completed, materials delivered on Site, variations and compensation events. Such materials shall become the property of the Employer once the Employer has paid the Sub-Contractor for their value. Thereafter, they shall not be removed from Site without the Project Manager's instructions except for use upon the Works.
- 23.3. Payments shall be adjusted for deductions for retention. The Employer shall pay the Sub-Contractor the amounts certified by the Project Manager within 30 days of the date of issue of each certificate. If the Employer makes a late payment, the Sub-Contractor shall be paid simple interest on the late payment in the next payment. Interest shall be calculated on the basis of number of days delayed at a rate three percentage points above the Central Bank of Kenya's average rate for base lending prevailing as of the first day the payment becomes overdue.
- 23.4. If an amount certified is increased in a later certificate or as a result of an award by an Arbitrator, the Sub-Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from

the date upon which the increased amount would have been certified in the absence of dispute.

- 23.5. Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Sub-Contract.
- 23.6. The Sub-Contract Price shall be stated in Kenya Shillings. All payments to the Sub-Contractor shall be made in Kenya Shillings and foreign currency in the proportion indicated in the tender, or agreed prior to the execution of the Sub-Contract Agreement and indicated therein. The rate of exchange for the calculation of the amount of foreign currency payment shall be the rate of exchange indicated in the Appendix to Conditions of Sub-Contract.

If the Sub-Contractor indicated foreign currencies for payment other than the currencies of the countries of origin of related goods and services the Employer reserves the right to pay the equivalent at the time of payment in the currencies of the countries of such goods and services

The Employer and the Project Manager shall be notified promptly by the Sub-Contractor of any changes in the expected foreign currency requirements of the Sub-Contractor during the execution of the Works as indicated in the Schedule of Foreign Currency Requirements and the foreign and local currency portions of the balance of the Sub-Contract Price shall then be amended by agreement between Employer and the Sub-Contractor in order to reflect appropriately such changes.

- 23.7. In the event that an advance payment is granted, the following:
- (a) On signature of the Sub-Contract, the Sub-Contractor shall at his request, and without furnishing proof of expenditure, be entitled to an advance of 10% (ten percent) of the original amount of the Sub-Contract. The advance shall not be subject to retention money.
 - (b) No advance payment may be made before the Sub-Contractor has submitted proof of the establishment of deposit or a directly liable guarantee satisfactory to the Employer in the amount of the advance payment. The guarantee shall be in the same currency as the advance.
 - (c) Reimbursement of the lump sum advance shall be made by deductions from the Interim payments and where applicable from the balance owing to the Sub-Contractor. Reimbursement shall begin when the amount of the sums due under the Sub-Contract

reaches 20% of the original amount of the Sub-Contract. It shall have been completed by the time 80% of this amount is reached.

The amount to be repaid by way of successive deductions shall be calculated by means of the formula:

$$R = \frac{A(X^1 - X^{11})}{80 - 20}$$

Where:

X^1 = the amount of proposed cumulative payments as a percentage of the original amount of the Sub-Contract. This figure will exceed 20% but not exceed 80%.

X^{11} = the amount of the previous cumulative payments as a percentage of the original amount of the Sub-Contract. This figure will be below 80% but not less than 20%.

- (d) With each reimbursement the counterpart of the directly liable guarantee may be reduced accordingly.

24. Compensation Events

24.1. The following issues shall constitute Compensation Events:

- (a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Appendix to Conditions of Sub-Contract.
- (b) The Employer modifies the List of Other Sub-Contractors, etc., in a way that affects the Work of the Sub-Sub-Contractor under the Sub-Contract.
- (c) The Project Manager orders a delay or does not issue drawings, specifications or instructions required for execution of the Works on time.
- (d) The Project Manager instructs the Sub-Contractor to uncover or to carry out additional tests upon the Work, which is then found to have no defects.
- (e) The Project Manager unreasonably does not approve a Sub-Contract to be let.
- (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of

Acceptance from the information issued to tenderers (including the Site investigation reports), from information available publicly and from a visual inspection of the Site.

- (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer or additional work required for safety or other reasons.
- (h) Other Sub-Contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Sub-Contract, and they cause delay or extra cost to the Sub-Contractor.
- (i) The effects on the Sub-Contractor of any of the Employer's risks.
- (j) The Project Manager unreasonably delays issuing a Certificate of Completion.
- (k) Other compensation events described in the Sub-Contract or determined by the Project Manager shall apply.

24.2. If a compensation event would cause additional cost or would prevent the Work being completed before the Intended Completion Date, the Sub-Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Sub-Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

24.3. As soon as information demonstrating the effect of each compensation event upon the Sub-Contractor's forecast cost has been provided by the Sub-Contractor, it shall be assessed by the Project Manager, and the Sub-Contract Price shall be adjusted accordingly. If the Sub-Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Sub-Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Sub-Contractor will react competently and promptly to the event.

24.4. The Sub-Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Sub-Contractor not having given early warning or not having co-operated with the Project Manager.

24.5. Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the Appendix to Conditions of Sub-Contract.

24.6. The Sub-Contractor shall give written notice to the Project Manager of his intention to make a claim within thirty days after the event giving rise to

the claim has first arisen. The claim shall be submitted within thirty days thereafter.

- 24.7. Provided always that should the event giving rise to the claim of continuing effect, the Sub-Contractor shall submit an interim claim within the said thirty days and a final claim within thirty days of the end of the event giving rise to the claim.

25. Price Adjustment

- 25.1. The Project Manager shall adjust the Sub-Contract Price if taxes, duties and other levies are changed between the date 30 days before the submission of tenders for the Sub-Contract and the date of Completion. The adjustment shall be the change in the amount of tax payable by the Sub-Contractor.
- 25.2. The Sub-Contract Price shall be deemed to be based on exchange rates current at the date of tender submission in calculating the cost to the Sub-Contractor of materials to be specifically imported (by express provisions in the Sub-Contract Bills of Quantities or Specifications) for permanent incorporation in the Works. Unless otherwise stated in the Sub-Contract, if at any time during the period of the Sub-Contract exchange rates shall be varied and this shall affect the cost to the Sub-Sub-Contractor of such materials, then the Project Manager shall assess the net difference in the cost of such materials. Any amount from time to time so assessed shall be added to or deducted from the Sub-Contract price.
- 25.3. Unless otherwise stated in the Sub-Contract, the Sub-Contract Price shall be deemed to have been calculated in the manner set out below and in sub-clauses 25.4 and 25.5 and shall be subject to adjustment in the events specified thereunder;
- (i) The prices contained in the Sub-Contract Bills of Quantities shall be deemed to be based upon the rates of wages and other emoluments and expenses as determined by the Joint Building Council of Kenya (JBC) and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Sub-Contractor in his pricing shall be attached in the Appendix to Conditions of Sub-Contract.
 - (ii) Upon JBC determining that any of the said rates of wages or other emoluments and expenses are increased or decreased, then the Sub-Contract Price shall be increased or decreased by the amount assessed by the Project Manager based upon the difference, expressed as a percentage, between the rate set out in the schedule

of basic rates issued 30 days before the date for submission of tenders and the rate published by the JBC and applied to the quantum of labour incorporated within the amount of Work remaining to be executed at the date of publication of such increase or decrease.

- (iii) No adjustment shall be made in respect of changes in the rates of wages and other emoluments and expenses which occur after the date of Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.

25.4. The prices contained in the Sub-Contract Bills of Quantities shall be deemed to be based upon the basic prices of materials to be permanently incorporated in the Works as determined by the JBC and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Sub-Contractor in his pricing shall be attached in the Appendix to Conditions of Sub-Contract.

25.5. Upon the JBC determining that any of the said basic prices are increased or decreased then the Sub-Contract Price shall be increased or decreased by the amount to be assessed by the Project Manager based upon the difference between the price set out in the schedule of basic rates issued 30 days before the date for submission of tenders and the rate published by the JBC and applied to the quantum of the relevant materials which have not been taken into account in arriving at the amount of any interim certificate under clause 23 of these Conditions issued before the date of publication of such increase or decrease.

25.6. No adjustment shall be made in respect of changes in basic prices of materials which occur after the date for Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.

25.7. The provisions of sub-clause 25.1 to 25.2 herein shall not apply in respect of any materials included in the schedule of basic rates.

26. Retention

26.1. The Employer shall retain from each payment due to the Sub-Contractor the proportion stated in the Appendix to Conditions of Sub-Contract until Completion of the whole of the Works. On Completion of the whole of the Works, half the total amount retained shall be repaid to the Sub-Contractor and the remaining half when the Defects Liability Period has

passed and the Project Manager has certified that all defects notified to the Sub-Contractor before the end of this period have been corrected.

27. Liquidated Damages

- 27.1. The Sub-Contractor shall pay liquidated damages to the Employer at the rate stated in the Appendix to Conditions of Sub-Contract for each day that the actual Completion Date is later than the Intended Completion
- 27.2. Date. The Employer may deduct liquidated damages from payments due to the Sub-Contractor. Payment of liquidated damages shall not alter the Sub-Contractor's liabilities.
- 27.3. If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Sub-Contractor by adjusting the next payment certificate. The Sub-Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rate specified in Clause 23.30

28. Securities

- 28.1. The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a reputable bank acceptable to the Employer, and denominated in Kenya Shillings. The Performance Security shall be valid until a date 30 days beyond the date of issue of the Certificate of Completion.

29. Dayworks

- 29.1. If applicable, the Dayworks rates in the Sub-Contractor's tender shall be used for small additional amounts of Work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.
- 29.2. All work to be paid for as Dayworks shall be recorded by the Sub-Contractor on Forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the Work being done.
- 29.3. The Sub-Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

30. Liability and Insurance

30.1. From the Start Date until the Defects Correction Certificate has been issued, the following are the Employer's risks:

- (a) The risk of personal injury, death or loss of or damage to property (excluding the Works, Plant, Materials and Equipment), which are due to;
 - (i) Use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works, or
 - (ii) Negligence, breach of statutory duty or interference with any legal right by the Employer or by any person employed by or Sub-Contracted to him except the Sub-Sub-Contractor.
- (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in Employer's design, or due to war or radioactive contamination directly affecting the place where the Works are being executed.

30.2. From the Completion Date until the Defects Correction Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is the Employer's risk except loss or damage due to;

- (a) A defect which existed on or before the Completion Date.
- (b) An event occurring before the Completion Date, which was not itself, the Employer's risk
- (c) The activities of the Sub-Contractor on the Site after the Completion Date.

30.3. From the Start Date until the Defects Correction Certificate has been issued, the risks of personal injury, death and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risk are Sub--contractor's risks.

The Sub-Contractor shall provide, in the joint names of the Employer and the Sub-Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts stated in the Appendix to Conditions of Sub-Contract for the following events;

- (a) Loss of or damage to the Works, Plant, and Materials;
- (b) Loss of or damage to Equipment;
- (c) Loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Sub-Contract, and
- (d) Personal injury or death.

- 30.4. Policies and certificates for insurance shall be delivered by the Sub-Sub-Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation required to rectify the loss or damage incurred.
- 30.5. If the Sub-Contractor does not provide any of the policies and certificates required, the Employer may affect the insurance which the Sub-Contractor should have provided and recover the premiums from payments otherwise due to the Sub-Contractor or, if no payment is due, the payment of the premiums shall be a debt due.
- 30.6. Alterations to the terms of an insurance shall not be made without the approval of the Project Manager. Both parties shall comply with any conditions of insurance policies.

31. Completion and taking over

- 31.1. Upon deciding that the Works are complete, the Sub-Contractor shall issue a written request to the Project Manager to issue a Certificate of Completion of the Works. The Employer shall take over the Site and the Works within seven [7] days of the Project Manager's issuing a Certificate of Completion.

32. Final Account

- 32.1. The Sub-Contractor shall issue the Project Manager with a detailed account of the total amount that the Sub-Contractor considers payable to him by the Employer under the Sub-Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Sub-Contractor within 30 days of receiving the Sub-Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 30 days a schedule that states the scope of the corrections or additions that are necessary. If the final account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Sub-Contractor and issue a Payment Certificate. The Employer shall pay the Sub-Contractor the amount due in the Final Certificate within 60 days.

33. Termination

- 33.1. The Employer or the Sub-Contractor may terminate the Sub-Contract if the other party causes a fundamental breach of the Sub-Contract. These fundamental breaches of Sub-Contract shall include, but shall not be limited to, the following;

- (a) The Sub-Contractor stops work for 30 days when no stoppage of work is shown on the current program and the stoppage has not been authorized by the Project Manager;
 - (b) The Project Manager instructs the Sub-Contractor to delay the progress of the Works, and the instruction is not withdrawn within 30 days;
 - (c) The Sub-Contractor is declared bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - (d) A payment certified by the Project Manager is not paid by the Employer to the Sub-Contractor within 30 days (for Interim Certificate) or 60 days (for Final Certificate) of issue.
 - (e) the Project Manager gives notice that failure to correct a particular defect is a fundamental breach of Sub-Contract and the Sub-Contractor fails to correct it within a reasonable period of time determined by the Project Manager;
 - (f) The Sub-Contractor does not maintain a security, which is required.
- 33.2. When either party to the Sub-Contract gives notice of a breach of Sub-Contract to the Project Manager for a cause other than those listed under Clause 33.1 above, the Project Manager shall decide whether the breach is fundamental or not.
- 33.3. Notwithstanding the above, the Employer may terminate the Sub-Contract for convenience.
- 33.4. If the Sub-Contract is terminated, the Sub-Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible. The Project Manager shall immediately thereafter arrange for a meeting for the purpose of taking record of the Works executed and materials, goods, equipment and temporary buildings on Site.

34. Payment upon Termination

- 34.1. If the Sub-Contract is terminated because of a fundamental breach of Sub-Contract by the Sub-Contractor, the Project Manager shall issue a certificate for the value of the Work done and materials ordered and delivered to Site up to the date of the issue of the certificate. Additional liquidated damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Sub-Contractor, the difference shall be a debt payable by the Sub-Contractor.

- 34.2. If the Sub-Contract is terminated for the Employer's convenience or because of a fundamental breach of Sub-Contract by the Employer, the Project Manager shall issue a certificate for the value of the Work done, materials ordered, the reasonable cost of removal of equipment, repatriation of the Sub-Contractor's personnel employed solely on the Works, and the Sub-Contractor's costs of protecting and securing the Works.
- 34.3. The Employer may employ and pay other persons to carry out and complete the Works and to rectify any defects and may enter upon the Works and use all materials on the Site, plant, equipment and temporary works.
- 34.4. The Sub-Contractor shall, during the execution or after the completion of the Works under this clause remove from the Site as and when required, within such reasonable time as the Project Manager may in writing specify, any temporary buildings, plant, machinery, appliances, goods or materials belonging to or hired by him, and in default the Employer may (without being responsible for any loss or damage) remove and sell any such property of the Sub-Contractor, holding the proceeds less all costs incurred to the credit of the Sub-Contractor.

Until after completion of the Works under this clause the Employer shall not be bound by any other provision of this Sub-Contract to make any payment to the Sub-Contractor, but upon such completion as aforesaid and the verification within a reasonable time of the accounts therefore the Project Manager shall certify the amount of expenses properly incurred by the Employer and, if such amount added to the money paid to the Sub-Contractor before such determination exceeds the total amount which would have been payable on due completion in accordance with this Sub-Contract the difference shall be a debt payable to the Employer by the Sub-Sub-Contractor; and if the said amount added to the said money be less than the said total amount, the difference shall be a debt payable by the Employer to the Sub-Contractor.

35. Release from Performance

- 35.1. If the Sub-Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Sub-Contractor, the Project Manager shall certify that the Sub-Contract has been frustrated. The Sub-Contractor shall make the Site safe and stop Work as quickly as possible after receiving this certificate and shall be paid for all Work carried out before receiving it.

36. Corrupt gifts and payments of commission

36.1. The Sub-Contractor shall not;

- (a) Offer or give or agree to give to any person in the service of the
- (b) Employer any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other Sub-Contract for the Employer or for showing or forbearing to show favor or disfavor to any person in relation to this or any other Sub-Contract for the Employer.
- (c) Enter into this or any other Sub-Contract with the Employer 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 Sub-Contract is made particulars of any such commission and of the terms and conditions of any agreement for the payment thereof have been disclosed in writing to the Employer.

Any breach of this Condition by the Sub-Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Sub-Contractor) shall be an offence under the provisions of the Public Procurement Regulations issued under The Exchequer and Audit Act Cap 412 of the Laws of Kenya.

37. Settlement of Disputes

37.1. In case any dispute or difference shall arise between the Employer or the Project Manager on his behalf and the Sub-Contractor, either during the progress or after the completion or termination of the Works, such 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 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

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

- 37.2. The arbitration may be on the construction of this Sub-Contract or on any matter or thing of whatsoever nature arising thereunder or in connection therewith, including any matter or thing left by this Sub-Contract to the discretion of the Project Manager, or the withholding by the Project Manager of any certificate to which the Sub-Contractor may claim to be entitled to or the measurement and valuation referred to in clause 23.0 of these conditions, or the rights and liabilities of the parties subsequent to the termination of Sub-Contract.
- 37.3. Provided that no arbitration proceedings shall be commenced on any dispute or difference where notice of a dispute or difference 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.
- 37.4. Notwithstanding the issue of a notice as stated above, the arbitration of such a dispute or difference shall not commence unless an attempt has in the first instance been made by the parties to settle such dispute or difference amicably with or without the assistance of third parties. Proof of such attempt shall be required.
- 37.5. 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 Sub-Contract by either party:
- (a) The appointment of a replacement Project Manager upon the said person ceasing to act.
 - (b) Whether or not the issue of an instruction by the Project Manager is empowered by these Conditions
 - (c) Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.
 - (d) Any dispute or difference arising in respect of war risks or war damage.
- 37.6. 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 Sub-Contract, unless the Employer and the Sub-Contractor agree otherwise in writing.
- 37.7. The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or

valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject of or included in any certificate.

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

37.9. The award of such Arbitrator shall be final and binding upon the parties.

38. Alternative Dispute Resolution

38.1. Pursuant to clause 37 of these Conditions of Sub-Contract, it shall be a condition that no dispute shall be referred to arbitration unless and until the matter has been dealt with through Alternative Dispute Resolution (ADR) mechanism.

38.2. The person or persons to conduct the Alternative Resolution shall be agreed upon between the parties

38.3. The Alternative Dispute Resolution shall involve Reconciliation, Mediation or Adjudication.

SECTION VI – APPENDIX TO CONDITIONS OF SUB-CONTRACT

<p>THE PROJECT MANAGER IS</p> <p>Name:</p> <p>Address:</p> <p>Telephone:</p> <p>Facsimile:</p>	
<p>The name (and identification number) of the Sub-Contract</p> <p>PROPOSED CONSTRUCTION OF TUITION COMPLEX AT ACHIEGO CAMPUS</p> <p>The Works consist of: SUPPLY, INSTALLATION AND COMMISSIONING OF MEDIUM AND LOW VOLTAGE ELECTRICAL INSTALLATIONS TO TUITION COMPLEX AT JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY, ACHIEGO CAMPUS</p>	
<p>Other Sub-Contractors, utilities etc. to be engaged by the Employer on the site include those for the execution of;</p> <p>NONE</p>	Clause 8.1
<p>The Start Date shall be AGREED WITH THE CLIENT</p> <p>The Intended Completion Date for the whole of the Works shall be AGREED WITH THE CLIENT</p> <p>The Sub-Contractor shall submit a program for the Works within 14 days of delivery of the Letter of Acceptance.</p>	Clause 10
<p>The period between Program updates is 14 days.</p> <p>The amount to be withheld for late submission of an updated Program is</p> <p>WHOLE CERTIFICATE</p>	Clause 13
<p>The Site Possession Date shall be AGREED WITH THE CLIENT</p> <p>The Site is located at JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY, ACHIEGO CAMPUS</p>	Clause 14
<p>The Defects Liability period is 6 Months.</p>	Clause 20
<p>Variations shall be in accordance with the Public Procurement and Asset Disposal Act (2015)</p>	Clause 22
<p>The payments shall be settled within 45 days from the date of receipt of the interim certificates by the Client</p>	Clause 23.1
<p>There shall be no payment on delayed payments</p>	Clause
<p>All payments shall be made in Kenya Shillings</p>	Clause
<p>There shall be no payment in advance</p>	Clause
<p>Not Applicable</p>	Clause 25
<p>The proportion of payments retained is 10 percent.</p>	Clause 26

The liquidated damages for the whole of the Works is Kshs. 200,000.00 per week or part thereof	Clause 27.1
The Performance Security shall be 10 percent (10%) of the Sub-Contract sum from a reputable bank recognized by the Central	Clause 28
The minimum insurance covers shall be;	Clause 30
<ol style="list-style-type: none"> 1. The minimum cover for insurance of the Works and of Plant and Materials in respect of the Sub-Sub-Contractor's liability is Sub-Contractors All Risk Policy 2. The minimum cover for loss or damage to Equipment is NIL 3. Insurance to cover third party risks 4. The minimum for insurance of other property is KShs 1,000,000.00 5. The minimum cover for personal injury or death insurance <ul style="list-style-type: none"> • For the Sub-Contractor's employees is AS PER LAWS APPLICABLE 	
<p>The Completion Period for the Works is 12 Months.</p> <p>The schedule of basic rates used in pricing by the Sub-Contractor is as attached</p> <p>[SUB-CONTRACTOR TO ATTACH].</p>	Clause 31
<p>Disputes to be settled as per the Arbitration Laws of Kenya</p> <p>Any dispute arising out of the Sub-Contract that cannot be amicably resolved between the parties shall be referred by either party to the arbitration and a final decision by a panel of a person to be agreed between the parties. Failing agreement on the appointment of an Arbitrator, the Arbitrator shall be appointed by the chairperson of the Chartered Institute of Arbitrators –Kenya</p>	Clause 37.1

SECTION VII
SUB-CONTRACT PRELIMINARIES
AND
GENERAL CONDITIONS

SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1.1. 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:

- (a) Work detailed in the Specification and in the Sub-Contract Drawings.
- (b) The Republic of Kenya Document "General Conditions of Sub-Contract for Electrical and Mechanical Works".
- (c) Other documents to which reference is made.

The tenderer shall also be deemed to have included for any expenditure which may be incurred in conforming to the above items (a), (b), (c) and observe this expense as being attached to the Sub-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.

1.2. Discrepancies

The Sub-Contractor shall include all work either shown on the Sub-Contract Drawings or detailed in the specification. No claim or extra cost shall be considered for works which has been shown on the drawings or in the specification alone.

Should the drawing and the specification appear to conflict, the Sub-Contractor shall query the points at the time of tendering and satisfy himself that he has included for the work intended, as no claim for extra payment on this account shall be considered after the Sub-Contract is awarded.

1.3. Conditions of Sub-Contract Agreement

The Sub-Contractor shall be required to enter into a Sub-Contract with the Main Contractor.

The Conditions of the Sub-Contract between the Main Contractor and the 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 Sub-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.

1.4. Payment

Payment will be made through certificates to the Main Contractor, unless he specifically agrees to forego this right, in which case direct payment can be made to the Sub-Contractor. All payments will be less retention as specified in the Main contract. No payment will become due until materials are delivered to site.

1.5. Definition of Terms

Throughout these Sub-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 Vice Chancellor, Jaramogi Oginga Odinga University of
Science and Technology,
P.O. Box 210 – 40601 BONDO
- (ii) Architect: The Term “Architect” Shall Mean
Heritage Associates Limited
P.O Box 56293- 00200 - NAIROBI.
- (iii) Project Manager: The term Project Manager shall Mean:
Heritage Associates Limited
P.O Box 56293- 00200 - NAIROBI.
- (iv) Quantity Surveyor: The term “Quantity Surveyor” shall mean
Cost Bill Systems Limited
P.O Box 5593-00100- NAIROBI.
- (v) Civil/Structural Engineers: The term “Civil/Structural Engineers” shall mean
Wastruct Consultants Limited

P.O Box 51288 – 00200 - NAIROBI.

- (vi) Engineer: The term “engineer” shall mean

M&E Consulting Engineers

P.O Box 50744-00200- NAIROBI.

- (vii) 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.

- (viii) Sub-Contractor: The term “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 Sub-Contract agreement with the Main Contractor for the execution of the Sub-Contract Works, and shall include his or their heirs, executors, administrators, assigns, successors and duly appointed representatives.

- (ix) 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.

- (x) Sub-Contract Drawings: The term “Sub-Contract Drawings” shall mean those drawings required or referred to herein and forming part of the Bills of Quantities.

- (xi) Working Drawings: The term “Working Drawings” shall mean those drawings required to be prepared by the Sub-Contractor as hereinafter described.

- (xii) Record Drawings: The term “Record Drawings” shall mean those drawings required to be prepared by the Sub-Contractor showing “as installed” and other records for the Sub-Contract Works.

- (xiii) 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 KBS 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.

1.6. Site Location

The site of the Sub-Contract Works is situated at Jaramogi Oginga Odinga University-Achiego Campus

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.

1.7. Duration of Sub-Contract

The Sub-Contractor shall be required to phase his work in accordance with the Main Contractor's program (or its revision). The program is to be agreed with the Main Contractor.

1.8. Scope of Sub-Contract Works

The Sub-Contractor shall supply, deliver, unload, hoist, fix, test, commission and handover in a satisfactory working order the complete installation detailed in the Specification and accompanying drawings, including all items of plant and equipment other than those clearly stated to be supplied and installed under other contracts. The Sub-Contractor shall supply all accessories, whether described in this Specification or not, essential to the completion of the work to the satisfaction of the Engineer and in accordance with all local and Government Regulations.

The Sub-Contractor shall be responsible for receiving of items or equipment supplied by the Main Contractor but to be fixed and commissioned under this Sub-Contract.

1.9. Extent of the Sub-Contractor's Duties

At the commencement of the works, the Sub-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 Sub-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 Sub-Contractor from supplying the specified materials and equipment in time.

For the purpose of this Contract the Agreement and Schedule of Conditions and any such modifications and amendments shall be read and construed together. In the event of discrepancy, the modifications and amendments shall prevail.

Materials supplied by others for installation and/or connection by the Sub-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 Sub-Contractor shall be responsible for verifying all dimensions relative to his work by actual measurements taken on site.

The Sub-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 as BS and CP respectively).
- (c) This Specification.
- (d) The Sub-Contract Drawings.
- (e) The Bye-laws of the Local Authority and the Electricity Supply Authority.
- (f) The Architect's and/or Engineer's Instructions.

The Sub-Contract Drawings and Specifications to be read and construed together.

1.11. Validity of Tender

The tender shall remain valid for acceptance within 90 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 Sub-Contract

Unless specifically stated in the documents or the invitation to tender, this is a firm-price Sub-Contract and the Sub-Contractor must allow in his tender for the increase in the cost of labour and/or materials during the duration of the Sub-Contract. No claims will be allowed for increased costs arising from the fluctuations in duties and/or day to day currency fluctuations. The 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 Sub-Contract period.

1.13. Variations

No alteration to the Sub-Contract Works shall be carried out until receipt by the Sub-Contractor of written instructions from the Project Manager.

Any variation from the Sub-Contract price in respect of any extra work, alteration or omission requested or sanctioned by the Architect or Engineer shall be agreed and confirmed in writing at the same time such variations are decided and shall not affect the validity of the Sub-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 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 Sub-Contractor) requires over and above that allotted for completion of the Sub-Contract. If the 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 Sub-Contractor may be nominated by the Architect to supply and/or install any equipment covered by the Prime Cost or Provisional Sums contained within the Sub-Contract documents.

The work covered by Prime Cost and Provisional Sums may or may not be carried out at the discretion of the Architect.

The whole or any part of these sums utilised by the Sub-Contractor shall be deducted from the value of the Sub-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 Main Contractor for an amount equal to 7½ % of the Sub-Contract amount.

1.16. Government Legislation and Regulations

The Sub-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 Sub-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 Sub-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 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 Sub-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

The Main Contractor shall make the following facilities available to the Sub-Contractor:

- (a) Attendance on the Sub-Contractor and the carrying out of all work affecting the structure of the building which may be necessary, including all chasing, cutting away and making good brickwork, etc., except that all plugging for fixing, fittings, machinery, fan ducting, etc., and all drilling and tapping of steel work shall be the responsibility of the Sub-Contractor. Any purpose made fixing brackets shall not constitute Builder's Work and shall be provided and installed by the Sub-Contractor unless stated hereinafter otherwise.
- (b) The provision of temporary water, lighting and power: All these services utilised shall be paid for by the Main Contractor. The Sub-Contractor shall, however, allow for additional connections/extensions required for his purposes.
- (c) Fixing of anchorage and pipe supports in the shuttering, except that all anchorage shall be supplied by the Sub-Contractor who shall also supply the Main Contractor with fully dimensioned drawings detailing the exact locations.
- (d) (i) Provision of scaffolding, cranes, etc. but only in so far as it is required for the Main contract Works. It shall be the Sub-Contractor's responsibility to liaise with the Main Contractor to ensure that there is maximum co-operation with other Sub-Contractors in the use of scaffolding, cranes, etc.
(ii) Any specialist scaffolding, cranes, etc. by the Sub-Contractor for his own exclusive use shall be paid for by the Sub-Contractor.

1.20. Suppliers

The Sub-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 Sub-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.

No materials of any description shall be used or delivered to site without prior sanction by the Engineer, and any condemned material as unfit for use in the Works, must be removed immediately from the site without any recompense to the Sub-Contractor.

All materials for the permanent works shall be new and shall, where no other specification is given, be of first class quality and suitable for the purpose intended.

1.22. Administrative Procedure and Sub-Contractual Responsibility

Wherever within the Specification it is mentioned or implied that the Sub-Contractor shall deal direct with the Employer or Engineer, it shall mean “through the contractor” 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 Sub-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 Sub- contract.

All work liable to adjustment under this Sub-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 Sub-Contractor shall give notice to the Quantity Surveyor or Engineer to carry out measurements before covering up. If the Sub-Contractor shall make

default in these respects he shall, if the Architect so directs, uncover the work to enable the necessary measurements to be taken and afterwards reinstate at his own expense.

1.24. Sub-Contractor's Office in Kenya

The Sub-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 Sub-Contract Works.

The Engineer Manager and his staff shall be empowered by the Sub-Contractor to represent him at meetings and in discussions with the Main Contractor, the Engineer and other parties who may be concerned and any liaison with the Sub-Contractor's Head Office on matters relating to the design, execution and completion of the Sub- contract Works shall be effected through his office in Kenya.

It shall be the Sub-Contractor's responsibility to procure work permits, entry permits, licences, registration, etc., in respect of all expatriate staff.

The Sub-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 Sub-Contractor's Head Office is remote from his office in Nairobi or the site of the Sub-Contract Works or otherwise.

1.25. Builder's Work

All chasing, cutting away and making good shall be done by the Main Contractor but the Sub-Contractor shall mark out in advance and shall be responsible for accuracy of the size and position of all holes and chases required.

The Sub-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 not constitute builder's work and shall be provided and installed by the Sub-Contractor unless stated hereinafter to the contrary.

1.26. Structural Provision for the Works

Preliminary major structural provision has been made for the Sub-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 Sub-Contractor stated otherwise when submitting his tender. Any major structural provision or alteration to major structural provisions required by the Sub-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 work of the Main Contractor.

1.27. Position of Services, Plant, Equipment, Fittings and Apparatus

The Sub-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 Sub-Contractor or the Main Sub-Contractor.

Services throughout 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 (by Sub-Contractor) in this respect shall be the Sub-Contractor's responsibility.

The Sub-Contractor shall be deemed to have allowed in his Sub-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 Sub-Contract Drawings. Within these limits no variations in the Sub-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 Sub-Contractor shall satisfy himself to the correctness of the connections he makes to all items of equipment supplied under the Sub-Contract agreement and equipment supplied under other Sub-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 Sub-Contractor shall carry out such tests of the Sub-Contract Works as required by BS 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 (Sub-Contractor's own preliminary and proving tests exempted).

It will be deemed that the Sub-Contractor has included in the Sub-Contract Sum for the costs of all fuel, power, water and the like, for testing and commissioning as required as part of the Sub-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 Sub-Contractor shall commission the Sub- contract Works and provide attendance during the commissioning of all services, plant and apparatus connected under the Sub-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 Sub-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 Sub- contract Works.

1.30. Identification of Plant Components

The Sub-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. Sub-Contract Drawings

The Sub-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 Sub-Contract works.

The Sub-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 Sub-Contractor shall prepare such Working Drawings as may be necessary. The Working Drawings shall be complete in such detail not only that the Sub-Contract Works can be executed on site but also that the Engineer can approve the Sub-Contractor's proposals, detailed designs and intentions in the execution of the Sub-Contract Works.

If the Sub-Contractor requires any further instructions, details, Sub-Contract Drawings or information drawings to enable him to prepare his Working Drawings or proposals, the Sub-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 Sub-Contractor to ensure that the installations shown on the Working

Drawings have been cleared with the Main Contractor and any other Sub-Contractors whose installations and works might be affected.

If the Sub-Contractor submits his Working Drawings to the Engineer without first liaising and obtaining clearance for his installations from the Main Contractor and other Sub-Contractors whose installations and works might be affected, then he shall be liable to pay for any alterations or modification to his own, the Main Contractor's or other 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 Sub-Contractor shall include but not be restricted to the following:

- (a) Any drawings required by the Main Contractor, or 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.
- (b) 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.
- (c) Schematic Layout Drawings of services and of control equipment.
- (d) Layout Drawings of all embedded and non-embedded paperwork, ducts and electrical conduits.
- (e) Complete circuit drawings of the equipment, together with associated circuit description.
- (f) 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 Sub-Contractor indicating approval or amendment therein.

Six copies of the approved Working Drawings shall be given to the Main Contractor by the Sub-Contractor for information and distribution to other 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 Sub- Sub-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 Sub-Contractor shall ensure that the Working Drawings are submitted to the Architect 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 Sub-Contractor of his obligation to complete the Sub-Contract Works within the agreed Sub-Contract Period and in a manner that would receive the approval of the Architect.

1.33. Record Drawings (As Installed) and Instructions

During the execution of the Sub-Contract Works the Sub-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 Sub-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 Sub-Contractor as a correct record of the installation of the Sub-Contract Works.

They shall include but not restricted to the following drawings or information:

- (a) 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.
- (b) Fully dimensioned drawings of all plant and apparatus.
- (c) General arrangement drawings of equipment, other areas containing plant forming part of the Sub-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.
- (d) Routes, types, sizes and arrangement of all pipework and ductwork including dates of installation of underground pipework.
- (e) Relay adjustment charts and manuals.

- (f) Routes, types, sizes and arrangement of all electric cables, conduits, ducts and wiring including the dates of installation of buried works.
- (g) System schematic and trunking diagrams showing all salient information relating to control and instrumentation.
- (h) Grading Charts.
- (i) Valve schedules and locations suitability cross-referenced.
- (j) Wiring and piping diagrams of plant and apparatus.
- (k) 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.
- (l) Operating Instructions.

Schematic and wiring diagrams shall not be manufacturer's multipurpose general issue drawings. They shall be prepared specially for the Sub-Contract Works and shall contain no spurious or irrelevant information.

Marked-up drawings of the installation of the Sub- contract Works shall be kept to date and completed by the date of practical or section completion. Two copies of the Record Drawings of Sub-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 Sub-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 Sub-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 Sub-Contractor's obligations referred to above, if the Sub- -contractor fails to produce to the Engineer's approval, either:-

- (a) The Marked-up Drawings during the execution of the Sub-Contract Works or
- (b) 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 Sub-Contractor.

1.34. Maintenance Manual

Upon Practical Completion of the Sub-Contract Works, the Sub-Contractor shall furnish the Engineer four copies of a Maintenance Manual relating to the installation forming part of all of the Sub-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 subdivided 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 Sub- 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 Sub-Contract Works the following and any other items listed in the text of the Specifications:

- (a) System Description.
- (b) Plant
- (c) Valve Operation
- (d) Switch Operation
- (e) Procedure of Fault Finding
- (f) Emergency Procedures
- (g) Lubrication Requirements
- (h) Maintenance and Servicing Periods and Procedures
- (i) Colour Coding Legend for all Services
- (j) Schematic and Wiring Diagrams of Plant and Apparatus
- (k) Record Drawings, true to scale, folded to International A4 size
- (l) Lists of Primary and Secondary Spares.

The manual is to be specially prepared for the Sub-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 Sub-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 Sub-Contract Works shall be considered complete and the Maintenance and Defects Liability Period shall commence only when the Sub-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, provided always that the handing over of the Sub-Contract Works shall be coincident with the handing over of the Main contract Works.

The procedure to be followed will be as follows:

- (a) On the completion of the Sub-Contract Works to the satisfaction of the Engineer and the Employer, the Sub-Contractor shall request the Engineer, at site to arrange for handing over.
- (b) The Engineer shall arrange a Hand-over Meeting or a series thereof, at site.
- (c) The Sub-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.
- (d) 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 Sub-Contractor allowed for all protective and finish painting in the Sub-Contract Sum for the Sub-Contract Works, including colour coding of service pipework to the approval of the Engineer. Any special requirements are described in the text of the Specifications.

1.37. Spares

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

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

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

Allow for testing each section of the Sub-Contract Works installation as described hereinafter to the satisfaction of the Engineer.

1.40. Temporary Structures

The Sub-Contractor shall provide the necessary temporary workshop and mess- room in position to be approved by the Architect.

The work people employed by the Sub-Contractor shall occupy or be about only that part of the site necessary for the performance of the work and the Sub-Contractor shall instruct his employees accordingly.

If practicable, W.C. accommodation shall be allocated for the sole use of the Sub-Contractor's workmen and the 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 Sub-Contractor may be allocated certain areas of partially finished building for the purpose of storing material and equipment on site, when such areas are available.

The Main Contractor shall be responsible for making the storage area waterproof but the Sub-Contractor shall be responsible for providing his own lock-up facilities and sheds.

The Sub-Contractor shall exercise particular care not to damage in any way the finished floors, plastered or painted walls and ceilings of the buildings. Care shall particularly be taken not to discolour finished concreted or granolithic floors. The Sub-Contractor shall be liable for making good any damage.

The Sub-Contractor shall, when called upon at any time by the Engineer or Clerk of Works, move any of his plant or material elsewhere notwithstanding his having previously obtained permission for it to be temporary accommodated at any location.

No materials shall be stored or stacked on suspended slabs without the prior approval of the Project Manager.

1.42. Initial Maintenance

The Sub-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 Sub-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 Sub-Contractor shall allow in the Sub-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 Initial Maintenance

The Sub-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 1.42 (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 Sub-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 Main Contractor. The Sub-Contractor shall be liable for the cost of any water or electric current used and for any installation provided especially for their own use by the Main Contractor.

1.46. Protection

The Sub-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 Sub-Contract.

1.47. Defects After Completion

The defects liability period will be 6 months from the date of completion of the Main contract as certified by the Engineer.

1.48. Damages for Delay

Liquidated and Ascertained damages as stated in the Main Contract Agreement will be claimed against the Main Contractor for any unauthorized delay in completion. The Sub-Contractor shall be held liable for the whole or a portion of these damages should he be the cause delay in completion of the Works.

1.49. Clear Away on Completion

The Sub-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 Sub-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 Sub-Contract.

Statement C - Summarizing statement A and B giving the net grand total due to the Sub-Contractor for the execution of the Sub-Contract.

1.51. Fair Wages

The Sub-Contractor shall in respect of all persons employed anywhere by him in the execution of the Sub-Contract, in every factory, workshop or place occupied or used by him for execution of the Sub-Contract, observe and fulfil the following conditions:

- (a) The Sub-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.

- (b) In the absence of any rates of wages, hours or conditions of labour so established the Sub-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 Sub-Contractor is engaged are similar.

1.52. Supervision

During the progress of the works, the Sub-Contractor shall provide and keep constantly available for consultation on site an 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 Sub-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 Sub-Contractor.

One copy of this Specification and one copy of each of the Sub-Contract Drawings (latest issue) must be retained on site at all times, and available for reference by the Engineer or Sub-Contractor.

1.53. Test Certificates

The Sub-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 Sub-Contractor shall provide skilled and unskilled labour as may be necessary for completion of the Sub-Contract.

1.55. Discount to the Main Contractor

No discount to the Main 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 6 months from the date of the Engineer's certification of completion and under such guarantee the 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 Sub-Contracts

Notwithstanding the foregoing conditions, the University reserves the right to place a "Direct Sub-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 Sub-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 Sub-Contract every facility for carrying out their work and also for the use of ordinary scaffolding. The Sub-Contractor however, shall not be required to erect any special scaffolding for them.

1.59. Trade Unions

The Sub-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 Sub-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 University 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 Sub-Contract sum or stated by way of provisional sum shall be added to the Sub-Contract sum.

The Sub-Contractor before making any variation from the Sub-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 Sub-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 Sub-Contract.

1.61. Assignment or subletting

The Sub-Contractor shall not without the written consent of the Project Manager assign this Sub-Contract or sublet any portion of the works, provided that such consent shall not be unreasonably withheld to the prejudice of the Sub-Contractor.

1.62. Partial Completion

If the Employer shall take over any part or parts of works, apparatus, equipment etc. then within seven days from the date on which the Employer 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 Defect Liability Period in respect of the relevant part be deemed to have commenced on the date the Employer shall have taken possession thereof.

The Sub-Contractor shall make good any defects or other faults in the relevant part that had been deemed complete.

The Sub-Contractor shall reduce the value of insurance by the full value of the relevant part.

The Sub-Contractor shall be paid for the part of works taken possession by the Employer.

1.63. Temporary Works

Where temporal works shall be deemed necessary, such as Temporary lighting, the Sub-Contractor shall take precaution to prevent damage to such works.

The Sub-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 Sub-Contract

1.64. Patent Rights

The Sub-Contractor shall fully indemnify the Employer; 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 Sub-Contractor to the Project Manager. In like manner the Employer shall fully indemnify the Sub-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 Sub-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 Sub-Contractor from liability should he manufacture for supply to other buyers.

1.65. Mobilization and Demobilization

The Sub-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 Sub-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 Sub-Contract period by the Project manager the Sub-Contractor shall still ensure availability on site, optimum labour, materials, plant and equipment. The Sub-Contractor

shall make provision for extended preliminaries, should the Sub-Contract period be extended and this shall be in a form of a percentage of the proportion of the Sub-Contract works remaining as at that time of extension. Where called upon in the Appendix to these Preliminaries the Sub-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 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 Sub-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 Sub-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 Sub-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 Sub-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 Sub-Contractor.

1.68. Amendment to Scope of Sub-Contract Works

No amendment to scope of Sub-Contract works is expected and in case of amendment or modification to scope of work, these shall be communicated to all tenderers in sufficient time before the deadline of the tender submission. However during the Sub-Contract period and as the works progress the Project Manager may vary the works as per conditions of Sub-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 1.69)

1.69. Sub-Contractor Obligation and Employers Obligation

The Sub-Contractor will finance all activities as part of his obligation to this Sub-Contract. The employer shall pay interim payment for materials and work completed on site as his obligation in this Sub-Contract, as the works progresses. No claims will be entertained for pre- financing of the project by the Sub-Contractor, or for loss of profit (expectation loss) in case of premature termination, reduction or increase of works as the 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 Sub-Contractor, except as relates to late payment as in the conditions of Sub-Contract clause 23.3. The Sub-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 Sub-Contract sum in the Appendix to this section.

APPENDIX TO SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1. ADD TO CLAUSE 1.40

There is no labour camp.

2. MODIFY CLAUSE 1.66

Percentage of extended preliminaries shall be inserted in Bill No.1 page H/5 of section H. However, this amount of the extended preliminaries SHALL NOT exceed the Liquidated and Ascertained Damages indicated on page B-23 of Section B of this tender document

3. ADD TO CLAUSE 1.17

Prices quoted shall include 14% VAT and 3% withholding tax including all other taxes applicable at the time of tender.

In accordance with Government policy, the 14% VAT and 3% withholding tax shall be deducted from all payments made to the Sub-Contractor, and the same shall subsequently be forwarded to the Kenya Revenue Authority (KRA).

4. OMIT CLAUSE 1.12

SECTION VIII
GENERAL SPECIFICATIONS
OF
MATERIALS AND WORKS

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

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-Contractors expense.

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.

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 colored 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 trip free with a positive movement in both make and break position. Clear indication of the position of the handle shall be incorporated.

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

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

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

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

2.11 FUSED SWITCHGEAR AND ISOLATORS

All fused switchgear and isolators whether mounted on machinery, walls or industrial panels shall conform to the requirements of KS 04 – 226 PART: 1: 1985.

All contacts are to be fully shrouded and are to have a breaking capacity on manual operations as required by KS 04 – 182 : 1980.

Fuse links for fused switches are to be of high rupturing capacity cartridge type, conforming to KS 04 – 183 1978.

Isolators shall be load breaking/fault making isolators.

Fused switches and isolators are to have separate metal enclosures. Mechanical interlocks are to be provided between the door and main switch operating mechanism so arranged that the door may not be opened with the switch in the 'ON' position. Similarly; it shall not be possible to close the switch with the door open except that provision to defeat the mechanical interlock and close the switch with the door in the open position for test purposes. The 'ON' and 'OFF' positions of all switches and isolators shall be clearly indicated by a mechanical flag indicator or similar device. In T.P & N fused switch units, bolted neutral links are to be fitted.

2.12 CONDUITS AND CONDUIT RUNS

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

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

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

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

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

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

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

Conduit connections shall either be by a demountable (screwed up) assembly or adhesive fixed and water tight by solution. The tube and fittings must be clean and free of all grease before applying the adhesive. When connections are made between the conduit and switch boxes, circular or non-screwed boxes, 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 Sub-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 or approved equivalent shall be used at intervals of 6000mm.

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

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

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

2.13 CONDUIT BOXES AND ACCESSORIES

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

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

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

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

Adaptable boxes are to of PVC or mild steel (of not less than 12swg) and black 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 Ivory engraved black on white.
- (ii) Shall be secured by R.H brass screws of same manufacturing throughout.
- (iii) Shall be indicated on switches:-
 - (a) Reference number of switch
 - (b) Special current rating
 - (c) Item of equipment controlled
- (iv) Shall indicate on MCB panels
 - (a) Reference number
 - (b) Type of board, i.e., lighting, sockets, etc.,.
 - (c) Size of cable supplying panel
 - (d) where to isolate feeder cable
- (v) Shall be generally not less than 75mm x 50mm.

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 MICS or conduit with separate earth wire, and installation is carried out in accordance with the figures stated in the current edition of the IEE 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:-

PVC Insulated Cables and Flexible Cords KS 04-192:1988

PVC Insulated Armoured Cables KS 04-194:1990

Armouring of Electric 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.

PVC insulated cables shall be 500/1000 volt grade. No cables smaller than 1.5mm² shall be used unless otherwise specified. The installation and the finish of cables shall be as detailed in later clauses. The colour of cables shall conform with the details stated in the "Cable Braid and insulation Colours" Clause.

2.17 ARMoured PVC 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.

PVC/SWA/PVC cables shall be terminated using "Telecom" "B" type or approved equal or approved equal glands and a PVC tapered sleeve shall be provided to shroud each gland.

Where cables rise from floor level to switchgear etc., they shall be protected by PVC conduit, to a height of 600mm from finished floor level, whether the cable is run on the surface or recessed into the wall.

2.18 CABLE SUPPORTS, MARKERS AND TILES

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

Alternatively, fixing shall be by BICC claw type cleating system with die-cast cleats and 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 and 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 2.20).

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 MARKER	END
1.) Main and Sub-Main			
a) Phase	Red	Red	
b) Neutral	Black	Black	

SYSTEM	INSULATION COLOUR	CABLE MARKER	END
2). Sub-Circuits			
Single			
a) Phase	Black	Black	
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 PVC cable.

1.5mm² for all lighting circuits indicated on the drawing.

Power circuits PVC cable (minimum sizes).

- (i) 2.5mm² for one, two or three 5Amp sockets wired in parallel.
- (ii) 2.5mm² for one 15Amp socket.
- (iii) 2.5mm² for maximum of ten switched 13 Amp sockets wired from 30 Amp MCB.

The wiring sizes for lighting circuits and sockets are shown on the drawings. In such cases, the sizes shown on the drawings shall prevail over the sizes specified.

Wiring sizes for other appliances shall be shown on the drawing or specified in later clauses of this specification.

2.25 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 IEE 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 IEE Regulations. Complete tests shall be made on all circuits by the Sub-Contractor before the installations are handed over.

A report of all tests shall be furnished by the Sub-Contractor to the Engineer. The Engineer will then check test with his own instruments if necessary.

2.27 LIGHTING SWITCHES

These shall be mounted flush with the walls, shall be contained in steel or alloy boxes and shall be of the gangs ratings and type shown in the drawings. They shall be as manufactured by M.K. Electrical Ltd., or other equal and approved to KS 04 – 247:1988

2.28 SOCKETS AND SWITCHED SOCKETS

These shall be flush pattern in steel/PVC box and shall be of the gangs and type specified in the drawings.

They shall be 13- Amp, 3-pin, shuttered, switched and as manufactured by “M.K. Electrical Co. Ltd.”, or other approved equal to KS 04 – 246:1987

2.29 FUSED SPUR BOXES

These shall be flush, DP switched as in steel/pvc box and of type and make specified in the drawings complete with pilot light and as manufactured by “M. K. Electrical Company Ltd”, or other approved equal. KS 04 – 247:1988

2.30 COOKER OUTLETS

These shall be flush mounted with 13-A switched socket outlet and neon indicator Lamps.

The cooker control units shall be as manufactured by “M.K. Electrical Company Ltd”, or other approved equal KS 04 – 247:1988

2.31 CONNECTORS

Shall be specified in the drawings and appropriate rating. These shall be fitted at all conduit box lighting point outlets for jointing of looped PVC cables with flexible cables of specified quality.

2.32 LAMP HOLDERS

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

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

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

2.33 LAMPS

All lamps shall be suitable for normal stated supply voltage and the number and sizes of lamps detailed on the drawings shall be supplied and fixed. The Sub-Contractor must verify the actual supply voltage with the supply authority before ordering the lamps.

Tungsten filament lamps shall be manufactured in accordance with KS 04 –112:1978 for general service lamps and KS 04 – 307:1985 for lamps other than general services. Tubular fluorescent lamps shall comply with KS 04 – 464:1982 Pearl lamps shall be used in all fittings unless otherwise specified.

2.34 LIGHTING FITTINGS AND STREET LIGHTING LANTERNS

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

All fittings and pendants shall be fixed to the conduit boxes with brass R/H screws. These to be in line with metal finish of fittings. The

lighting fittings are detailed for the purpose of establishing a high standard of finish and under no circumstances will substitute fittings be permitted.

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

The whole of the metal work of each lighting fittings shall be effectively bonded to earth. In the case of ball and/or knuckle joints short lengths of flexible cable shall be provided, bonded to the metal work on either side of the joints. If the above provisions are not made by the manufacturers -, the Sub-Contractor shall include cost of additional work necessary in his tender. See "Flexible Cords" clause for details of internal wiring of lighting fittings. Minimum size of internal wiring shall be 20/0.20mm (23/0067). Each lighting fitting shall be provided with number type and size of lamps as detailed on the drawings. It is to be noted that some fittings are suspended as shown on the drawings.

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

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

2.35 POSITIONS OF POINTS AND SWITCHES

Although the approximate positions of all points are shown on the drawings, enquiry shall be made as to the exact positions of all M.C.B panels, lighting points, socket outlets etc, before work is actually commenced. The Sub-Contractor must approach the Architect with regard to the final layout of all lights on the ceiling and walls.

The Sub-Contractor must consult with the Engineer in liaison with the Clerk of Works, or the General Foreman on site regarding the positions of all points before fixing any conduit etc. The Sub-Contractor shall be responsible for all alterations made necessary by the non-compliance with the clause.

2.36 STREET/SECURITY OUTDOOR LIGHTING COLUMNS

The column shall be at a minimum of 225mm in the ground on 75mm thick concrete foundations and the pole upto 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 STREETLIGHTING

Cables shall be as indicated on the drawings, and shall be laid in a cable trench 450mm deep along the road sides and 600mm deep across the roads and 900mm away from the road kerb or 1500mm away from the edges of the road. 'Loop-in' and 'Loop-out' arrangement shall be used at every pole. Wiring to the lanterns on each pole shall be with 1.5mm² PVC twin insulated and sheathed cable with earth wire shall be laid at least 600mm below the finished road level on a compact bed of murram at least 50mm thick and covered with a concrete surrounded 150mm thick.

2.39 METAL CONTROL PILLAR

These shall be metal clad and fabricated as per Sub-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 BSS. 4293:68 rated at 240 volts DP 50 cycles AC 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 MV 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 KS should cover the requirements for specified apparatus for which separate Kenyan Standard exist. All equipment and material used in the switchboard shall be in accordance with the appropriate Kenya Standard.

The switchboard shall comprise the equipment shown on the drawings together with all current transformers, auxiliary fuses, labels, small wiring and interconnections necessary for the satisfactory operation of the switchboard.

Switchboard shall be of the flush fronted, enclosed, metal clad type with full front or rear access as called for in the particular specifications, suitable for indoor use, sectionalised 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 BS 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 AC 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 or fuseboards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

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

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

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

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

Conduit and trunking shall be mechanically and electrically continuous. Conduit shall be tightly screwed between the various lengths so that they butt at the socketed joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects. Oil and any other insulating substance shall be removed from the screw threads. Where conduits terminate in fuse-gear, distribution boards, adaptable boxes, non-spouted switchboxes, etc., they shall, unless otherwise stated, be connected thereto by means of smooth bore male brass bushes, compression washers and sockets. All exposed threads and abrasions shall be painted using an oil paint for black enameled tubing and galvanising paint for galvanized tubing immediately after the conduits are erected

All bends and sets shall be made cold without altering the section of the conduit. The inner radius of the bend shall not be less than four(4) times the outside diameter of the conduit. Not more than two right angle bends will be permitted without the inter-position of a draw-in-box. Where straight runs of conduit are installed, draw-in-boxes shall be provided at distances not exceeding 15m. No tees, elbows, sleeves, either of inspection or solid type, will be permitted.

Conduit shall be swabbed out prior to drawing in cables, and they shall be laid so as to drain of all condensed moisture without injury to end connections.

Conduits and trunking shall be run at least 150mm clear of hot water and steam pipes, and at least 75mm clear of cold water and other services unless otherwise approved by the services engineer.

All boxes shall conform to KS 04 – 668:1986, to be of malleable iron, and black enameled or galvanised according to the type of conduit specified. All accessory boxes shall have threaded brass inserts.

Box lids where required shall be heavy gauge metal, secured by means of zinc plated or cadmium plated steel screws.

All adaptable boxes and lids of the same size shall be interchangeable.

Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.

Where used in conjunction with mineral insulated copper sheathed (MICS) cable, galvanised 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 Sub-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 IEE of Great Britain, the Government Electrical Specification and the Electric Supply Company's By-Laws.

- (a) Tests shall be carried out to prove that all single pole switches are installed in the 'live' conductor.
- (b) Tests shall be carried out to prove that all socket outlets and switched socket outlets are connected to the 'live' conductor in the terminal marked as such, and that each earth pin is effectively bonded to the earth continuity system. Tests shall be carried out to verify the continuity of all conductors of each 'ring' circuit.
- (c) Phase tests shall be carried out on completion of the installation to ensure that correct phase sequence is maintained throughout the installation. Triplicate copies of the results of the above tests shall be provided within 14 days of the witnessed tests and the Sub-Contractor will be required to issue to the service engineer the requisite certificate upon completion as required by the regulations referred to above
- (d) Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparently by such inspections or tests shall be rectified by the Sub-Contractor at his own expense.
- (e) The Sub-Contractor shall provide accurate instruments and apparatus and all labour required to carry out the above tests. The instruments and apparatus shall be made available to the services engineer to enable him to carry out such tests as he may require.

The Sub-Contractor shall generally attend on other Sub-Contractors employed on the project and carry out such electrical tests as may be necessary.

The Sub-Contractor shall test to the services engineer's approval and as specified elsewhere in this specification or in standards and regulations already referred to, all equipment, plant and apparatus forming part of the works and before connecting to any power or other supply and setting to work

Where such equipment, etc., forms part of or is connected to a system whether primarily or of an electrical nature or otherwise (e.g. air conditioning system) the Sub-Contractor shall attend on and assist in balancing, regulating testing and commissioning, or if primarily an electrical or other system forming part of works, shall balance, regulate, test and commission the system to the service engineer's approval.

APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

The electrical Sub-Contractor shall comply with the following:-

1. Government Electrical Specifications No. 1 and No. 2.
2. All requirements of the Energy and Petroleum Regulatory Authority, KPLC, IEE wiring regulations and Communications Authority of Kenya (CAK).

SECTION IX
PARTICULAR SPECIFICATIONS OF
MATERIALS AND WORKS

SPECIFICATIONS FOR ELECTRICAL INSTALLATION WORKS

1 Location of Site

The site of the proposed Sub-Contract works shall be in Jaramogi Oginga Odinga University of Science and Technology, Achiego Campus, Bondo, Kenya.

2 Description of Project

The project shall comprise the development of four blocks, for the Jaramogi Oginga Odinga University of Science and Technology, Kenya.

3 Commencement of Works

The Sub-Contractor in submitting his tender shall be deemed to have included for commencing any necessary work on site at such time as will comply with the Main Contractor's Program.

4 Climatic Conditions

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.

Maximum temperature	-	30°C
Minimum temperature	-	15°C
Average temperature range	-	25°C
Relative humidity range	-	50% - 85%
Altitude	-	1226 M above sea level
Latitude	-	0° 14' 19N
Longitude	-	34° 16' 10E
Rainfall	-	Extremely heavy at certain periods of the year

The 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. Unless otherwise stated, all ratings of plant, equipment and apparatus shall be interpreted as site ratings and not sea level or other ratings.

5 Scope of Sub-Contract Works

The Sub-Contract Works shall comprise the supply, delivery, erection, testing, commissioning and setting to work of the Electrical Engineering Services as detailed in this Specification and accompanying Sub-Contract Drawings.

The Sub-Contractor shall include for all apparatus and appliances not particularly called for in this Specification or on the Sub-Contract Drawings but which are necessary for the completion and satisfactory functioning of the Sub-Contract Works.

No claims for extra payment shall be accepted from the Sub-Contractor due to his failure to adhere to the above requirements.

It is deemed that if, in the opinion of the Sub-Contractor at the time of tendering, there existed a discrepancy between the Specification and the Sub-Contract Drawings, that the Sub-Contractor clarified this difference with the Engineer before tendering.

The works to be installed under this Sub-Contract shall comprise but not restricted to the following:-

- (a) KPLC Main incoming electricity supplies.
- (b) Main Low Voltage Switchboard, sub-main switchboards, distribution boards and consumer units.
- (c) Electrical distribution systems and works associated with mechanical services.
- (d) Sub Mains cable and associated sub boards.
- (e) Lighting and Power Installations.
- (f) Lightning Protection System.
- (g) Telephone Distribution System.
- (h) Security Lighting System.
- (i) Fire Alarm and Detection system.

General Requirements

6 *Scope of Works:*

This section of specification deals with the general requirements for the medium, low and extra low voltage works to be installed in the proposed JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY TUITION BLOCK.

The Sub-Contractor shall supply, deliver, unload, hoist, fix and erect, test and commission all the equipment, plant and materials in accordance with the Specifications contained in this document including the Sub-Contract Drawings to provide a complete and operable installation. The Sub-Contractor shall become liable for defects and be responsible for the initial maintenance of the medium, low and extra low voltage installations all as specified herein.

7 *Incoming Electricity Supplies*

The electricity supply shall be derived from the Kenya Power and Lighting Company network. The incoming low voltage cables from Transformer will be supplied, installed and connected to the main Low Voltage Switchboard by K.P.L.C. The Main Low Voltage Switchboard shall be supplied and installed under this contract.

A Provisional Sum is included in the appropriate price schedule for the service line charges that will become payable to the Kenya Power and Lighting Company.

The Sub-Contractor shall ascertain the size and type of incoming Low Voltage supply cables that will be installed by the Supply Authority and thereby ensure that the correct glands and terminations for the service cables entries into the Main Low Voltage switchboard are provided.

8 Earthing

Earthing and bonding shall be carried out to comply with the regulations currently in force and copper tape mesh system shall be installed adjacent to the Kenya Power and Lighting Company supply intake.

The copper tape mesh system has been decided on due to the nature of soil resistivity at the proposed site for construction.

A provisional sum has been included in the appropriate price Schedule for any additional cost that may be necessary to achieve an effective and permanent earthing system.

Provision shall be made for protective multiple earthing at the main meter boards with the final connection between the neutral and the consumers earthing terminal being effected by the Kenya Power and Lighting Company Limited's electrode system.

9 Metering of Power Supplies

Electric power supply to the building shall be metered via KPLC's maximum demand (kVA) and energy (kWh) meters supplied at 415V and connected at the Main Low Voltage Switchboard by KPLC. The entire building is connected to supplies from KPLC and the standby generator.

10 Main Low Voltage Switchboard

This section of the Specification covers the supply, installation, testing and commissioning of the Main Low Voltage Switchboard in accordance with the Contract Drawings and Specification.

The Schematic Layout of Main Electrical Distribution for the Building is shown on the contract Drawings. The Sub-Contractor shall be deemed to have studied all the Contract Drawings and to have allowed for any necessary provisions in this section of the works required thereby.

The Low Voltage Switchboard and meter boards shall be self-supporting floor mounted cubicles with front access incorporating the equipment as detailed on the Schematic Layout of Main Electrical Distribution System.

They shall also be supplied complete with all internal connections, voltmeter, instrument selection switches, cable glands or boxes and current transformers for the supply Authority's meters. The switchboard shall have a separate compartment to house KPLC metering equipment.

The Main Low Voltage Switchboard shall be capable of extension and the busbar section shall allow for this provision. The Engineer reserves the right to make such variations to the layout and dimensions of the switchboards as are deemed necessary to suit site conditions. The arrangement of these switchboards shall be capable of accommodating power supply connection to all parts of the buildings.

11 Fuse Switches

The fuse switches shall be as shown on Schematic Layout of Main Electrical Distribution and shall be as manufactured by Merlin Gerin to BS 5419. The fuse switched shall be provided complete with Class Q1 HRC cartridge fuse links and three spare fuse links of each size fuse.

12 Moulded case circuit breakers (MCCB)

MCCBs of fault breaking capacity of over 50kA shall be installed and shall be manufactured by Merlin Gerin unless otherwise stated.

These MCCBs shall be as shown on Schematic Layout of Main Electrical Distribution system. Where switches or isolators are specified, these shall be moulded case switches and shall be capable of interrupting currents upto 10 times the rated current.

Electrical Distribution System

13 Scope of Work

This section of the Specification covers supply, installation, connection, testing and commissioning of the Sub-main cables, consumer units and distribution boards in accordance with the Contract Drawings and Specification.

14 Sub-main Cables

The sub-main cables and methods of installation shall be as shown on the Schematic and Layout Drawings and/or as specified in this Specification. The cables shall be as manufactured by BICC, East African Cables Ltd. or other equal and approved.

15 Distribution Boards and Consumer Units

The distribution boards and consumer units shall conform with the requirements of this Specification and shall be as manufactured by M/S Square D. Ltd., Crabtree or other equal and approved.

Schematic of individual distribution boards and consumer units have been prepared and the Sub-Contractor should note that power boards consist of single phase and three phase sub-circuits ways.

All neutral conductors in a single phase distribution board shall be connected in the same circuit sequence as its phase conductor, i.e. phase wire No. 1 connected to No. 1 terminal on the neutral bar, etc.

In addition to this requirement for every distribution board each phase and neutral conductor shall have clipped to its sheath in the distribution board a clip-on numbered tag corresponding to its circuit number. The tag shall be of a type manufactures by M/S. Critchley Brothers Ltd or equal and approved type. All circuit numbers shall commence from left to right.

Electrical Services Associated with Mechanical Services Installation

16 Scope of Work

Work to be carried out under this section includes the supply, installation, wiring to and connection to the mechanical equipment power supply isolator or its control panel. The supply, installation, testing and commissioning of the equipment control panel, wiring between control pane; and equipment shall be by the Mechanical Equipment sub-contractor.

The electrical services shall be associated with the following mechanical equipment:-

- (a) Domestic water pumps (duty and standby) and the associated control panel) Rainwater pumps (duty and Standby) and the associated control panel.
- (b) Fuel Interceptor pump (petrol interceptor pumps) (duty and standby) and associated control panel.
- (c) Sprinkler pumps (duty and standby) and associated control panel.
- (d) Wet Riser Pumps (duty and standby) and associated control panel.
- (e) Waste water treatment plant pumps (duty and Standby) and associated control panel.
- (f) Hose reel pumps (duty and Standby) and associated control panel.
- (g) Domestic/Rain water transfer pumps (duty and standby) and the associated control panel.
- (h) Air conditioning and Mechanical ventilation services and their associated control panels.

The Electrical Services shall also be associated with the provision of power supply upto the isolator or control panel of the following specialised equipment:-

- (a) Electric passenger lifts and associated control panel.
- (b) Electric Bullion Hoist and associated control panel.
- (c) PABX equipment.
- (d) Surveillance equipments
- (e) Fire protection system

17 Fuse Switches (Loose Equipment)

Fuse switches shall conform with the requirements detailed in this Specification.

18 Isolator (Loose Equipment)

Isolators shall conform with the requirements detailed in this specification but with exception that solid links shall be suitably sized to carry the full rated current of the respective isolators. Unless otherwise stated, isolators shall be designed for load making/load breaking duties.

19 Cable Tray

Sizes, proposed fixing arrangements and routes of the galvanised cable tray have been detailed on the layout drawings. The cable tray shall conform to the requirements detailed in this specification.

20 Cable Schedule

The sub-contractor shall prepare a suitable cable route and schedule for all major Low Voltage cables within the Facility. The schedule shall be submitted with working drawings after contracts have been exchanged. During the course of installation, each major cable shall be suitably identified along its route by traffolite cable markers, in accordance with the Sub-Contractor's cable schedule.

21 Rising Main Bus bars

There shall be four sub- boards for each block and additional board for mechanical loads.

Phase colours of the incoming cables to each board shall clearly be marked and the current ratings shall comply with BS 159 for a temperature rise of 500C. All connections to the boards shall be made by means of bolted type clamps designed to ensure maximum conductivity at all times, and drilling of bus-bars in the boards shall never be permitted.

22 Fire Barriers

Where the rising bus bar systems, vertical cable tray installations, vertical trunking installations pass through floors, a barrier of fire resisting materials shall be incorporated around the installations at each floor level to prevent the possible spread of fire between floors.

The fire barrier shall be foil clad, wire mesh reinforced 5mm thick fire barrier curtain, complete with metal fixing strips as RBC Envirograf 1983 - 1993 tested to BS 476 part 20/22 or equal and approved.

Power Factor Correction Equipment

23 Scope of Works

This section of the specification covers the supply, installations, connections, testing and commissioning of the power factor correction equipment and to ensure that at the peak of the demand the power factor shall be maintained at 0.95.

The anticipated maximum demand for the building is 300 kVA. The kVA rating of the capacitors is provisionally taken as 250 kVAr switched in three steps of 100 kVAr 50 kVAr, 50 kVAr, 25 KVar, 25 KVar, each.

The power factor correction equipment shall be in separate free standing steel cabinet and shall be interconnected with the main LV Switchboard. The equipment shall be installed in the switchroom.

The power factor correction equipment shall be dry resin encapsulated, shall have low losses and shall be self-healing. The capacitors shall be delta connected.

The power factor relay shall be cyclic type with built in power factor meter.

The capacitors shall incorporate automatically switching facilities to vary the capacitors in circuit depending on load variations.

Lighting and Power Installation

24 Scope of Work

This section of the Specification covers supply, installation, connection, testing and commissioning of the lighting and single phase power installation in accordance with the Contract Drawings and Specification.

25 Wiring System

Final sub-circuit wiring shall be carried out using single core PVC insulated copper cables enclosed in a system of high impact heavy gauge PVC conduit. The conduits shall be embedded in the fabric of the building or run surface on the roof members. All single phase 13A socket outlets shall be wired using 30A ring main circuit system or 20A radial circuits as shown on the Contract Drawings.

An insulated earth continuity conductor shall be enclosed in all non-metallic conduits.

26 Lighting Luminaries

Lighting Luminaries shall be of the type and manufacture as detailed in this Specification. All luminaries shall be supplied and installed complete with lamps and tubes of the wattage specified.

All fluorescent tubes shall be warm white as manufactured by Thorn Lighting or other equal and approved and shall conform to BS 1853.

27 Lighting Switches and Socket Outlets

In general areas lighting switches shall be flush mounted, single pole, 15A rating, rocker operated grid switches with ivory moulded plastic cover plates.

Socket outlets and spur units shall be flush mounted 13 Amp. rating with rocker operated switches and ivory plastic moulded cover plates.

All lighting switches and socket outlets shall be as manufactured by M/S Crabtree Ltd., MK. Electric Ltd., Nettle Accessories Ltd. or other equal and approved.

28 Cooker Control Units

Cooker control units shall be flush mounting, with 45 Amp. DP switch, 13 Amp switched socket and neon indicators. An appropriate connector block shall be installed at low level. The cooker control units shall comply fully with B.S 4177 and shall have ivory plastic cover plates.

29 Connector boxes

Connector boxes for cookers and water heaters shall be flush mounted with moulded cover plates. The connector boxes shall be supplied complete with terminal blocks and cords grips, terminals shall be capable of accommodating up to 2 No. 10mm² stranded copper conductors.

30 Ramp Lighting

The work under this section includes the supply and installation of the ramp lighting as shown on the Contract Drawings. The ramp lights shall comprise of 18W PL lamp in 300mm dia. polycarbonate post top lanterns as specified on the contract drawings or equal and approved.

The ramp light shall be on top of the ramp parapet wall.

31 External lighting

The works under this section includes the supply and installation of the external security lighting and floodlighting of the building.

The external security lighting comprises of 18W PL lamps fitted in 300mm diameter white polycarbonate spheres suitable for external wall mounting. The security luminaries shall be controlled via photoelectric cell mounted on roof. The photo electric cell shall detect darkness in the evening and then energises the contactor coil to switch on power supply to the external luminaries via the respective distribution boards located in the riser ducts.

The car park lighting shall be controlled by photoelectric cells. Power supply to the car park lighting shall be derived from the consumer unit at the Gate House.

32 Adaptor Boxes

All adaptor boxes draw-in boxes, conduit boxes, lighting points boxes, boxes for sockets, telephone outlets, television outlets, camera boxes etc. shall form part of conduit layout installations.

33 Sub-Main Cables

All main and sub-main cables shall be supplied complete with glands, lugs etc

Lightning Protection System

34 Scope of Work

Under this section of the specification, the Sub-Contractor shall supply, deliver, install and test a lightning protection system as shown on the Contract Drawings.

The Sub-Contractor shall include for the supply and installation of the roof tapes network, all bonding to down conductors and other metal works and earthing as indicated on the appropriate drawings.

35 Description of Installation

The installation is based on the recommendation of Kenya Bureau of Standards and I.E.C 62561 and shall comprise a network of 25mm x 3mm flat copper roof tapes running on the ridges and parapet wall and bonded to a selected 20mm diameter reinforced steel (lengths welded to form a sound and effective electrical continuity down to the concrete foundation bases). At the basement level, the down conductors shall be bonded to a system of effective earthing comprising of earth mats as specified herein.

36 Bonding of Roof Copper Tapes

The roof copper tapes shall be fixed onto the roof ridges; parapet wall etc by means of special holdfasts. All roof tanks and other metal works projecting from the roof shall be bonded to the roof copper tapes.

37 Earthing of Lightning Protection System

Earthing of the lightning protection system shall be effected by bonding 20mm diameter reinforced steel down conductor to 25mm x 3mm earth matt constructed from the 25mm x 3mm copper tape as detailed in the contract drawings.

The earth matt shall be placed in an earth pit 1200mm x 1200mm x 800mm deep. The earth matt shall then be filled with red soil mixed with charcoal in the ratio of 3:1. The earth pit shall then be covered by concrete slab.

The periodical testing of the earthing for lightning protection system shall be conducted at the earth testing point in the basement column and as clearly shown on the contract drawings.

The expected earthing test result for this specification shall never be above 5 ohms

38 Earth Continuity Test for Down Conductor

It will be the responsibility of the Electrical Sub-Contractor to ensure that the 20mm reinforced steel down conductor is properly welded to guarantee earth continuity from roof to foundation level.

The electrical sub-contractor shall witness and be satisfied that concrete pouring to the columns with lightning protection down conductors does not affect the welded points.

ICT and Structured Cabling

39 Scope of Works

This section of the specification covers the supply and installation of trunkings, conduits and cable trays for the distribution of telephone system, communication system like Television network via satellite dish on roof all in accordance with the Contract Drawings and specification.

40 Distribution System

At the ground floor level, the sub-contractor shall supply and install a cable tray for the installation of the main incoming line from the main university point of entry into the building to the proposed telecommunication room. The sub-contractor shall also provide and install cable tray from telecomm room to riser duct and all the length of riser duct up to highest floor ceiling.

The electrical sub-contractor shall provide conduit interconnections between each cabinet box and office floor trunkings. Details of the office floor trunkings are shown on the Drawings and the trunking shall be 3-compartment with a separate compartment for telephone cables. The electrical sub-contractor shall provide and install an accessory box and telephone outlet plates (plug-in type as specified) for connection by other. Outlet plates shall be as manufactured by M/s Crabtree Ltd, MK Electric Ltd or other equal and approved.

Draw wires shall be installed in all conduits to facilitate wiring by others.

A metallic trunking 200mm x 50mm 3 - compartment shall be provided and installed by electrical sub-contractor in the same telephone riser duct from basement floor to highest floor for the accommodation of communication cables, T.V. cables and Fire Alarm and Detection system cables.

41 Wiring System

The Sub-Contractor shall supply and install lead-in pipe of diameter 100mm for the main incoming last mile cables.

The Sub-Contractor shall allow for all conduit installation from the cabinet to the data outlet position. The final wiring from the distribution case to each telephone outlet shall be carried out by others. The minimum size of conduit shall be 25mm diameter and not more than 3 data outlets shall be fed by any 25mm diameter conduit.

At each telephone outlet position the sub-contractor shall supply and install an accessory box and outlet plate for connection by others. Each outlet plate shall comprise of jack plug mounted on an ivory plastic moulded cover plate to match the other accessories used. Outlet plates shall be as manufactured by M/S Crabtree Ltd., M.K. Electric Ltd., Nettle Accessories Ltd., or equal and approved.

Fire Alarm and Detection System

42 Scope of Work

This section of the Specification covers supply, installation, connection, testing and commissioning of the fire alarm and detection system in accordance with the Contract Drawings and Specification.

43 Operation

The fire alarm system shall function as follows:-

In the event of a fire breaking out in any part of a building the alarm can be raised by an observer breaking the glass of the nearest contact. As a result of this action the following signals will be initiated:-

- (a) All the alarm bells within the affected zone shall sound.
- (b) The lamp of the appropriate zone indicator on the annunciator panel will be illuminated.
- (c) A supervisory alarm buzzer on the annunciator panel will sound.

Such signals may be initiated similarly by smoke or heat detectors.

The audible alarms may be silenced by a 'Mute' switch on the annunciator panel. The zone indicator will however remain illuminated until the broken glass of the fire alarm contact is replaced and the system re-set. The operation of the 'Mute' switch shall not preclude the receipt of further alarm signals from other zones.

44 Wiring System

The equipment shall be wired using a 24 volt series fault monitoring circuitry with each floor of the building constituting a separate zone on the annunciator panel. Wiring shall be carried out using single core PVC insulated copper cables enclosed in high impact PVC embedded in the fabric of the building. The fire alarm conduit system shall be completely separate from all other systems. Red conduits shall be used in the ceiling voids or all exposed areas. The system shall be in accordance with BS 5839 PTI (1980). The 24 volt DC supply for the system shall be derived from a battery/charger unit within the annunciator panel located on the Ground Floor reception area.

45 Battery/Charger Unit

The battery/Charger unit is an integral part of the annunciator panel. It shall be as manufactured by M/s Chloride Gent or Menvier or other equal and approved and shall be to BS 5839 PTI 1980. The power supply to the batter/charger unit shall be 240 volts AC and shall be derived from an unswitched fused spur unit with neon indicator.

46 Annunciator Panels

A 16 way flush mounted addressable fire alarm annunciator panel shall be installed at the ground floor reception area with a mimic panel installed in an agreed position. The panels shall comprise of a sheet steel cabinet with a stainless steel front plate containing 16 No. indicator lights, mains failure light, zone fault light, bell circuit fault light, red fire light, supervisory buzzer and alarm mute switch. The function of all indicator lights shall be clearly labelled. The panels shall be as manufactured by M/S Chloride Gent, Manvier or other equal and approved.

47 Break Glass Contacts

Break glass contacts shall be mounted at a height of 1400 fffl and shall be suitable for flush mounting. The unit shall be complete with a black instruction plate engrave "FIRE-SMASH

GLASS" and a test button mechanism. The break glass units shall be as manufactured by Chloride Gent or other equal and approved.

48 Alarm Bells

The alarm bells shall be tangent type "8" diameter suitable for operation in the voltage range 12-24 volts DC as manufactured by M/S Chloride Gent or other equal and approved. The bells shall be mounted at a height of 2000mm fff1 and shall be suitable for mounting on a standard BESA conduit box with terminals capable of accommodating 2 No. 4mm² PVC cables.

49 Smoke Detectors

Smoke detectors shall be installed as shown on the Contract Drawings and shall be of ionization chamber type and manufactured by M/S Chloride Gent, Menvier or other equal and approved.

50 Heat Detectors

Where called for, Heat detectors shall be suitable for operation on a closed loop circuitry system and shall comprise of a bi-metal strip and tilting mercury switch tube mounted in a stainless steel body as manufactured by M/s Chloride Gent, Menvier or other equal and approved.

Standby Generator

51 Description of Project

The project comprises the supply and installation of 1No. Standby Diesel Generating Set rated at 300kVA (at site) for the new Tuition Block.

52 Scope of Works

The scope of work comprises the supply, erection, assembly, wiring, connection, testing, commissioning and setting to work, 1No 300 kVA standby diesel generator, together with control panels in accordance with the Specification and Contract Drawings to provide a complete and operable installation. The generating set shall be provided with sound insulation to contribute no more than 70 decibels of noise (at 1 metre distance) to the surrounding.

DIESEL ENGINE

53 Cylinder Block

The cylinder block shall be made of one-piece cast iron. It shall have full-length water jacket with circulation around each cylinder. The cylinder block shall have wet liners with rubber seal at the bottom end.

54 Cylinder Head

The cylinder head for each bank of cylinders shall be of one piece and manufactured from cast iron. It shall be secured by studs of high tensile steel and be easily detachable valve seats shall be replaceable.

55 Pistons

The pistons shall be made of die cast aluminium alloy and tapered with a ground skirt. The pistons shall have at least three compression and two oil control rings. The combustion chamber and the valve recess shall be smooth contoured. The pistons shall have fully floating pins.

56 Valves

The valves shall have separate guides pressed into the cylinder head. Operating shall be of the normal pushrod/rocker type with tappet adjustment at the rocker arm.

57 Flywheel

The flywheel shall be of heavy cast iron with close coupling type cast iron flywheel housing and shall have a gear ring bolted onto it. The gear shall have heat treated teeth.

58 Crankshaft

The crankshaft shall be forged steel with induction hardened main and pin journals. It shall be statically and dynamically balanced and shall have replaceable, line steel bearings.

59 Connecting rods

The connecting rods shall be of 'T' Section forged steel.

60 Fuel and Air system

The engine shall have a mono-block injection pump which is gear driven through flexible coupling. The fuel pump shall be integral and shall incorporate a head primer. The engine shall have a multi-core injector nozzle. A fuel filter shall be provided complete with a replacement element and the engine shall have a heavy-duty oil bath air cleaner.

61 Governor

The governor shall be of the centrifugal type operating direct on the fuel line and shall be capable of maintaining the speed constant within 3% of nominal output in accordance with BS 649:1958 Class A2.

62 Protection

The engine shall be provided with the following protective devices capable of providing audible and visible alarm signals at one or more remote locations:

- (a) Low lubricating oil pressure

- (b) High lubrication oil temperature
- (c) High cooling water temperature
- (d) High engine speed

63 Instrumentation

The engine shall be provided with the following instruments to indicate the various speeds and temperatures:

- (a) Tachometer indicating the engine speed
- (b) Instrumentation to indicate the temperature of the exhaust gases.
- (c) Instrumentation to indicate the temperature of the lubrication oil.
- (d) Instrumentation to indicate the pressure of the lubrication oil
- (e) Instrumentation to indicate the temperature of the cooling water

64 Ancillary equipment

The sub-contractor shall be responsible for providing the following ancillary equipment for the installation:

Exhaust piping and heavy-duty silencer including flexible piping off the engine exhaust manifold. The exhaust piping provided shall be sufficiently long to cover the route shown on the Contract Drawings. The Contractor shall liaise with the building contractor for the final positioning of the exhaust pipe. The exhaust pipe shall be terminated in a duct 500 x 500mm internal dimension to the top of the building. Any additional silencers shall be provided to ensure the specified noise levels are maintained.

Fuel storage tank of capacity 10,500 litres with contents gauge drainpipe with cock, vent, gill connection and engine supply with isolating valve. If the generator is supplied with an integral fuel tank, the additional tank shall be supplied to make up the specified capacity.

Basic set of tools and special tools or gauges required for maintenance, all contained in a steel, lockable box. The tools may include but not limited to the following:

- (a) set of open-ended spanners
- (b) set of ring spanners
- (c) set of box spanners with tommy bar
- (d) circlip pliers (internal and external)
- (e) Normal pliers
- (f) Insulated crocodile pliers
- (g) set of insulated screwdrivers
- (h) hammer
- (i) valve spring compression tool
- (j) piston band assembling set
- (k) set of feeler gauges
- (l) valve grinding tool

(m) cleaning outfit for injector nozzle

Semi-rotary hand pump to be mounted adjacent at the Ground Floor Level with necessary piping from pump to header tank

65 Cooling system

Unless otherwise specified elsewhere, a suitable radiator shall be provided for the cooling water and lubricating oil requirements of the engine when operating under the site conditions stated. This shall be complete with engine driven fan and drive, guard for fan and drive, belt tensioner and all integral oil and water piping connections.

A suitable duct from the radiator face flange, extending to the ending room wall, total distance one metre, shall be supplied incorporating a flexible section if required. Circulation of both lubricating oil and primary water shall be catered for by means of geared or belt driven pumps, integral with the engine. A thermostatic bypass shall be fitted in the water outlet from the engine to give a quick warm up and even temperature control over the load range.

66 Lubrication

The engine components shall be lubricated via a pressure oil system from an integral oil pump driven by the engine. The system shall incorporate oil filters, the secondary oil filter being of the changeable type. A suitable relief valve shall be provided to maintain the pump discharge pressure within safe limits.

67 Starting

The engine shall start up by means of a DC motor, which shall be supplied, from a set of rechargeable batteries of an appropriate voltage and of such a capacity as to enable up to ten start-ups in one hour when fully charged.

68 Compliance

The equipment and installation shall comply with BS 649 and also with CP 323. The sub-contractor shall in his statement of compliance confirm that the engine would be capable of running on class 'A' fuel to BS 2869.

69 Noise level

The sub-contractor shall state in his statement of compliance the level of noise in decibels expected in the engine room. The set shall be supplied complete with any necessary noise reduction cover to give a maximum noise level of 70 decibels at a distance of 10 metres from the generator building.

70 Ancillary Power requirements

In selecting the size of the diesel engine, the sub-contractor shall make suitable allowances for power requirements for the cooling system, the lubricating system and any other requirements that may be necessary for that set.

71 Ventilation

The sub-contractor must ensure that adequate ventilation in the generator room is provided.

72 Exhaust Fumes

The Sub-contractor shall provide piping to discharge exhaust fumes away from the building.

GENERATOR SET

73 Alternator

The alternator shall be of 12 wire reconnectable brushless type rated at 0.8 p.f. lagging in accordance with BS 2613:1975 and having a revolving field, a single self-aligning roller bearing and solid half coupling to connect to the engine. The alternator shall be screen protected, drip-proof and shall be wound high temperature, tropicalised class B insulation of the stator and class F insulation on the rotor. The stator frame shall be barrel design with conventional two layer winding in semi-enclosed skewed slots, pitched to give a good waveform with low harmonic content. The rotor core shall be specially constructed with strip winding to obtain maximum cooling effect from the fabricated fan, with separate air circuits cooling the rotor and stator.

74 AC exciter

An AC exciter of direct-coupled flange mounted type shall be supplied. The exciter frame shall be of nodular iron and shall serve additionally as the bearing housing. The exciter armature shall be mounted on a tub on the alternator shaft. Connections shall be taken to the rotating rectifiers, which shall be carried on aluminium castings, from the main room.

75 Automatic Voltage Regulator

A Thyristor type static automatic voltage regulator shall be used to regulate machine. This regulator shall incorporate a zener diode bridge reference voltage circuit, thyristor drive reactor with series silicon diode and a further commutating diode. Under steady conditions, the automatic voltage regulator shall maintain the voltage within 3% for all balanced loads between no load and full load at power factors between unity and zero lagging. The automatic voltage regulator shall be complete with hand-operated manual control potentiometer which shall be fitted in control panel.

The voltage level controls shall enable the terminal voltage to be adjustable within the range -5% to +10%.

The voltage gain controls shall be adjustable to compensate for engine speed variations when operating with a speed droop governor.

After any change of load, the voltage shall not vary by more than -15% the rated voltage, and shall return to within -3% within 3 seconds, and to within -2.5% rated voltage within 15 seconds. On starting, the voltage overshoot shall not exceed 15% and shall return to within 3% within 3 seconds.

76 Terminal box

Any suitable dimensioned terminal box suitable for conduit or cable entry shall be supplied with undrilled gland plate.

77 Rating

The machine shall be continuously maximum rated in accordance with BS 2613 and shall give the output specified in the particular specification. Allowance shall be made for a 10% overload for one hour in any 12 hours without any injurious overheating.

78 Engine rating

The engine driving the generator set shall be rated in accordance with BS 649:1958 and shall be so de-rated owing to site conditions that the specified electrical output is obtained from the alternator. The sub-contractor shall provide additional labelling on the generator to distinguish clearly between the nameplate ratings and the actual ratings on site.

The tenderer's manufacturer's catalogue should indicate the percentage reductions from the nameplate ratings resulting from altitude and inlet temperature for any of the following engine variations:

- a) Naturally aspirated.
- b) Turbocharged without a charge air cooler.
- c) Turbo-charged with a charge air cooler.

79 Radio Interference suppression

The generator sets shall be suppressed for radio interference in accordance with BS 833 and CP 1006.

80 Duty performance

The generator will be used as a standby duty generator.

81 Generator Set specification

The generator shall be sound attenuated (super silent) and shall be rated for the following parameters after suitable derating for the site service conditions and allowing for power

requirements for integral cooling systems, lubricating system and any other integral parts of the set.

Generator output	300kVA each (at site)
Rated power factor	0.8 lagging
Rated speed	1500 RPM
Frequency	50 Hz
Rated voltage	415/240V, 3 phase
Fuel Autonomy at Full load	9 Hours
Day Tank capacity	14 days at 12-hours utilization
Maximum Sound level	70dB(A)
Ambient temperature	up to 45 degrees C

The generator set shall also be provided with heavy-duty skid base fitted with anti-vibration mountings. The sub-contractor shall include for fully commissioning the set and its control equipment, and for the purpose of the required tests, shall provide all necessary instruments, tools, fuel full tank and lubricating oil. The tests and checks shall be carried out by the sub-contractor in the presence of the Engineer or his representative, as applicable.

CONTROL CUBICLE

82 General

The control panel shall be totally enclosed type plant wall mounted in the generator room, fitted with removable covers giving access to the control gear, terminal and connection blocks and undrilled gland plates for cables entry and shall be finished in stove enameled grey hammer paint. The control panel shall be rated at 600A.

83 Function

The control cubicles shall house the start/stop buttons and protection systems and shall be complete with all the necessary relays and circuitry to the following requirements.

84 Control and Logic section

Facilities shall be available with suitable fuse protection for the following functions:

- a) Manual start
- b) Manual Stop
- c) Stall lockout, i.e. a lockout to prevent re-cranking of an engine upon fuel failure, or stall conditions.

85 Protection circuits

Suitably fused protection circuits, for oil, water, speed and one spare, shall be allowed for. The first stage protection shall be by means of fail-safe circuits, while the second stage shall be energised on fault circuits. All circuits except over-speed shall be commissioned after a delay following engine start-up.

The circuits for:-

- (a) Lubricating oil pressure.
- (b) Water temperature.
- (c) Spare.

Shall be either alarm, or alarm and shutdown. The latter shall be achieved by means of a link within the control panel. The circuit for engine over-speed shall give simultaneous alarm and shut down. When the engine has a fault condition, the protection circuits shall still accept further faults. Once a shutdown signal has been given, the protection circuits shall be locked on as (i) not to give further fault indication as engine stops (ii) to give indication of fault condition even when the engine has stopped.

The fault circuit shall be reset by pushing the "reset" button.

One audible alarm mute shall be provided for each fault channel. This shall mute the alarm for the fault causing the alarm, but shall leave the Klaxon prepared for further faults.

86 Switching section

A suitably fused switching section for engine functions as per list below shall be provided:

- (a) Fuel rack solenoid (start or stop)
- (b) Starter motor solenoid via a repeater

87 Indication

Indicator lamps as per list below shall be provided:

- (a) Engine running and protection circuits commissioned - green.
- (b) Fault parameters - all red.

The indication circuits shall have a lamp test pushbutton by means of which the lamp filaments can be tested.

88 Control switching

A rotary switch with off/on positions, to switch the control circuit supplies. In the 'ON' position the engine shall be started by depressing a push button and stopped by depressing a 'Stop' push button. The indicators, switches and push buttons shall be mounted on the front face of the chassis unit.

89 Alarm

The subcontractor shall supply and install a Klaxon which is loud enough to be heard even when the engine is running. The supply for this Klaxon shall be obtained from the control cubicle through suitably rated fuses.

90 Mains detection

A mains detection unit which can register a mains voltage failure under the following conditions shall be provided:

- (a) Failure of any one or more phases
- (b) Incorrect phase sequence
- (c) Low volts on any individual or all phases - i.e. below 85% of normal voltage.
- (d) Excessive frequency change i.e. +/- 3Hz

The failure condition shall be used to produce a start signal for the standby engine after a delay. The delay shall be adjustable and shall ensure the failure is not a transient condition. Mains detection units shall receive their sensing supplied from the main board feeding the load.

91 Instrumentation and controls

The following equipment shall be provided by the Generator supplier:

- (a) Moulded case air circuit breaker, triple pole and neutral, with magnetic release to provide alternator short circuit protection, trip free handle and shunt trip.
- (b) One bolted neutral link.
- (c) Alternator voltage trimmer regulator.
- (d) 3 No., one per phase, flush mounting ammeters.
- (e) 1 No., flush mounting voltmeter.
- (f) 1 No., voltmeter rotary selector switch.
- (g) One set of control circuit instruments and the accompanying fuses. All internal wiring, terminals, cable lugs, legends and one main earthing bar.
- (h) 1 No., frequency meter, vibrating leaf type.
- (i) 1 No., governor motor raise and lower switch. Cable boxes and glands to suit.
- (j) 1 No. kilowatt-hour meter.

92 Terminations

All internal wiring terminations shall be numbered and marked with ferrules.

93 Earthing

The sub-contractor shall be responsible for ensuring that the earthing of the generator neutral is carried out efficiently and that the resistance of the generator neutral from the earth does not exceed one ohm.

Earth pit provision has been given under builder's works for the installation of an earth mat but the sub-contractor shall be responsible for the supply and installation of an earth mat comprising of 1000mm x 1000mm mesh of 25mm x 3mm copper tape.

The earth rods shall be 2m long by 15mm diameter, extensible type as "copperweld" or other equal and approved, each pair of electrodes shall be located not less than 3m apart, the first pair being not less than 3m from the building. The copper earth mat shall be laid in 1200mm x 1200mm x 800mm deep earth the surface of the pit with a concrete inspection cover.

The subcontractor shall ensure that the earthing system of the generator is adequately bonded to the permanent earth system of the 'normal' supply. All earthing shall be carried out in accordance with the appropriate section of the IEE Regulations.

94 Trickle charger

The trickle charger shall have rating and service parameters such as to keep the engine start batteries fully charged and ready for service whenever required. When the engine is running the batteries shall be charged from integral dynamo.

95 Hours counter

The sub-contractor shall allow for the installation of an hours counter on the control panel for the generator.

96 Automatic Changeover Contactor unit

- (a) A contactor unit shall be provided in the main switchroom. On failure of the normal electricity supply the change-over panel will automatically initiate the starting of and effect the transfer of load to the standby generator. The unit shall contain power contactors and ancillary apparatus as specified.
- (b) A control cable shall be laid between the changeover panel and the generator control panel in the new generator room.
- (c) Failure of normal supply shall mean complete loss of voltage or the falling below 85% of the normal voltage between any two phases or phase and neutral.
- (d) The power circuit shall consist of two contactors feeding a common busbar to which the load will be directly connected. One contactor shall control the normal supply, the other standby supply; they shall be electrically and mechanically interlocked so that they cannot both be closed at the same time.
- (e) On failure of the normal supply, the unit shall operate in the following manner:
 - (i) After a delay, adjustable from 0 to 5 seconds (to avoid operation by a transient dip in voltage) a signal shall be given to start the standby generating set.

- (ii) On receipt of a signal from the standby generating set that it is ready to take the load and providing that the failure of the normal supply still persists, the normal supply contactor shall close. If the normal supply still persists, the normal supply contactor shall close. If the normal supply has been restored before the changeover has taken place, the contactors shall not operate and the starting delay

When the standby supply is in operation and the normal supply is restored and remains within 10% of rated voltage on all phases for a preset time (adjustable to 30 seconds) the standby contactor shall open and the contacts shall then open to shut down the standby generating set.

Provision should be so made that automatic return to normal supply can be prevented if required. Once a start signal has been sent to the standby generating set, the engine starting sequence shall be allowed to continue until the set is ready to take the load before a stopping signal is sent.

By addition of external connections the following facilities shall be made available:

- (a) Remote starting of the standby generating set and transfer of the load to it.
- (b) Restoration of the normal supply on failure of the standby generating set.

Each switch shall be labelled with its duty and each position shall be marked. The following switches shall be fitted:

Contactor control switch, with make before break contacts and "Hand" and "Auto" positions.

In the "Hand" position the unit shall be controlled by the "Contactor Hand Control Switch".

In the "Auto" position the unit shall operate automatically irrespective of the position of the "Contactor Hand Control Switch".

A contactor Hand Control Switch: with "Standby" and "Normal" positions.

An Auto Return Switch; having "ON" and "OFF" positions. In the "ON" position the return to normal supply shall be automatic when the normal supply is restored.

Contactor by-pass switches: shall be provided to enable the essential load circuits to be served direct from the normal supply to enable the generator and/or the control equipment to be serviced. The by-pass switches shall be provided with a suitable and conspicuous label warning against leaving the generator in the disconnected position.

Indicating lamps shall be provided. They shall be appropriately labelled, easily visible and shall give the following information:

- Normal supply available
- Standby supply available
- Normal supply in use
- Standby supply in use.

A push button labelled "Test" shall be provided to enable a failure of normal supply to be simulated. If the button is pressed and released the equipment shall complete the starting

sequence and when the set is ready to take the load it shall be shut down. If the button is held depressed the equipment shall change over to the standby supply when the set is ready to take load.

The control circuit supply shall be either 12 volts or 24 volts DC depending upon the starting battery and charger. No current shall be drawn from the control supply when the unit is accepting the normal power supply.

SECTION X: SCHEDULE OF UNIT RATES

- 1 The tenderer shall insert rates against the items in the following schedules and may add such other items as he considers appropriate.
- 2 The unit 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.
- 3 The unit rates will be used to assess the value of additions or omissions arising from authorized variations to the sub-contract works.
- 4 Where trade names or manufacture's catalogue numbers are mentioned in the specification, the reference is intended as a guide to the type of quality of article or quality of material required .Alternative brands of equal and approved quality will be accepted.

SCHEDULE OF UNIT RATES

(Must be completed by the Tenderer)

ITEM	DESCRIPTION	QTY/UNI	RATE (KSHS)
1	Supply and install		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

SECTION XI BILLS OF QUANTITIES

A) PRICING OF PRELIMINARIES ITEMS

Prices will be inserted against item of preliminaries in the Sub-Contractor's Bills of Quantities and specification. These Bills are designated as Bill No.1 in this Section. Where the Sub-Contractor fails to insert his price in any item he shall be deemed to have made adequate provision for this on various items in the Bills of Quantities. The preliminaries form part of this Sub-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 Sub-Contract.

The Bills of Quantities are divided generally into three sections:

Preliminaries – Bill No.1

Sub-Contractor's preliminaries are as per those described in section C – Sub-Contract Preliminaries and General Conditions of Sub-Contract. The Sub-Contractor shall study the conditions and make provision to cover their cost in this Bill. The number of preliminary items to be priced by the Tenderer has been limited to tangible items such as site office, temporary works and others. However the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.

Installation Items – Other Bills

The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the Sub-Contract Drawings, conditions of Sub-Contract and specifications.

The unit of measurements and observations are as per those described in clause 1.0 5 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.

SPECIAL NOTES TO BILLS OF QUANTITIES

1. The Bills of Quantities form part of the Sub-Contract documents and are to be read in conjunction with the Sub-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 14% VAT and 3% withholding tax).

In accordance with Government policy, the 14% 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 thereof.
4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the Sub-Contractor shall adhere. Otherwise alternative brands of equal and approved quality will be accepted.

Should the Sub-Contractor install any material not specified here in before receiving written approval from the Project Manager, the Sub-Contractor shall remove the material in question and, at his own cost, install the proper material.

5. The grand total of prices in the price summary page must be carried forward to the Form of Tender for the tender to be deemed valid.
6. Tenderers must enclose, together with their submitted tenders, manufacturer's brochures detailing technical literature and specifications of the equipment that they intend to offer. Where the brochure contains different models tenderers MUST clearly mark out the model they intend to offer by using a 'markpen'.

BILLS OF QUANTITIES

ITEM	GRAND SUMMARY PAGE	AMOUNT (KSHS)
A	INCOMING POWER - KPLC RELATED WORKS	
B	PRELIMINARIES	
C	POWER HOUSE ELECTRICS	
D	MAIN POWER DISTRIBUTION	
E	POWER FACTOR CORRECTION PANEL IN SWITCHROOM	
F	SUB -DISTRIBUTION CABLES	
G	BLOCK A	
H	BLOCK B	
I	BLOCK C	
J	BLOCK D	
K	EXTERNAL ELECTRICS	
L	LIGHTNING PROTECTION	
M	CCTV SYSTEM	
N	GENERATOR SET WITH ATS	
O	ICT & STRUCTURED CABLING	
P	FIRE ALARM AND DETECTION	
GRAND TOTAL CARRIED FORWARD TO FORM OF TENDER		

ITEM	INCOMING POWER - KPLC RELATED WORKS	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
A	Allow a PC sum (KShs.1, 500,000) for capital contribution towards KPLC incoming supply line and transformer arrangement in to the transformer room and improvements of feeds and new terminations of cut - outs and meters and extension of underground line and all new installations as necessary.	1	Sum		
B	100mm diameter Heavy gauge duct for incoming underground H.V. cables with 1:3:6 concrete surround	350	M		
C	900 x 900 x 900 concrete manhole complete with Manhole covers and Hatari(Danger) Sign indelibly engraved at the top	7	No.		
D	Hatari(Danger) sign concrete slabs	7	No.		
E	Attendance on Kenya Power and Lighting Co. Ltd.		Sum		
F	Complete Earthing system to KPLC requirements		Sum		
G	Any other item to complete the installation in this section.		Sum		
Total carried to Grand Summary on Page 115					

ITEM	PRELIMINARIES	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
A	Allow for mobilization and setting up stores, tools and all necessary equipment on site	1	Item		
B	Allow for co-ordination of works with the Main Contractor and other Sub-contractors	1	Item		
C	Allow for preparation of all "shop" drawings and submitting to the Engineers for approval prior to commencement of work on site	1	Item		
D	Arrangement for all inspections and tests of the installation that may be required by the Engineer/Client and shall provide all instruments and equipment required for these tests	1	Item		
E	Allow for preparation of all "As Built" Drawings immediately after Practical Completion of the works.	1	Item		
F	Allow for the preparation of all "Operations & Maintenance Manuals" immediately after Practical Completion of the works.	1	Item		
G	Allow for the cost of Performance Bond and Insurance of the Works in accordance with the Conditions of Contract.	1	Item		
H	Allow for on-site Training of the Operators for specialised equipment	1	Item		
I	Allow for all the preliminaries relating to this contract as specified				
J	Allow for all the conditions relating to this contract as specified	1	Item		
Total carried to Grand Summary on Page 115					

ITEM	POWER HOUSE ELECTRICS	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Supply and install the following:-				
	Lighting				
A	All lighting points wired in 1.5mm ² PVC Cu cables in 20mm diameter HG PVC conduit embedded in wall fabrics, roof structure and floor slabs complete with switches as shown on the contract drawings	25	No.		
	Luminaires as listed below:-				
B	A4	20	No.		
C	S	5	No.		
	POWER				
D	4way 63A SPN CU as MERLIN GERIN complete with MCBs or equal and approved.	1	No.		
E	All socket outlet points wired in 2.5mm ² PVC cable in conduit embedded in floor slabs and in metal trunking complete with 13A twin socket outlet as shown on the drawing	5	No.		
F	Provisions for points including laying of conduits and provision of outlet boxes for the following:				
	i) Surveillance Cameras	2	No.		
	ii) Fire Alarm & Detection System	10	No.		
Total carried to Grand Summary Page 115					

ITEM	MAIN POWER DISTRIBUTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
A	<p>Main Supply Intake Panel Low Voltage Distribution Panel in switch room</p> <p>Supply, install and commission:-</p> <p>Switch Board Switch board standardized sheet steel (2mm) execution including inscription plate and mounted on a metal support of 100mm</p> <p>Paint: Anti-rust primer : interior of panel RAL 7030 exterior of panel RAL 7030</p> <p>Mounting The equipment is to be mounted on a light metal frame, with terminals in the section</p> <p>Protection 415V 3 phase with earthing bar</p> <p>Standards The switch board to be in accordance with SEV - standards</p> <p>Voltage Rated voltage 500V 50HZ service voltage 415V 50HZ control voltage 220V 50HZ</p> <p>Busbars Laminated HDHC copper rectangular busbar rated 500A</p> <p>TYP NS 3D Protection IP 54 rear must be accessible</p> <p>Front doors Back doors Top closed Bases open Power rating 500 Amps</p>				
Sub-Total Carried Forward to Page 120					

ITEM	MAIN POWER DISTRIBUTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 119				
B	Incoming				
i)	Moulded Case Circuit breaker make MERLIN GERIN or approved equivalent, nominal rating 500A 660V 50HZ breaking capacity 50kA at 440V with over current and short circuit protection inclusive with solid state trip.	1	NO		
iii)	Current transformer 500/ 1 A	1	NO		
iv)	Voltage transformer 415/110V BTV 10 with selector switch for all phases	1	NO		
vii)	Electronic/ kWh meter similar to Merlin Gerin CE series or equal and approved	1	NO		
C	Block A Distribution Board Outgoing MCCB				
	Moulded case circuit breaker Four pole, breaking capacity 50kA rated 500A, 660V make MERLIN GERIN or LERGRAND or equal and approved to tower floors busbars with BMS compatible communicating module				
D	Research Block Outgoing MCCB				
	Moulded case circuit breaker Four pole, breaking capacity 50kA rated 500A, 660V make MERLIN GERIN or LERGRAND or equal and approved to Podium and Basement floors busbars with BMS compatible communicating module				
E	<u>Block B DB Outgoing MCCB</u>				
	Moulded case circuit breaker Four pole, breaking capacity 50kA rated 160A, 660V make MERLIN GERIN or LERGRAND or equal and approved to tower lifts Distribution board with BMS compatible communicating module				
Sub-Total Carried Forward to Page 121					

ITEM	MAIN POWER DISTRIBUTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 120				
F	Block C & D DB Outgoing MCCB Moulded case circuit breaker Four pole, breaking capacity 50kA rated 250A, 660V make MERLIN GERIN or LERGRAND or equal and approved to Podium lifts Distribution board with BMS compatible communicating module				
G	Power Factor Correction Outgoing MCCB Moulded case circuit breaker Four pole, breaking capacity 50kA rated 630A, 660V make MERLIN GERIN or LERGRAND with adjustable thermal trip or equal and approved to Power Factor Correction Bank with BMS compatible communicating module				
H	Fire Fighting Equipment Outgoing MCCB Moulded case circuit breaker Four pole, breaking capacity 50kA rated 250A, 660V make MERLIN GERIN or LERGRAND with adjustable thermal trip or equal and approved to Fire Fighting Panel Board with BMS compatible communicating module				
I	3 Phase multi function power meter with Current,Voltage, kW, kWH, kVArh, Pf and kVAh with BMS compatible communicating module				
J	4 x 150mm dia. Heavy gauge pvc duct complete with draw wire from Switch Room to Electrical Duct in Ground Floor Lift Lobby	50	M		
K	Trenching , sifting and backfilling the 750mm deep trench after laying the above ducts including compaction	50	M		
L	900 x 900 x 900 concrete manhole complete with Manhole covers and Hatari(Danger) Sign indelibly engraved at the top	2	NO		
Sub-Total Carried Forward to Page 122					

ITEM	MAIN POWER DISTRIBUTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page D- 7				
J	Kitchen Outgoing MCCB Moulded case circuit breaker, Two pole, breaking capacity 50kA rated 100A, 660V make MERLIN GERIN C101 H or LERGRAND DPX or equally approved to fire pump panel board with BMS compatible communicating module	1	NO		
K	Power Factor Outgoing MCCB Moulded case circuit breaker Triple pole make MERLIN GERIN type C401H or LEGRAND DPX range or nominal rating, 300A, 660V, breaking capacity 50kA with adjustable thermal trip or equally approved with BMS compatible communicating module	1	NO		
L	Generator Feed Outgoing MCCB Moulded case circuit breaker: Triple pole make MERLIN GERIN type C401 N or LEGRAND DPX range nominal rating 250A 415V 50HZ breaking capacity 50 kA with Adjustable thermal trip or equally approved with BMS compatible communicating module	1	NO		
M	Street Lighting Outgoing MCCB Moulded case circuit breaker : single pole , Make LEGRAND DPX range or Make Marlin Gerin Type C101H : Rated voltage 63A 660V breaking capacity 50kA or equally approved with communicating module with BMS compatible communicating module	1	NO		
N	Spare Outlet Outgoing Spare cubicle for future connection	2	NO		
O	Change Over switch comprising of 2No. 400 A 4P motorised MCCB, Electromechanical interlocked, complete with microprocessor, electronic trip, manual /bypass with BMS compatible communicating module	1	NO		
Total carried to Grand Summary Page D-1					

ITEM	POWER FACTOR CORRECTION PANEL IN SWITCHROOM	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
A	<p>For the supply and installation (refer Engineers drawing). Constructed from rolled steel angle channel section welded to form robust structure with detachable 16 gauge plates to SEV - standards mounted on B198 Sheet1 Sheet1 metal support of Sheet1</p> <p>Front doors</p> <p>Back doors</p> <p>Top closed</p> <p>Bases open</p> <p>Paint: Anti-rust primer interior of panel RAL 7030, exterior of panel RAL 7030</p> <p>Mounting: To be mounted on light frame, with terminals in the lower section</p> <p>Protection 415V 3 phase with earthing bar</p> <p>Voltage Rated voltage 500V 50HZ service voltage 415V 50HZ</p> <p>Busbars Laminated HDHC copper busbar rating 300A rectangular conductor</p>				
B	<u>Metering</u>				
i)	Current transformer self-cooled rating 630/5A				
ii)	Power factor meter direct reading range - 0.5 capacitive of built in series resistors TYPE SIEMENS M01055 - D3590				
iii)	Power factor regulator 5 steps of 100, 50,50,50,50 controller similar to siemens electronic KVAR controller type 4RY81 01 3DA01 supply voltage 415V 50HZ				
v)	Power factor correction unit comprising of 1 step 100KVA capacitor, and 4 steps of 50KVA automatic switching Capacitor banks, current transformers and control cables				
Total Carried to Grand Summary on Page 115					

ITEM	SUB-DISTRIBUTION CABLES	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Supply and install the following complete as specified:				
A	2x 185mm ² PVC/SWA/PVC 4 core armoured copper cable from main switchboard in switch room to each block(total length) complete with cable lags	60	M		
B	1x 50mm ² PVC/SWA/PVC 4 core armoured copper cable from main switchboard in switch room to block d(total length) complete with cable lags	50	M		
C	1x 50mm ² PVC/SWA/PVC 4 core armoured copper cable from main switchboard in switch room to lifts DB in each block (total length) complete with cable lags	100	M		
D	1x 150 mm ² PVC/SWA/PVC 4 core armoured copper cable from main switchboard in switch room to fire fighting equipment panel board in Block A (total length)	130	M		
E	1x 10mm ² PVC/SWA/PVC 4 core armoured copper cable from fire fighting equipment panel board in Block A to pumps DB in Block D (total length)	105	M		
F	300mmx 100mm highx16SWG slotted galvanised steel cable tray with factory made bends and tees including mounting brackets bolted to slab and on wall for sub main cables	250	M		
G	Cable Ladder From Entry Point to Riser with Brackets bolted in soffit (To withstand 60kg/m cable	30	M		
Total Carried to Grand Summary on Page 115					

ITEM	BLOCK A	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Supply and install the following:- Lighting All lighting points wired in 1.5mm ² PVC cu cables in 20mm diameter HG PVC conduit embedded in wall fabrics, roof structure and floor slabs complete with switches as shown on the contract drawings Luminaires as listed below:-				
A		290	No.		
B	A5	95	No.		
C	C	76	No.		
D	DL	80	No.		
E	DL5	57	No.		
F	EXIT _{EM}	11	No.		
G	DL1	4	No.		
I	SP	20	No.		
	POWER 6way 63A TPN DB as MERLIN GERIN complete with MCBs and blanking plates including bonding and labeling or equal and approved.	2	No.		
I	4way 63A TPN DB as MERLIN GERIN complete with MCBs and blanking plates including bonding and labeling or equal and approved.	1	No.		
J	All socket outlet points wired in 2.5mm ² PVC cable in 20mm HG PVC conduit embedded in wall fabrics, roof structure and floor slabs and complete with 13A twin socket outlet as shown on the drawing	104	No.		
Sub-Total Carried Forward to 126					

ITEM	BLOCK A	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 125				
K	16mm ² PVC/SWA/PVC 4 core armoured copper cable from main switch board tap-off to distribution board	50	M		
L	TPN 32A 415V ventilation fan Isolator with steel enclosure hinged door as Crabtree cat. No. 190323NSW1. or equivalent and approved.	2	No.		
M	6mm ² PVC/SWA/PVC 4 core copper cable from distribution board to Isolator supplying ventilation fan in 20mm HG PVC Conduit embedded in floor slab and wall	35	M		
N	TPN 100A, 415V Isolator for fire fighting Panel	1	No.		
O	16 mm ² PVC/SWA/PVC 4 core copper cable from busbar tap-off to Isolator supplying Essential Pumping Loads	16	M		
P	TPN 200A, 415V Isolator for Essential Pumping Loads	1	No.		
Q	16 mm ² PVC/SWA/PVC 4 core copper cable from main switch board to Isolator supplying Water Treatment Plant (WWTP) Load	40	M		
R	TPN 100A, 415V Isolator supplying Water Treatment Plant (WWTP) Load	1	No.		
S	300 x 150 mm galvanized steel cable tray on brackets complete with accessories to approval	30	LM		
T	Provisions for outlet points including laying of 25mm HG PVC conduits and provision of outlet boxes for the following:				
	i) Surveillance Cameras	19	No.		
	ii) Fire Alarm & Detection System	34	No.		
	iii) Data Points	52	No.		
Total Carried to Grand Summary on Page 115					

ITEM	BLOCK B	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Supply and install the following:- Lighting All lighting points wired in 1.5mm ² PVC Cu cables in 20mm diameter HG PVC conduit embedded in wall fabrics, roof structure and floor slabs complete with switches as shown on the contract drawings				
A	Luminaires as listed below:-				
B	A5	450	No.		
C	DL	160	No.		
D	DL1	218	No.		
E	EXIT _{EM}	37	No.		
F	SP	25	No.		
G	C	37	No.		
	POWER 6way 63A TPN DB as MERLIN GERIN complete with MCBs and blanking plates including bonding and labeling or equal and approved.				
H		1	No.		
I	4way 63A TPN DB as MERLIN GERIN complete with MCBs or equal and approved.	1	No.		
J	All socket outlet points wired in 2.5mm ² PVC cable in conduit embedded in floor slabs and in metal trunking complete with 13A twin socket outlet as shown on the drawing	98	No.		
Sub-Total Carried Forward to Page 128					

ITEM	BLOCK B	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 127				
J	16mm ² PVC/SWA/PVC 4 core armoured copper cable from busbars to distribution board	50	M		
K	TPN 32A 415V Isolator to ventilation fans	2	No.		
L	6mm ² PVC/SWA/PVC 4 core copper cable from distribution board to Isolator supplying ventilation fan	52	M		
R	300 x 150 mm galvanized steel cable tray on brackets complete with accessories to approval	50	LM		
M	Provisions for points including laying of conduits and provision of outlet boxes for the following:				
	i) Surveillance Cameras	15	No.		
	ii) Fire Alarm & Detection System	34	No.		
	iii) Data Points	45	No.		
Total Carried to Grand Summary on Page 115					

ITEM	BLOCK C	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Supply and install the following:- Lighting All lighting points wired in 1.5mm ² PVC Cu cables in 20mm diameterHG PVC conduit embedded in wall fabrics, roof structure and floor slabs complete with switches as shown on the contract drawings Luminaires as listed below:-				
A		497	No.		
B	A5	152	No.		
C	DL	182	No.		
D	ST	9	No.		
E	ST _{EM}	9	No.		
F	E _{EM}	14	No.		
G	EXIT _{EM}	24	No.		
H	DL1	24	No.		
I	BF	31	No.		
Sub-Total Carried Forward to Page 130					

ITEM	BLOCK C	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 129				
J	POWER 4way 100A TPN DB as MERLIN GERIN complete with MCBs or equal and approved.	2	No.		
K	Hand drier points wired in 2.5mm ² PVC cable in conduit embedded in wall fabric and floor slabs complete with 20A D.P. switch as shown on the contract drawings.contract drawings.	2	No.		
L	All socket outlet points wired in 2.5mm ² PVC cable in conduit embedded in floor slabs and in metal trunking complete with 13A twin socket outlet as shown on the drawing	109	No.		
M	TPN 45A, 415V Isolator to Pressurisation Fans wired in 16mm ² 4C PVC cable in trunking as shown on the drawing	2	No.		
N	25mm ² PVC/SWA/PVC 4 core armoured copper cable from Main Board to distribution board	50	M		
O	Fireman Switch	1	No.		
P	Provisions for points including laying of conduits and provision of outlet boxes for the following:				
	i) Surveillance Cameras	6	No.		
	ii) Fire Alarm & Detection System	70	No.		
	iii) Data Points	46	No.		
Total Carried to Grand Summary on Page 115					

ITEM	BLOCK D	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Supply and install the following:- Lighting				
A	All lighting points wired in 1.5mm ² PVC Cu cables in 20mm diameter HG PVC conduit embedded in wall fabrics, roof structure and floor slabs complete with switches as shown on the contract drawings	289	No.		
	Luminaires as listed below:-				
B	DL	7	No.		
C	DL5	54	No.		
D	A5	106	No.		
E	DL4	84	No.		
F	DL1	13	No.		
G	ST	7	No.		
H	ST _{EM}	3	No.		
I	E _{NM}	13	No.		
J	EXIT _{EM}	14	No.		
Total carried to Page D- 18					

ITEM	BLOCK D	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Total Brought forward from Page D- 17				
	POWER				
K	6way 100A TPN DB as MERLIN GERIN complete with MCBs or equal and approved.	2	No.		
L	8way 63A SPN CU as MERLIN GERIN complete with MCBs or equal and approved.	1	No.		
M	4way 63A SPN CU as MERLIN GERIN complete with MCBs or equal and approved.	1	No.		
N	Hand drier points wired in 2.5mm ² PVC cable in conduit embedded in wall fabric and floor slabs complete with 20A D.P. switch as shown on the contract drawings.	2	No.		
O	All socket outlet points wired in 2.5mm ² PVC cable in conduit embedded in floor slabs and in metal trunking complete with 13A twin socket outlet as shown on the drawing	96	No.		
P	20A DP Control Switch with neon indicator in Washrooms wired in 2.5mm ² PVC CU cable in HG PVC conduit embedded in wall fabric and floor slabs as Crabtree Cat. No. 1012/13 as shown on the contract drawings. or equal and approved	3	No.		
Q	25mm ² PVC/SWA/PVC 4 core armoured copper cable from busbars to distribution board	50	M		
R	Provisions for points including laying of conduits and provision of outlet boxes for the following:				
	i) Surveillance Cameras	7	No.		
	ii) Fire Alarm & Detection System	26	No.		
	iii) Data Points	30	No.		

Total carried to Grand Summary Page D-1

ITEM	EXTERNAL ELECTRICS	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Supply and install the following:-				
A	6M Street light column w bracket complete with 100W side entry Lantern as FELICITY or equal and approved.	25	No.		
B	Ditto; but with Double Arm Outreach bracket	3	No.		
C	4 x 6 mm ² PVC/SWA/PVC Cu armoured cable to External Services Sub-Panel including cable terminations and joints as appropriate	300	M		
D	4way 63Amps TPN external services panel board complete with Mcbs as Merlin Gerin or Equal and approved	2	No.		
Total Carried to Grand Summary on Page 115					

ITEM	LIGHTNING PROTECTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
A	Air Termination including the spike terminal, copper rod and clamp	15	No.		
	Down Conductor				
B	25 x 3mm copper tape	516	LM		
C	Tape clip	516	No.		
D	Junction clamp	86	No.		
E	38mm diameter HG PVC pipe	516	LM		
F	Testing Joints	86	No.		
G	Earth Termination				
H	15mm diameter, 4 meter length Copper Earth rod to be buried a depth of 5m below ground and spaced horizontally 3.5 meters apart in basement level 2	2	No.		
I	Earth Treatment and Bonding	4	Item		
J	Testing and commissioning of all the installations	1	Lot.		
K	Any other item to complete installation in this section (specify)	Sum	Sum		
Total Carried to Grand Summary on Page 115					

ITEM	CCTV SYSTEM	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
A	Supply, install, test, commission and maintain:- Set of outdoor IP camera to be configured for number plate recognition at the gate comprising of the following LAN network based high speed 2 MP ANPR Ultra-Low Light Bullet Camera that is able to capture vehicle and recognize vehicle number plate of various countries and regions like Support countries and regions of Mid-East, Africa, Asia-Pacific, America and Europe. 1920 × 1080 @60fps, IP67, Capture rate > 99%, Recognition rate > 98%, standard 128 G microSD/SDHC/SDXC card storage, Support three-level user authentication management, 2.8 mm to 12 mm, F1.4, horizontal field of view: 92° to 32° lens, Support vehicle speed under 120 km/h (74.6 mi/h), Up to 4 lines supported, Up to 2048 blacklist and whitelist, 850 nm IR wavelength.	2	No.		
B	Professional ANPR mounting pole for mounting the cameras	2	No.		
C	Complete CCTV control centre in security room comprising of;				
D	Operators computer as HP Compaq intel core 17 8GB HDD 1* 2TB.DVD-RAM 2Gb graphics card with full Direct X 9.0 hardware acceleration and on board video memory of 3Gb - microsoft windows 10 64bit professional running panasonic camera software station complete with interconnections and power adapters or equal and approved	1	No.		
E	55" LED high resolution smart LED color monitor c/w accessories	2	No.		
F	Video surveillance control board inclusive of joystick and accessories in security office as approved	1	No.		
Sub-Total Carried Forward to Page 136					

ITEM	CCTV SYSTEM	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 135				
G	IP CCTV system in the server room comprising of:-				
H	Smart Video Recorder with internal Recording data rate up to 512 Mbps (with Raid Enabled), Raid 0/1/5/6/10 support, 16 HDDs (Up to 8TB support per HDD) for video storage, 45 days recording period calculated for 90 cameras at 720P recording resolution, 15fps, 2048kbs, 70% activity. The server to be able to have 326.4 Mbps recording, live recording of 97.62 Mbps playback of 71.8 Mbps, storage throughput of 398.2 mbps, outgoing network of 169.72 Mbps and computational throughput of 492.12 Mbps. Show how the total storage of 45 days required is arrived at using illustrations or calculation formula. 16 ANPR camera access license included	1	Item		
I	Site management license which includes: VMS license & Embedded ANPR module for 128 cameras	1	Item		
J	Allow for configuration of the server and its accessories	1	lot		
K	Decoder supporting up to 4 video DVI-I/HDMI inputs/outputs (1U), upto 4K utput resolution for each HDMI output	1	Item		
L	Allow for liason with ICT/structured cabling subcontractor	1	Item		
Sub-Total Carried Forward to Page 137					

ITEM	CCTV SYSTEM	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 136				
	Supply and Install the following:-				
A	Set of indoor IP 5MP,1/2.5" Progressive Scan CMOS; H.265+/H.265/H.264+/H.264/MJPEG; Color: 0.01 lux@(F1.2, AGC ON), 0 lux with IR; 2.8~12mm motorized VF lens; 120dB WDR; VCA functions; 3 streams; 3D DNR; BLC; ICR; EXIR 2.0, up to 30m; All-metal housing, IP67, IK10; DC12V&PoE; Built-in micro SD/SDHC/SDXC slot; 2.8~12mm motorized VF lens,Line crossing detection, Intrusion detection, Unattended baggage detection, Object removal detection, Face detection surveillance camera		Item		
a	Block A	16	No.		
c	Block B	20	No.		
d	Block C	20	No.		
e	Block D	10	No.		
f	Service Room	2	No.		
B	Set of outdoor IP 5MP,1/2.5" Progressive Scan CMOS; H.265+/H.265/H.264+/H.264/MJPEG; Color: 0.01 lux@(F1.2, AGC ON), 0 lux with IR; 2.8~12mm motorized VF lens; up to 50m; All-metal housing, IP67; DC12V&PoE; Built-in micro SD/SDHC/SDXC slot; 2.8~12mm motorized VF lens, Line crossing detection, Intrusion detection, Unattended baggage detection, Object removal detection, Face detection	10	No.		
Sub-Total Carried Forward to Page 138					

ITEM	ACCESS CONTROL SYSTEM	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page D- 23				
	Supply and install:				
A	Door access points comprising of wiring with multi-stranded 4/6 core unscreened cable drawn in conduits/trunkings and including all the necessary accessories requirements as PAC or approved and equivalent	18	No.		
B	Security system management workstation complete with hardware, software, an application programming interface that shall be used from scripting languages such as VBScript and Jscript for implementation of real time data and all the other accessories as approved.	1	No.		
C	Doors with entry and exit readers; i-class 13.56Mhz contactless/smart as shown in the contract drawings				
	BLOCK A	10	No.		
	BLOCK B	2	No.		
	BLOCK C	2	No.		
	BLOCK D	4	No.		
D	ID cards may fare type	1000	No.		
E	Lift Controllers	2	No.		
F	Turnstiles half height as approved by the Engineer				
	Ground Floor	4	No.		
G	Biometric reader and pin for doors to telecom room, security control rooms and strong rooms as PAC or equal and approved	2	No.		
H	Programming Panel as PAC or equal and approved	1	No.		
I	Attendance for the structured cabling subcontractor during the configuration of the system	Sum	Sum		
Total Carried to Grand Summary on Page 115					

ITEM	STANDBY GENERATOR	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
A	Supply, install, test and commission 1No. 300 kVA generator set complete with synchronizing panel Supply, install, test and commission of control panel and local cabling Supply of "AS FITTED" drawings and maintenance				
B	LIST OF TOOLS TO BE SUPPLIED WITH THE SET Metal tool box with lock and 2 keys	1	No.		
	Chrome Vanadium ring spanners in size to suit the set	8	SET		
	Ditto open ended spanners	8	SET		
	screwdrivers, 75mm 200 mm and 300 mm plus 200 mm Philips type	3	SET		
	feeler gauges	1	SET		
	greases gun to suit greasing points	1	No.		
	oil can, trigger type	1	No.		
	Hydrometer and plastic filler bottle with pouring spout	1	SET		
C	Supply, instal, test and commission 1000mm x 1000mm copper tape mesh, 25mm x 3mm in 1200mm x 1200mm x 800mm earth pit and allow for the filling of pit with red soil and charcoal.	1	SET		
Sub-Total Carried Forward to Page 140					

ITEM	STANDBY GENERATOR	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
D	Sub-Total Brought Forward from Page 139				
	SPARE PARTS AND LUBRICANTS TO BE SUPPLIED				
	Oil filters	12	Set		
	Air filters to suit the set	12	Set		
	Fan belts	1	No		
	Indicator lenses	1	Set		
	Indicator lenses	1	Set		
	Overall kit	1	Set		
	Fuses	1	No		
	200 litre drum of sump oil of grade	1	No		
	FUEL STORAGE TANKS				
	Generator set fuelling enough for 9 hours running	1	No		
	Daily service tank 1800 mm x 900 mm x 1500 mm full of fuel 2430 litres	1	No		
	2400mm x 1000mm x 1500mm Auxiliary Fuel tank	1	No		
	Fuel transfer pumps	1	No		
	50mm diameter pipe complete with plugs for fuel transfer from both fuel storage room and generator room	1	No		
Total Carried to Grand Summary on Page 115					

ITEM	ICT & STRUCTURED CABLING	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
A	Supply, install, test and commission a complete solution as described below:				
	Core Switch - 10 x 40G Down-link in HA, 10 Slot Chassis as Cisco 9500 or approved equivalent as described in the specifications	1	Item		
	Distribution to Core Uplink Modules 10G 10GBASE-SR SFP Module, Enterprise-Class as Cisco SFP - 10G - SR - AO or approved equivalent as described in the specifications	8	Item		
	7-slot chassis, 10RU Distribution Switches. 10G Down-link to Access, 10G Up-link to Core as Cisco c9300 or approved equivalent as described in the specifications	4	Item		
	Data Access switches - 1G x 24 and 10G Uplink as Cisco 9200L or approved equivalent as described in the specifications	13	Item		
B	Surveillance Access Switches - 1G x 24 and 10G Uplink as Cisco 9200L or approved equivalent as described in the specifications	5	Item		
	Access to Distribution Uplink Modules 1G 1GBASE-SR SFP Module, Enterprise-Class as Cisco GLC - SX - MMD - AO or approved equivalent as described in the specifications	36	Item		
	WIRELESS				
	Wireless Controller w/rack mounting kit as Cisco or approved equivalent as described in the specifications	1	Item		
	APs Indoor 802.11ac W2 AP w/CA; 4x4:3; Int Ant; 2xGbE E as Cisco or approved equivalent as described in the specifications	34	Item		
	Outdoor Aps, 802.11ac W2 Low-Profile Outdoor AP, External Ant, E Reg Dom as Cisco or approved equivalent as described in the specifications	10	Item		
	Outdoor AP Power Injectors Power Injector (802.3at) for Aironet Access Points, as Cisco or approved equivalent as described in the specifications	10	Item		
Sub-Total Carried Forward to Page 142					

ITEM	ICT AND STRUCTURED CABLING	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
C	Sub-Total Brought Forward from Page 141				
	CABLING				
	Supply, install, test and commission a complete Cat. 6A Performance Structured Cabling solution as NEXANS or equivalent as described below:				
	HORIZONTAL CABLING				
	Cat.6A 4-pair FTP cable for data/voice outlets as as approved	45	Roll		
	Dual RJ45 Cat.6A outlets for voice / data complete with faceplate and labeling as approved	250	No.		
	24-Port Cat.6A Voice and Data modular patch panel for 4-Pair FTP cable termination as as approved	18	No.		
	1M Factory terminated Cat.6A 4 pair-FTP RJ45-RJ45 patch cords to be used inside cabinet as as approved	10	No.		
	3M Factory terminated Cat.6 4 pair-RJ45- RJ45 patch cords for voice/data outlets as as approved	25	No.		
	1U Cable managers/organisers as as approved.	36	No.		
D	CABINETS				
	Purpose-made Floor standing 19-inch, 42U, (800x1000)mm rack mount communication cabinet in the Technical Room, complete with extract fan and 12 No. 3-pin power points as APC, HP or approved equivalent	2	No.		
E	BACKBONE CABLING				
	2 runs of 4-core single mode armoured fibre optic cable linking floor cabinet edge switch to core switch in the server cabinet.(Total length of 4-core fibre cable)	2250	TBD		
	12-port fibre connector optic tray rack /patch panel	4	No.		
	3M Factory terminated fibre optic patch cords complete with connectors to be used inside cabinet	44	No.		
	Allow for Earthing of the cabinet as specified	1	No.		
Sub-Total Carried Forward to Page 143					

ITEM	ICT AND STRUCTURED CABLING	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
F	Total Brought forward from Page D- 28				
	TESTING				
	Test and commission as described below:				
	Supply and installation of all necessary consumeables e.g. factory made cable markers, cable ties, etc. for proper labeling and cable management.	1	Item		
	Carry out comprehensive Structured LAN Cabling tests and analysis, after installations	1	Item		
Total Carried to Grand Summary on Page 115					

ITEM	FIRE ALARM AND DETECTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Supply and Install the following				
1.1	Addressable Fire Alarm Control Panel, Ten loops, 100 detector and module per loop complete with the following features and interface modules: Fully networkable, BMS interface, voice evacuation with built in digital amplifier complete with power supply and charger, capability of IP network connection and as Ateis or equal and approved. Capability of Speeching, Phene Text Alerts directly to key personnel with relevant devices, LCD display	1	Item		
1.2	Battery Backup with Sealed and maintenance free, Overcharge protected, Easy Handling with leakproof construction, Ruggedly constructed, high impact case (ABS, polystyrene, or polypropylene, depending on models). Long service life and compact design	1	No		
1.3	Repeater addressable fire alarm panel complete with emergency batteries and complete with Module interface as Ateis or equal and approved	6	No		
1.4	Loop Control Module with up to 12,500 feet (3,810) on a Class B (Style 4) SLC loop (twisted-unshielded), Built-in degraded made, plug-in style installation and permits multiple loops in small enclosure	5	No		
1.5	Supply and installation of Fire Alarm Graphics System with visual display for monitoring and controlling of fire alarm sysyem	1	Item		
1.6	Network Communication Module	5	No		
Sub-Total Carried Forward to Page 145					

Item	FIRE ALARM AND DETECTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 144				
2.2	Addressable optical smoke detectors with isolator base with remote indicator	250	No.		
2.3	Linear Heat detector/PG modulator /EOL Box	20	LM		
2.4	Addressable Manual Pull Station	25	No.		
2.5	Addressable Manual Pull Station with surface mount box and weatherproof FIRE PROTECTION COVER External Stopper	5	No.		
2.6	Addressable Beam Smoke Detector Complete with mounting box and security kit	4	No.		
2.7	Red wall-mountable clear lens, chime strobe that is unmarked. Selectable strobe settings: 15,30,75,95,110, 135 and 185 cd with red, wall surface-mountable back box.	25	No.		
Sub-Total Carried Forward to Page 146					

Item	FIRE ALARM AND DETECTION	QTY	UNIT	RATE (KSHS)	AMOUNT (KSHS)
	Sub-Total Brought Forward from Page 145				
3.1	24 Volt, 6 Amp Power Supply which operates as a sync-follower or as a sync-generator and contains two fully-isolated input control circuits, Four Class B (Style Y) or Four Class A (StyleZ, with ZNAC-4 module) NACs. Compatible with coded inputs; signals passed throu Felly regulated and filterd power out - optimal for powering four-wire smoke detectors, annunciators, and other system peripherals requiring regulated/filterd power	4	No		
3.2	SPEAKER CEILING WHITE with white ceiling surface-mountable back box.	36	No		
3.3	Digital Audio Amplifiers with 2 Class A or 4 Class speaker circuits to distribute live paging and pre-recorded audio messages, multi-media support allowing the preferred media(wire, single mode fiber, multi-mode) to be used. Firefighter/ Emergency telephone circuit for easy distribution of emergency phones for live two-way communication remote microphone support for live remote paging.	2	No.		
3.4	Fire fighter's handset with fire phone storage cabinet	4	No.		
3.5	FIREFIGHTR'S PHONE JACK	4	No.		
3.6	12/24 volt horn for outdoor ceiling or wall installation	16	No.		
Total Carried to Grand Summary on Page 115					

SECTION XII: TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED

TECHNICAL SCHEDULE

- 1.0. The technical schedule shall be submitted by tenderers to facilitate and enable the Project Manager to evaluate the tenders.
- 2.0. The filling of this schedule forms part of Technical Evaluation of the tenders, and tenderers 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.
- 3.0. Any bid returned with unfilled Technical Schedule shall be considered technically non-responsive, and the tenderer shall automatically be disqualified.

TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED

(To be Completed by the Tenderer as a Mandatory Requirement)

SECTION:.....TITLE:.....

EQUIPMENT.....

ITEM	DESCRIPTION	TYPE/MAKE	COUNTRY OF ORIGIN
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

SECTION XIII

SCHEDULE OF SUB-CONTRACT DRAWINGS

DRAWING NO.	DRAWING TITLE

SECTION XIV – STANDARD FORMS

- i. Letter of Acceptance
- ii. Form of Agreement
- iii. Performance Bank Guarantee
- iv. Qualification Information
- v. Tender Questionnaire
- vi. Confidential Business Questionnaire
- vii. Details of Sub-Contractors
- viii. Letter of Notification of Award
- ix. Request for Review
- x. Anti-Corruption Declaration Commitment/Pledge
- xi. Non-Debarment Statement
- xii. Statement of Compliance
- xiii. Details of Litigations or Arbitration Proceedings

LETTER OF ACCEPTANCE

[Letterhead paper of the Employer]

_____ [Date]

To: _____
[Name of the Sub-contractor]

[Address of the Sub-contractor]

Dear Sir,

This is to notify you that your Tender datedfor the execution
of.....

.....

[name of the Sub-contract and identification number, as given in the Tender documents] for the

Sub-contract Price of Kshs..... [amount in figures][Kenya

Shillings]..... (amount in words) in

accordance with Instructions to Tenderers is hereby accepted

You are hereby instructed to proceed with the execution of the said Works in accordance with the
Sub-contract documents.

Authorized Signature

Name and Title of Signatory

Attachment: Agreement

FORM OF AGREEMENT

THIS AGREEMENT, made the _____ day of _____ 20 _____

Between of/or whose registered office is situated at.....(hereinafter called “the Employer”) of the one part ANDof/or whose registered office is situated at(hereinafter called “the Sub-contractor”) of the other part.

WHEREAS THE Employer is desirous that the Sub-contractor executes ..
.....

..... (Name and identification number of Sub-contract) (Hereinafter called “the Works”) located at
.....[Place/location of the Works]and the Employer has accepted the tender submitted by the Sub-contractor for the execution and completion of such Works and the remedying of any defects therein for the Sub-contract Price of Kshs [Amount in figures], Kenya Shillings
.....
.....[Amount in words].

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Sub-contract hereinafter referred to.
2. The following documents shall be deemed to form and shall be read and construed as part of this Agreement i.e.
 - (i) Letter of Acceptance
 - (ii) Form of Tender
 - (iii) Conditions of Sub-contract Part I
 - (iv) Conditions of Sub-contract Part II and Appendix to Conditions of Sub-contract
 - (v) Specifications
 - (vi) Drawings
 - (vii) Priced Bills of Quantities

3. In consideration of the payments to be made by the Employer to the Sub-contractor as hereinafter mentioned, the Sub-contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Sub-contract.
4. The Employer hereby covenants to pay the Sub-contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Sub-contract Price or such other sum as may become payable under the provisions of the Sub-contract at the times and in the manner prescribed by the Sub-contract.

IN WITNESS whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The common Seal of -----

Was hereunto affixed in the presence of -----

Signed Sealed, and Delivered by the said-----

Binding Signature of Employer-----

Binding Signature of Sub-contractor-----

In the presence of (i) Name -----

Address -----

Signature -----

[ii] Name -----

Address -----

Signature -----

PERFORMANCE BANK GUARANTEE

To:

.....(Name of Employer.....(Date)

.....(Address of Employer)

Dear Sir,

WHERE AS _.....(hereinafter called “the Sub-contractor”) has undertaken, in pursuance of Sub-contract No.....dated.....to execute

..... (hereinafter called “the Works”

AND WHEREAS it has been stipulated by you in the said Sub-contract that the Sub-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 Sub-contract;

AND WHEREAS we have agreed to give the Sub-contractor such a Bank Guarantee: NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Sub-contractor, up to a total of Ksh------(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 Sub-contractor before presenting us with the demand.

We further agree that no change, addition or other modification of the terms of the Sub-contract or of the Works to be performed thereunder or of any of the Sub-contract documents which may be made between you and the Sub-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 -----

QUALIFICATION INFORMATION

1. Individual Tenderers or Individual Members of Joint Ventures

1.1 Constitution or legal status of tenderer (attach copy or Incorporation Certificate);

Place of Registration

Principal Place of Business

Power of Attorney of Signatory of Tenderer

1.2 Total annual volume of construction work performed in the last five years

Year	Volume	
	Currency	Value

1.3 Schedule of completed projects of similar nature and volume over the last five years.

Project name	Name of client and contact person	Type of work performed and year of	Value of sub-contract

1.4 Schedule of on-going projects of similar nature and volume.

Project name	Name of client and contact person	Type of work performed	Value of sub-contract

1.5 Major items of Sub-contractor's Equipment proposed for carrying out the Works. List all information requested below.

Type of Equipment	Description, Make and age (years)	Condition (new, good, poor) and number available	Owned, leased (from whom?), or to be purchased (from whom?)

1.6 Qualifications and experience of key personnel proposed for administration and execution of the Sub-contract. Attach biographical data.

Position	Name	Years of experience	Years of experience in
Project Manager			
etc			

1.7 Financial reports for the last three years: balance sheets, profit and loss statements, auditor's reports, etc. List below and attach copies.

1.8 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of supportive documents.

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1.9 Tenderer's Bank Information

NAME OF BANK	BANK BRANCH	ADDRESS	TELEPHONE

1.10 Statement of compliance with the requirements of Clause 1.2 of the Instructions to Tenderers.

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 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.....

Make copy and deliver to

(Name of Employer)

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 2 (d) 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: K.
pound.....

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.....			

Part 2(c) – Registered Company:

Private or public..... State the nominal and
issued capital 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(Name of Employer) who has interest in this firm? Yes/No.....(Delete as necessary)

I certify that the information given above is correct.

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

- Attach proof of citizenship

DETAILS OF SUB-CONTRACTORS

If the Tenderer wishes to sublet any portions of the Works under any heading, he must give below details of the sub-contractors he intends to employ for each portion.

Failure to comply with this requirement may invalidate the tender.

(1) Portion of Works to be sublet.....

(i) Full name of Sub-contractor.....

and address of head office:
.....

(ii) Sub-contractor's experience of similar works carried out in the last 3 years with Sub-contract value:

.....
.....
.....

(iii) Sub-contractor's experience of similar works carried out in the last 3 years with Sub-contract value:

.....
.....
.....

2) Portion of Works to be sublet.....

(i) Full name of Sub-contractor.....

and address of head office:
.....

(ii) Sub-contractor's experience of similar works carried out in the last 3 years with Sub-contract value:

.....

.....
.....

(iii) Sub-contractor's experience of similar works carried out in the last 3 years with Sub-
contract value:

.....
.....
.....

[Signature of Tenderer)

Date

LETTER OF NOTIFICATION OF AWARD

To:

Name and Address of Sub-Contractor

RE: Tender No. _____

Tender Name _____

This is to notify that the sub-contract/s stated below under the above mentioned tender have been awarded to you.

1. Please acknowledge receipt of this letter of notification signifying your acceptance.
2. The sub-contract/sub-contracts shall be signed by the parties within 30 days of the date of this letter but not earlier than 14 days from the date of the letter.
3. You may contact the officer(s) whose particulars appear below on the subject matter of this letter of notification of award.

(FULL PARTICULARS)

SIGNED FOR ACCOUNTING OFFICE

REQUEST FOR REVIEW

REPUBLIC OF KENYA

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) ofdated the.....day of 20 in the matter of Tender No.....of20...

REQUEST FOR REVIEW

I/We....., the above named Applicant(s), of address: Physical address Fax 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. etc.

By this memorandum, the Applicant requests the Board for an order/orders that: -

- 1.
2. etc.

SIGNED (Applicant)

Dated on.....day of/...20...

FOR OFFICIAL USE ONLY

Lodged with the Secretary Public Procurement Administrative Review Board on day of20.....

SIGNED

Board Secretary

ANTI – CORRUPTION POLICY IN THE PROCUREMENT PROCESS

UNDERTAKING BY BIDDER ON ANTI – CORRUPTION POLICY / CODE OF CONDUCT AND COMPLIANCE PROGRAMME

The governments of Kenya is committed to fighting corruption in all its forms and in all its institutions to ensure that all the government earned revenues are utilized prudently and for the purpose intended with a view to promoting economic development as the country work towards actualizing Vision 2030.

Here at Jaramogi Oginga Odinga University of Science and Technology and also being one of the government entities mandated under the government to provide quality education and transforming lives, on behalf of the government, we are highly committed to fighting any form of corruption in our organization to ensure that all the monies that the government entrust with us, is optimally and prudently utilized for the benefits of all the people we serve.

The following is a requirement that every Bidder wishing to do business with JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY must comply with:

- (1) Each bidder must submit a statement, as part of the tender documents, in the format given and which must be signed personally by the Chief Executive Officer or other appropriate senior corporate officer of the bidding company and, where relevant, of its subsidiary in Kenya. If a tender is submitted by a subsidiary, a statement to this effect will also be required of the parent company, signed by its Chief Executive Officer or other appropriate senior corporate officer.
- (2) Bidders will also be required to submit similar No-bribery commitments from their subcontractors and consortium partners; the bidder may cover the subcontractors and consortium partners in its own statement, provided the bidder assumes full responsibility.
- (3)
 - a) Payment to agents and other third parties shall be limited to appropriate compensation for legitimate services.
 - b) Each bidder will make full disclosure in the tender documentation of the beneficiaries and amounts of all payments made, or intended to be made, to agents or other third parties (including political parties or electoral candidates) relating to the tender and, if successful, the implementation of the contract.
 - c) The successful bidder will also make full disclosure [quarterly or semi- annually] of all payments to agents and other third parties during the execution of the contract.
 - d) Within six months of the completion of the performance of the contract, the successful bidder will formally certify that no bribes or other illicit commissions have been paid. The final accounting shall include brief details of the goods and services provided that are sufficient to establish the legitimacy of the payments made.

- e) Statements required according to subparagraphs (b) and (d) of this paragraph will have to be certified by the company's Chief Executive Officer, or other appropriate senior corporate officer.
- (4) Tenders which do not conform to these requirements shall not be considered.
- (5) If the successful bidder fails to comply with its No-bribery commitment, significant sanctions will apply. The sanctions may include all or any of the following:
 - a) Cancellation of the contract;
 - b) Liability for damages to the public authority and/or the unsuccessful competitors in the bidding possibly in the form of a lump sum representing a pre-set percentage of the contract value (liquidated).
- (6) Bidders shall make available, as part of their tender, copies of their anti-Bribery Policy/Code of Conduct, if any, and of their-general or project - specific - Compliance Program.
- (7) The Government of Kenya through Ethics and Anti-Corruption Commission has made special arrangements for adequate oversight of the procurement process and the execution of the contract. Those charged with the oversight responsibility will have full access if need be to all documentation submitted by Bidders for this contract, and to which in turn all Bidders and other parties involved or affected by the project shall have full access (provided, however, that no proprietary information concerning a bidder may be disclosed to another bidder or to the public).

1. MEMORANDUM (FORMAT)

(Clause 46 of Kenya Public Procurement and Asset Disposal Act 2015)

This company _____(*name of company*) has issued, for the purposes of this tender, a Compliance Program copy attached -which includes all reasonable steps necessary to assure that the No-bribery commitment given in this statement will be complied with by its managers and employees, as well as by all third parties working with this company on the public sector projects or contract including agents, consultants, consortium partners, subcontractors and suppliers")"

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Bidder: _____

Address: _____

NON-DEBARMENT STATEMENT

I/We/Messrs.....

ofStreet/avenue,Building, P. O. Box.....Code, of
(Town),

..... (Nationality), Phone: E-mail

declare that I/We /Messrs

.....

are not debarred from participating in public procurement by the Public Procurement Oversight
Authority pursuant to section 115 of the Public Procurement and Disposal Act, 2005.

Dated thisday of 20.....

Authorized Signature.....Official Stamp
.....

Name and Title of
Signatory.....

STATEMENT OF COMPLIANCE

- a) I confirm compliance of all clauses of the General Conditions, General Specifications and Particular Specifications in this tender.
- b) I confirm I have not made and will not make any payment to any person, who can be perceived as an inducement to win this tender.

Signed:for and on behalf of the Tenderer

Date:

Official

Rubber

Stamp:

.....

**DETAILS OF LITIGATIONS OR ARBITRATION PROCEEDINGS
IN WHICH THE TENDERER IS INVOLVED AS ONE OF THE PARTIES**

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