



**CENTRE FOR MATHEMATICS, SCIENCE AND TECHNOLOGY
EDUCATION IN AFRICA (CEMASTEa)**

TENDER DOCUMENT FOR:

**PROVISION OF SUPPLY, INSTALLATION, TESTING, AND COMMISSIONING OF SOLAR
STREETLIGHTING (PHASE 1) AT CENTRE FOR MATHEMATICS SCIENCE AND TECHNOLOGY
EDUCATION IN AFRICA (CEMASTEa) KAREN**

OPEN TENDER

TENDER NO. CEM/SL/001/2020

Karen-Bogani road Junction P.O. Box 24214-00502

TEL: +254 020 2044406 NAIROBI, KENYA.

Email: director@cemastea.ac.ke

Website: www.cemastea.ac.ke

SECTION I

**INVITATION TO TENDER
DATE 25TH FEBRUARY 2020**

TENDER REF NO. CEM/SL/001/2020

**TENDER NAME: PROVISION OF SUPPLY, INSTALLATION, TESTING, AND
COMMISSIONING OF SOLAR STREETLIGHTING (PHASE 1) AT CENTRE
FOR MATHEMATICS SCIENCE AND TECHNOLOGY EDUCATION IN
AFRICA (CEMASTEА) KAREN**

- 1.1 The CEMASTEА invites sealed bids from eligible candidates for Supply and Delivery of Cleaning Materials.
- 1.2 Interested eligible candidates may obtain further information from and inspect the tender documents at **Supply Chain Office, CEMASTEА located at the junction of Karen- Bogani road** during normal working hours.
- 1.3 A complete set of tender documents may be obtained by interested candidates upon payment of non-refundable fees of Ksh 1,000.00 in cash or Bankers cheque payable to Director, CEMASTEА or **downloaded for free** from the CEMASTEА website **www.cemastea.ac.ke**
- 1.4 Completed tender documents are to be enclosed in plain sealed envelopes marked with tender reference number and be deposited in the Tender Box at the Administration block, CEMASTEА, located at the junction of Karen-Bogani Road or be addressed to CEMASTEА, P.O BOX 24214-00502 so as to be received on or before **Tuesday, 10TH March 2020 at 11.00 a.m.**
- 1.5 Prices quoted should be net inclusive of all taxes and delivery must be in Kenya Shillings and shall remain valid for 120 days from the closing date of the tender.
- 1.6 Tenders will be opened immediately thereafter in the presence of the Candidates or their representatives who choose to attend at the Sugiyama Hall, CEMASTEА.
- 1.7 Interested eligible candidates should come for a site visit at CEMASTEА on Wednesday 4th March 2020 and Thursday, 5th March 2020.

Director: CEMASTEА

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DEFINITIONS

The following terms and expressions used in the contract document shall have the following meanings:

The Employer	Board of Management, Centre for Mathematics, Science and Technology Education in Africa (CEMASTEА).
Employer's representative	The Director, Centre for Mathematics Science and Technology Education in Africa (CEMASTEА), P.O Box 24214 - 00502, NAIROBI.
The Project Manager	Chief Engineer (Electrical),, State Department of Public Works, P.O. Box 41191 - 00100, <u>NAIROBI.</u>
Architect	Chief Architect, State Department of Public Works, P.O. Box 30743 - 00100, <u>NAIROBI.</u>
Engineer	Chief Engineer (Electrical), State Department of Public Works, P.O. Box 41191 - 00100, <u>NAIROBI.</u>
Mechanical Engineer	Chief Engineer (Mechanical - BS) State Department of Public Works P.O. Box 41191 - 00100 <u>NAIROBI</u>
Quantity Surveyor	Chief Quantity Surveyor. State Department of Public Works, P.O. Box 30743 - 00100, <u>NAIROBI.</u>
Structural Engineer	Chief Engineer (Structural), State Department of Public Works, P.O. Box 30743 - 00100. <u>NAIROBI.</u>
Contractor	The firm appointed to carry out Solar street lighting installation works
Site	The site for the proposed works is at The Centre for Mathematics Science and Technology Education in Africa (CEMASTEА), Karen- Nairobi.

SPECIAL NOTES

1. These notes shall form part of the Instructions to Tenderers and Conditions of Contract.
2. The tenderer is required to check the number of pages in this document and should he find any missing, or in duplicate, or indistinct he should inform the **Chief Engineer-Electrical**, State Department of Public Works.
3. Should the tenderer be in any doubt about the precise meaning of any item or figure, for any reason whatsoever, he must inform the **Chief Engineer-Electrical**, State Department of Public Works, in order that the correct meaning may be decided before the date of submission of tender.
4. No liability will be admitted nor claim allowed, in respect of errors in the tender due to mistakes in the specification, which should have been rectified in the manner, described above.
5. All tenderers must make a declaration that they have not and will not make any payment to any person which can be perceived as an inducement to enable them to win this tender.

FORM OF TENDER

To: The Director,
Centre for Mathematics Science and Technology
Education in Africa (CEMASTE A),
P.O Box 24214 - 00502,
NAIROBI.

**PROPOSED SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR
STREETLIGHTING AT CENTRE FOR MATHEMATICS SCIENCE AND TECHNOLOGY
EDUCATION IN AFRICA (CEMASTE A) KAREN CAMPUS, NAIROBI.**

1. In accordance with the Instructions to Tenderers, Conditions of Contract, Specifications 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 Employer's Representative'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 for a period of 120 days from the date of tender opening, and shall remain binding upon us and may be accepted at any time before the expiry of that period.
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 of20.....

Signaturein the capacity of

duly authorized to sign tenders for and on behalf of:

.....*[Name of Tenderer]*

of.....*[Address of Tenderer]*

PIN No.

VAT CERTIFICATE No.

Witness: Name

Address

Signature

FORM OF TENDER SECURITY (BANK SECURITY)

To: The Director,
Centre for Mathematics Science and Technology
Education in Africa (CEMASTE A),
P.O Box 24214 - 00502,
NAIROBI.

**PROPOSED SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR
STREETLIGHTING AT CENTRE FOR MATHEMATICS SCIENCE AND TECHNOLOGY
EDUCATION IN AFRICA (CEMASTE A) KAREN CAMPUS, NAIROBI.**

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 bind itself, its successors and assigns by these presents sealed with the Common
Seal of the said Bank thisDay 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 this 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 for **one hundred and fifty (150) days** from the date of tender
opening, and any demand in respect thereof should reach the insurance firm not later than the said
date.

[date]

[signature of the Bank]

[witness]

[seal]

(iv)

FORM OF TENDER SECURITY (INSURANCE SECURITY)

To: The Director,
Centre for Mathematics Science and Technology
Education in Africa (CEMASTEА),
P.O Box 24214 - 00502,
NAIROBI.

PROPOSED SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR STREETLIGHTING AT CENTRE FOR MATHEMATICS SCIENCE AND TECHNOLOGY EDUCATION IN AFRICA (CEMASTEА) KAREN CAMPUS, NAIROBI.

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..... of.....(Name of Insurance Company)...having our registered office at.....(hereinafter called "the Guarantor"), are bound unto.....(hereinafter called "the Procuring Entity" in the sum of Kshs.....for which payment well and truly to be made to the said Procuring Entity, the Guarantor bind itself, its successors and assigns by these presents sealed with the Common Seal of the said Guarantor thisDay 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 this 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 for a period of **one hundred and fifty (150) days** from the date of tender opening, and any demand in respect thereof should reach the Bank not later than the said date.

[date]

[signature of the Guarantor]

[witness]

[seal]

SECTION A
INSTRUCTIONS TO TENDERERS

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INSTRUCTIONS TO TENDERERS

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INSTRUCTION TO TENDERERS

Note: The tenderer must comply with the following conditions and instructions and failure to do so is liable to result in rejection of the tender.

GENERAL

1. Definitions

- (a) **"Tenderer"** means any person or persons partnership firm or company submitting a sum or sums in the Bills of Quantities in accordance with the Instructions to Tenderers, Conditions of Contract Parts I and II, Specifications, Drawings and Bills of Quantities for the work contemplated, acting directly or through a legally appointed representative.
- (b) **"Approved tenderer"** means the tenderer who is approved by the Employer.
- (c) Any noun or adjective derived from the word **"tender"** shall be read and construed to mean the corresponding form of the noun or adjective **"bid"**. Any conjugation of the verb **"tender"** shall be read and construed to mean the corresponding form of the verb **"bid."**
- (d) **"Employer"** means a Central Government Ministry, Local Authority, State Corporation or any other Public Institution.

2. Eligibility and Qualification Requirements

- 2.1 This invitation to tender is open to all tenderers who have been prequalified.
- 2.2 To be eligible for award of Contract, the tenderer shall provide evidence satisfactory to the Employer of their eligibility under Sub clause 2.1 above and of their capability and adequacy of resources to effectively carry out the subject Contract. To this end, the tenderer shall be required to update the following information already submitted during prequalification:-
 - (a) Details of experience and past performance of the tenderer on the works of a similar nature within the past five years and details of current work on hand and other contractual commitments.
 - (b) The qualifications and experience of key personnel proposed for administration and execution of the contract, both on and off site.
 - (c) Major items of construction plant and equipment proposed for use in carrying out the Contract. Only reliable plant in good working order and suitable for the work required of it shall be shown on this schedule. The tenderer will also indicate on this schedule when each item will be available on the Works. Included also should be a schedule of plant, equipment and material to be imported for the purpose of the Contract, giving details of make, type, origin and CIF value as appropriate.

- (d) Details of subcontractors to whom it is proposed to sublet any portion of the Contract and for whom authority will be requested for such subletting in accordance with clause 4 of the Conditions of Contract.
- (e) A draft Program of Works in the form of a bar chart and Schedule of Payment which shall form part of the Contract if the tender is accepted. Any change in the Program or Schedule shall be subjected to the approval of the Engineer.
- (f) Details of any current litigation or arbitration proceedings in which the Tenderer is involved as one of the parties.

2.3 Joint Ventures

Tenders submitted by a joint venture of two or more firms as partners shall comply with the following requirements:-

- (a) The tender, and in case of a successful tender, the Form of Agreement, shall be signed so as to be legally binding on all partners.
- (b) One of the partners shall be nominated as being in charge; and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the partners.
- (c) The partner in charge shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture and the entire execution of the Contract including payment shall be done exclusively with the partner in charge.
- (d) All partners of the joint venture shall be liable jointly and severally for the execution of the Contract in accordance with the Contract terms, and a relevant statement to this effect shall be included in the authorization mentioned under (b) above as well as in the Form of Tender and the Form of Agreement (in case of a successful tender).
- (e) A copy of the agreement entered into by the joint venture partners shall be submitted with the tender.

3. Cost of Tendering

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, regardless of the conduct or outcome of the tendering process.

4. Site Visit

- 4.1 The tenderer is advised to visit and examine the Site and its surroundings and obtain for himself on his own responsibility, all information that may be necessary for preparing the tender and entering into a contract. The costs of visiting the Site shall be the tenderer's own responsibility.

4.2 The tenderer and any of his personnel or agents will be granted permission by the Employer to enter upon premises and lands for the purpose of such inspection, but only upon the express condition that the tenderer, his personnel or agents, will release and indemnify the Employer from and against all liability in respect of, and will be responsible for personal injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, costs and expenses however caused, which but for the exercise of such permission, would not have arisen.

4.3 The Employer shall organize a site visit at a date to be notified. A representative of the Employer will be available to meet the intending tenderers at the Site.

Tenderers must provide their own transport. The representative will not be available at any other time for site inspection visits.

Each tenderer shall complete the Certificate of Tenderer's Visit to the Site, whether he in fact visits the Site at the time of the organized site visit or by himself at some other time.

TENDER DOCUMENTS

5. Tender Documents

5.1 The Tender documents comprise the documents listed herebelow and should be read together with any Addenda issued in accordance with Clause 7 of these instructions to tenderers.

- a. Form of Invitation for Tenders
- b. Instructions to Tenderers
- c. Form of Tender
- d. Appendix to Form of Tender
- e. Form of Tender Surety
- f. Statement of Foreign Currency Requirements
- g. Form of Performance Security
- h. Form of Agreement
- i. Form of Advance payment Bank Guarantee
- j. Schedules of Supplementary Information
- k. General Conditions of Contract - Part I
- l. Conditions of Particular Application - Part II
- m. Specifications
- n. Bills of Quantities
- o. Drawings

5.2 The tenderer is expected to examine carefully all instructions, conditions, forms, terms, specifications and drawings in the tender documents. Failure to comply with the requirements for tender submission will be at the tenderer's own risk. Pursuant to clause 22 of Instructions to Tenderers, tenders which are not substantially responsive to the requirements of the tender documents will be rejected.

5.3 All recipients of the documents for the proposed Contract for the purpose of submitting a tender (whether they submit a tender or not) shall treat the details of the documents as "private and confidential".

6. Clarification of Tender Documents

- 6.1 A prospective tenderer requiring any clarification of the tender documents may notify the Employer in writing or by telex, cable or facsimile at the Employer's mailing address indicated in the Invitation to Tender. The Employer will respond in writing to any request for clarification which he receives earlier than 5 days prior to the expiry of 28 days deadline for the submission of tenders. Written copies of the Employer's response (including the query but without identifying the source of the inquiry) will be sent to all prospective tenderers who have purchased the tender documents.

7. Amendment of Tender Documents

- 7.1 At any time prior to the deadline for submission of tenders the Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective tenderer, modify the tender documents by issuing Addenda.
- 7.2 Any Addendum will be notified in writing or by cable, telex or facsimile to all prospective tenderers who have purchased the tender documents and will be binding upon them.
- 7.3 If during the period of tendering, any circular letters (tender notices) shall be issued to tenderers by, or on behalf of, the Employer setting forth the interpretation to be placed on a part of the tender documents or to make any change in them, such circular letters will form part of the tender documents and it will be assumed that the tenderer has taken account of them in preparing his tender. The tenderer must promptly acknowledge any circular letters he may receive.
- 7.4 In order to allow prospective tenderers reasonable time in which to take the Addendum into account in preparing their tenders, the Employer may, at his discretion, extend the deadline for the submission of tenders.

PREPARATION OF TENDERS

8. Language of Tender

- 8.1 The tender and all correspondence and documents relating to the tender exchanged between the tenderer and the Employer shall be written in the English language. Supporting documents and printed literature furnished by the tenderer with the tender may be in another language provided they are accompanied by an appropriate translation of pertinent passages in the above stated language. For the purpose of interpretation of the tender, the English language shall prevail.

9. Documents Comprising the Tender

- 9.1 The tender to be prepared by the tenderer shall comprise: the Form of Tender and Appendix thereto, a Tender Surety, the Priced Bills of Quantities and Schedules, the information on eligibility and qualification, and any other materials required to be completed and submitted in accordance with the Instructions to Tenderers embodied in these tender documents. The Forms, Bills of Quantities and Schedules provided in the tender documents shall be used without exception (subject to extensions of the schedules in the same format and to the provisions of clause 13.2 regarding the alternative forms of Tender Surety].

10. Tender Prices

- 10.1 All the insertions made by the tenderer shall be made in INK and the tenderer shall clearly form the figures. The relevant space in the Form of Tender and Bills of Quantities shall be completed accordingly without interlineations or erasures except those necessary to correct errors made by the tenderer in which case the erasures and interlineations shall be initialed by the person or persons signing the tender.
- 10.2 A price or rate shall be inserted by the tenderer for every item in the Bills of Quantities whether the quantities are stated or not items against which no rate or price is entered by the tenderer will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bills of Quantities.

The prices and unit rates in the Bills of Quantities are to be the full [all-inclusive] value of the work described under the items, including all costs and expenses which may be necessary and all general risks, liabilities and obligations set forth or implied in the documents on which the tender is based. All duties and taxes and other levies payable by the Contractor under the Contract or for any other cause as of the date 28 days prior to the deadline for the submission of tenders, shall be included in the rates and prices and the total tender prices submitted by the Tenderer.

Each price or unit rate inserted in the Bills of Quantities should be a realistic estimate for completing the activity or activities described under that particular item and the tenderer is advised against inserting a price or rate against any item contrary to this instruction.

Every rate entered in the Bills of Quantities, whether or not such rate be associated with a quantity, shall form part of the Contract. The Employer shall have the right to call for any item of work contained in the Bills of Quantities, and such items of work to be paid for at the rate entered by the tenderer and it is the intention of the Employer to take full advantage of unbalanced low rates.

- 10.3 Unless otherwise specified the tenderer must enter the amounts representing 10% of the sub-total of the summary of the Bills of Quantities for Contingencies and Variation of Prices [V.O.P.] payments in the summary sheet and add them to the sub-total to arrive at the tender amount.

- 10.4 The tenderer shall furnish with his tender written confirmation from his suppliers or manufacturers of unit rates for the supply of items listed in the Conditions of Contract clause 47 where appropriate.
- 10.5 The rates and prices quoted by the tenderer are subject to adjustment during the performance of the Contract only in accordance with the provisions of the Conditions of Contract. The tenderer shall complete the schedule of basic rates and shall submit with his tender such other supporting information as required under clause 47 of the Conditions of Contract Part II.

11. Currencies of Tender and Payment

- 11.1 Tenders shall be priced in Kenya Shillings and the tender sum shall be in Kenya Shillings.
- 11.2 Tenderers are required to indicate in the Statement of Foreign Currency Requirements, which forms part of the tender, the foreign currency required by them. Such currency should generally be the currency of the country of the tenderer's main office. However, if a substantial portion of the tenderer's expenditure under the Contract is expected to be in countries other than his country of origin, then he may state a corresponding portion of the contract price in the currency of those other countries. However, the foreign currency element is to be limited to two (2) different currencies and a maximum of 30% (thirty percent) of the Contract Price.
- 11.3 The rate of rates of exchange used for pricing the tender shall be selling rate or rates of the Central Bank ruling on the date thirty (30) days before the final date for the submission of tenders.
- 11.4 Tenderers must enclose with their tenders, a brief justification of the foreign currency requirements stated in their tenders.

12. Tender Validity

- 12.1 The tender shall remain valid and open for acceptance for a period of one hundred and twenty (120) days from the specified date of tender opening or from the extended date of tender opening (in accordance with clause 7.4 here above) whichever is the later.
- 12.2 In exceptional circumstances prior to expiry of the original tender validity period, the Employer may request the tenderer for a specified extension of the period of validity. The request and the responses thereto shall be made in writing or by cable, telex or facsimile. A tenderer may refuse the request without forfeiting his Tender Surety. A tenderer agreeing to the request will not be required nor permitted to modify his tender, but will be required to extend the validity of his Tender Surety correspondingly.

13. Tender Surety

- 13.1 The tenderer shall furnish as part of his tender, a Tender Surety in the amount stated in the Appendix to Instructions to Tenderers.
- 13.2 The unconditional Tender Surety shall be in Kenya Shillings and be in form of a certified cheque, a bank draft, an irrevocable letter of credit or a guarantee from a reputable Bank approved by the Employer located in the Republic of Kenya.
- 13.3 The format of the Surety shall be in accordance with the sample form of Tender Surety included in these tender documents; other formats may be permitted subject to the prior approval of the Employer. The Tender Surety shall be valid for twenty eight (28) days beyond the tender validity period.
- 13.4 Any tender not accompanied by an acceptable Tender Surety will be rejected by the Employer as non-responsive.
- 13.5 The Tender Sureties of unsuccessful tenderers will be returned as promptly as possible as but not later than twenty eight (28) days after concluding the Contract execution and after a Performance Security has been furnished by the successful tenderer. The Tender Surety of the successful tenderer will be returned upon the tenderer executing the Contract and furnishing the required Performance Security.
- 13.6 The Tender Surety may be forfeited:
- (a) if a tenderer withdraws his tender during the period of tender validity: or
 - (b) in the case of a successful tenderer, if he fails
 - (i) to sign the Agreement, or
 - (ii) to furnish the necessary Performance Security
 - (c) if a tenderer does not accept the correction of his tender price pursuant to clause 23.

14. No Alternative Offers

- 14.1 The tenderer shall submit an offer which complies fully with the requirements of the tender documents.

Only one tender may be submitted by each tenderer either by himself or as partner in a joint venture.

- 14.2 The tenderer shall not attach any conditions of his own to his tender. The tender price must be based on the tender documents. The tenderer is not required to present alternative construction options and he shall use without exception, the Bills of Quantities as provided, with the amendments as notified in tender notices, if any, for the calculation of his tender price.

Any tenderer who fails to comply with this clause will be disqualified.

15. Pre-Tender Meeting

- 15.1 The tenderer's designated representative is invited to attend a pre-tender meeting, which if convened, will take place at the venue and time stated in the Invitation to Tender. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 15.2 The tenderer is requested as far as possible to submit any questions in writing or by cable, to reach the Employer not later than seven days before the meeting. It may not be practicable at the meeting to answer questions received late, but questions and responses will be transmitted in accordance with the following:
- (a) Minutes of the meeting, including the text of the questions raised and the responses given together with any responses prepared after the meeting will be transmitted without delay to all purchasers of the tender documents. Any modification of the tender documents listed in --Clause 9 which may become necessary as a result of the pre-tender meeting shall be made by the Employer exclusively through the issue of a tender notice pursuant to Clause 7 and not through the minutes of the pre-tender meeting.
 - (b) Non-attendance at the pre-tender meeting will not be cause for disqualification of a bidder.

16. Format and Signing of Tenders

- 16.1 The tenderer shall prepare his tender as outlined in clause 9 above and mark appropriately one set "ORIGINAL" and the other "COPY".
- 16.2 The copy of the tender and Bills of Quantities shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the tenderer. Proof of authorization shall be furnished in the form of the written power of attorney which shall accompany the tender. All pages of the tender where amendments have been made shall be initialed by the person or persons signing the tender.
- 16.3 The complete tender shall be without alterations, interlineations or erasures, except as necessary to correct errors made by the tenderer, in which case such corrections shall be initialed by the person or persons signing the tender.

SUBMISSION OF TENDERS

17. Sealing and Marking of Tenders

- 17.1 The tenderer shall seal the original and copy of the tender in separated envelopes, duly marking the envelopes as "ORIGINAL" and "COPY". The envelopes shall then be sealed in an outer envelope.

- 17.2 The inner and outer envelopes shall be addressed to the Employer at the address stated in the Appendix to Instructions to Tenderers and bear the name and identification of the Contract stated in the said Appendix with a warning not to open before the date and time for opening of tenders stated in the said Appendix.
- 17.3 The inner envelopes shall each indicated the name and address of the tenderer to enable the tender to be returned unopened in case it is declared "late", while the outer envelope shall bear no mark indicating the identity of the tenderer.
- 17.4 If the outer envelope is not sealed and marked as instructed above, the Employer will assume no responsibility for the misplacement or premature opening of the tender. A tender opened prematurely for this cause will be rejected by the Employer and returned to the tenderer.

18 Deadline for Submission of Tenders

- 18.1 Tenders must be received by the Employer at the address specified in clause 17.2 and on the date and time specified in the Letter of Invitation, subject to the provisions of clause 7.4, 18.2 and 18.3.

Tenders delivered by hand must be placed in the "tender box" provided in the office of the Employer.

Proof of posting will not be accepted as proof of delivery and any tender delivered after the above stipulated time, from whatever cause arising will not be considered.

- 18.2 The Employer may, at his discretion, extend the deadline for the submission of tenders through the issue of an Addendum in accordance with clause 7, in which case all rights and obligations of the Employer and the tenderers previously subject to the original deadline shall thereafter be subject to the new deadline as extended.

- 18.3 Any tender received by the Employer after the prescribed deadline for submission of tender will be returned unopened to the tenderer.

19 Modification and Withdrawal of Tenders

- 19.1 The tenderer may modify or withdraw his tender after tender submission, provided that written notice of the modification or withdrawal is received by the Employer prior to prescribed deadline for submission of tenders.

The tenderer's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions for the submission of tenders, with the inner and outer envelopes additionally marked "MODIFICATION" or "WITHDRAWAL" as appropriate.

- 19.2 No tender may be modified subsequent to the deadline for submission of tenders.
- 19.3 No tender may be withdrawn in the interval between the deadline for submission of tenders and the period of tender validity specified on the tender form. Withdrawal of a tender during this interval will result in the forfeiture of the Tender Surety.
- 19.4 Subsequent to the expiration of the period of tender validity prescribed by the Employer, and the tenderer having not been notified by the Employer of the award of the Contract or the tenderer does not intend to conform with the request of the Employer to extend the period of tender validity, the tenderer may withdraw his tender without risk of forfeiture of the Tender Surety.

TENDER OPENING AND EVALUATION

20 Tender Opening

- 20.1 The Employer will open the tenders in the presence of the tenderers' representatives who choose to attend at the time and location indicated in the Letter of Invitation to Tender. The tenderers' representatives who are present shall sign a register evidencing their attendance.
- 20.2 Tenders for which an acceptable notice of withdrawal has been submitted, pursuant to clause 19, will not be opened. The Employer will examine the tenders to determine whether they are complete, whether the requisite Tender Sureties have been furnished, whether the documents have been properly signed and whether the tenders are generally in order.
- 20.3 At the tender opening, the Employer will announce the tenderer's names, total tender price, tender price modifications and tender withdrawals, if any, the presence of the requisite Tender Surety and such other details as the Employer, at his discretion, may consider appropriate. No tender shall be rejected at the tender opening except for late tenders.
- 20.4 The Employer shall prepare minutes of the tender opening including the information disclosed to those present.
- 20.5 Tenders not opened and read out at a tender opening shall not be considered further for evaluation, irrespective of the circumstances.

21 Process to be Confidential

- 21.1 After the public opening of tenders, information relating to the examination, clarification, evaluation and comparisons of tenders and recommendations concerning the award of Contract shall not be disclosed to tenderers or other persons not officially concerned with such process until the award of Contract is announced.
- 21.2 Any effort by a tenderer to influence the Employer in the process of examination, evaluation and comparison of tenders and decisions concerning award of Contract may result in the rejection of the tenderer's tender.

22 Clarification of Tenders

- 22.1 To assist in the examination, evaluation and comparison of tenders, the Employer may ask tenderers individually for clarification of their tenders, including breakdown of unit prices. The request for clarification and the response shall be in writing or by cable, facsimile or telex, 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 arithmetical errors discovered by the employer during the evaluation of the tenders in accordance with clause 24.
- 22.2 No Tenderer shall contact the Employer on any matter relating to his tender from the time of the tender opening to the time the Contract is awarded. If the tenderer wishes to bring additional information to the notice of the Employer, he shall do so in writing.

23 Determination of Responsiveness

- 23.1 Prior to the detailed evaluation of tenders, the Employer will determine whether each tender is substantially responsive to the requirements of the tender documents.
- 23.2 For the purpose of this clause, a substantially responsive tender is one which conforms to all the terms, conditions and specifications of the tender documents without material deviation or reservation and has a valid bank guarantee. A material deviation or reservation is one which affects in any substantial way the scope, quality, completion timing or administration of the Works to be undertaken by the tenderer under the Contract, or which limits in any substantial way, inconsistent with the tender documents, the Employer's rights or the tenderers obligations under the Contract and the rectification of which would affect unfairly the competitive position of other tenderers who have presented substantially responsive tenders.
- 23.3 Each price or unit rate inserted in the Bills of Quantities shall be a realistic estimate of the cost of completing the works described under the particular item including allowance for overheads, profits and the like. Should a tender be seriously unbalanced in relation to the Employer's estimate of the works to be performed under any item or groups of items, the tender shall be deemed not responsive.
- 23.4 A tender determined to be not substantially responsive will be rejected by the Employer and may not subsequently be made responsive by the tenderer by correction of the non-conforming deviation or reservation.

24 Correction of Errors

Tenders determined to be substantially responsive shall be checked by the Employer for any arithmetic errors in the computations and summations. Errors will be corrected by the Employer as follows:

- (a) Where there is a discrepancy between the amount in figures and the amount in words, the amount in words will govern.

- (b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will prevail, unless in the opinion of the Employer, there is an obvious typographical error, in which case adjustment will be made to the entry containing that error.
- (c) The amount stated in the tender will be adjusted in accordance with the above procedure for the correction of errors and, with concurrence of the tenderer, shall be considered as binding upon the tenderer. If the tenderer does not accept the corrected amount, the tender may be rejected and the Tender Security may be forfeited in accordance with clause 13.

25 Conversion to Single Currency

- 25.1 For compensation of tenders, the tender price shall first be broken down into the respective amounts payable in various currencies by using the selling rate or rates of the Central Bank of Kenya ruling on the date twenty eight (28) days before the final date for the submission of tenders.
- 25.2 The Employer will convert the amounts in various currencies in which the tender is payable (excluding provisional sums but including Day works where priced competitively) to Kenya Shillings at the selling rates stated in clause 25.1.

26 Evaluation and Comparison of Tenders

- 26.1 The Employer will evaluate only tenders determined to be substantially responsive to the requirements of the tender documents in accordance with clause 23.
- 26.2 In evaluating tenders, the Employer will determine for each tender the evaluated tender price by adjusting the tender price as follows:
 - (a) Making any correction for errors pursuant to clause 24.
 - (b) Excluding Provisional Sums and provision, if any, for Contingencies in the Bills of Quantities, but including Day works where priced competitively.
- 26.3 The Employer reserves the right to accept any variation, deviation or alternative offer. Variations, deviations, alternative offers and other factors which are in excess of the requirements of the tender documents or otherwise result in the accrual of unsolicited benefits to the Employer, shall not be taken into account in tender evaluation.
- 26.4 Price adjustment provisions in the Conditions of Contract applied over the period of execution of the Contract shall not be taken into account in tender evaluation.

- 26.5 If the lowest evaluated tender is seriously unbalanced or front loaded in relation to the Employer's estimate of the items of work to be performed under the Contract, the Employer may require the tenderer to produce detailed price analyses for any or all items of the Bills of Quantities, to demonstrate the relationship between those prices, proposed construction methods and schedules. After evaluation of the price analyses, the Employer may require that the amount of the Performance Security set forth in clause 29 be increased at the expense of the successful tenderer to a level sufficient to protect the Employer against financial loss in the event of subsequent default of the successful tenderer under the Contract.
- 26.6 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 Contract Price excluding Provisional Sums to a non-indigenous sub-contractor.

AWARD OF CONTRACT

27 Award

- 27.1 Subject to clause 27.2, the Employer will award the Contract to the tenderer whose tender is determined to be substantially responsive to the tender documents and who has offered the lowest evaluated tender price subject to possessing the capability and resources to effectively carry out the Contract Works.
- 27.2 The Employer reserves the right to accept or reject any tender, and to annul the tendering process and reject all tenders, at any time prior to award of Contract, without thereby incurring any liability to the affected tenderers or any obligation to inform the affected tenderers of the grounds for the Employer's action.

28 Notification of Award

- 28.1 Prior to the expiration of the period of tender validity prescribed by the Employer, the Employer will notify the successful tenderer by cable, telefax or telex and confirmed in writing by registered letter that his tender has been accepted. This letter (hereinafter and in all Contract documents called "Letter of Acceptance") shall name the sum (hereinafter and in all Contract documents called "the Contract Price") which the Employer will pay to the Contractor in consideration of the execution and completion of the Works as prescribed by the Contract.
- 28.2 Notification of award will constitute the formation of the Contract.
- 28.3 Upon the furnishing of a Performance Security by the successful tenderer, the unsuccessful tenderers will promptly be notified that their tenders have been unsuccessful.
- 28.4 Within twenty eight [28] days of receipt of the form of Contract Agreement from the Employer, the successful tenderer shall sign the form and return it to the Employer together with the required Performance Security.

29 Performance Guarantee

- 29.1 Within twenty eight [28] days of receipt of the notification of award from the Employer, the successful tenderer shall furnish the Employer with a Performance Security in an amount stated in the Appendix to Instructions to Tenderers.
- 29.2 The Performance Security to be provided by the successful tenderer shall be an unconditional Bank Guarantee issued at the tenderer's option by an established and a reputable Bank approved by the Employer and located in the Republic of Kenya and shall be divided into two elements namely, a performance security payable in foreign currencies (based upon the exchange rates determined in accordance with clause 35.4 of the Conditions of Contract) and a performance security payable in Kenya Shillings. The value of the two securities shall be in the same proportions of foreign and local currencies as requested in the form of foreign currency requirements.
- 29.3 Failure of the successful tenderer to lodge the required Performance Security shall constitute a breach of Contract and sufficient grounds for the annulment of the award and forfeiture of the Tender Security and any other remedy under the Contract the Employer may award the Contract to the next ranked tenderer.

30 Advance Payment

An advance payment, if approved by the Employer, shall be made under the Contract, if requested by the Contractor, in accordance with clause 23.7 of the Conditions of Contract. The Advance Payment Guarantee shall be denominated in the proportion and currencies named in the form of foreign currency requirements. For each currency, a separate guarantee shall be issued. The guarantee shall be issued by a bank located in the Republic of Kenya, or a foreign bank through a correspondent bank located in the Republic of Kenya, in either case subject to the approval of the Employer.

APPENDIX TO INSTRUCTIONS TO TENDERERS

1. CLAUSE 2.1

Change to read "This invitation is as per the tender invitation notice".

2. OMIT

Clauses 5.1 (a), (d), (f), (h), (i), (j), 10.4, 10.5, 11.2, 11.4, 15, 25, 26.6, 30

3. ADD TO CLAUSE 4.3

A mandatory site visit shall be called by the client at a date and time as indicated by the client in the tender invitation notice.

4. ADD TO CLAUSE 13.1

Amount of tender surety shall be Kshs.100,000/= either from a reputable Bank or an Insurance Firm recommended by Public Procurement Regulatory Authority (PPRA)

5. ADD TO CLAUSE 29.1

Amount of performance security shall be five per cent (5%)

6. ADD TO CLAUSE 29.2

Performance security shall not be divided in two elements and shall be payable in Kenya Shillings Only.

7. ADD CLAUSE 13.2

Tender surety shall be valid for one hundred and fifty (150) days from the date of tender opening.

8. ADD TO CLAUSE 24

- (i) In the event of a discrepancy between the tender amount as stated in the form of Tender and the corrected tender figure in the Main summary of the Bills of Quantities, the amount as stated in the Form of Tender shall prevail
- (ii) The Error correction factor shall be computed by expressing the difference between the amount and the corrected tender sum as a percentage of the corrected sub-contract works (i.e. corrected tender sum less P.C; and Provisional Sums)
- (iii) The Error correction factor shall be applied to all sub-contract works (as a rebate or addition as the case may be) for the purposes of valuations for Interim Certificates and valuation of variations.

9. MODIFY CLAUSE 10.5

Clause 47 is not part of the Conditions of Contract Part II.

10. MODIFY CLAUSE 16.2

Proof of authorization shall be furnished in the form of a written power of attorney which shall accompany the tender if the signatory to the tender is not a director of the company.

11. CLAUSE 28.4 AND 29.1

Replace "twenty eight (28) days" with "twenty one (21) days"

12. MODIFY CLAUSE 16 & 17

Only one document (THE ORIGINAL) is to be filled, signed, sealed and submitted.

13. ADD TO CLAUSE 26.

The evaluation criteria in Appendix pages A16 – A23 shall form the basis of the evaluation.

TENDER EVALUATION CRITERIA

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

1. Preliminary examination;
2. Technical evaluation;
3. Financial Evaluation; and
4. Recommendation for Award.

STAGE 1: PRELIMINARY /MANDATORY REQUIREMENTS

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

These conditions may include the following:

- i) Company Certificate of incorporation/registration;
- ii) Current certificate of Registration with National Construction Authority (NCA 7 and above) in Electrical Installation works
- iii) Current NCA contractor's Annual Practicing license;
- iv) Current Class of License with Energy Regulatory Commission (A1);
- v) Proof of payment for tender document if required;
- vi) The bid has been submitted in the format required and with all the sections as issued by the procuring entity;
- vii) Provision of a tender Security of Kshs. 100,000.00, that is in the required format, amount and that the tender is valid for the period required;
- viii) Duly filled Form of Tender;
- ix) Valid Tax Compliance Certificate;
- x) Duly filled Confidential Business Questionnaire;
- xi) Duly signed Statement of Compliance;
- xii) The required number of copies of the Bid has been submitted and all required documents, information and samples have been submitted if stipulated in the tender, advertisement/Invitation letter;
- xiii) Signed Pre-tender site visit form if pre-tender site visit is required;
- xiv) Proof of authorization shall be furnished in the form of a written power of attorney which shall accompany the tender if the signatory to the tender is not a director of the company. (Provide name and attach proof of citizenship of the signatory to the tender). Provide also Form CR12 from the Registrar of Companies.

Note:

- a) The bid security shall be in accordance with clauses 13 and 23.2 of Instruction to Tenderers which states as follows:
 - *Clause 13.1 of Instruction to Tenderers, "the tenderers shall furnish as part of his tenders a Bid surety in the amount stated in the tender document in the Appendix to Instructions to Tenderers".*
 - *Clause 13.2 of Instruction to Tenderers, "the unconditional Tender surety shall be in Kenya shillings and be in form of a certified cheque, bank draft, an irrevocable letter of credit or a guarantee from a reputable Bank/ Insurance approved by PPOA located in the Republic of Kenya. The format of the surety shall be in accordance with the sample form included in the tender documents and the tender surety shall be valid for 150 days from the date of tender opening".*

- **Clause 23.2 of Instruction to Tenderers:** *"For the purposes of this clause, a substantially responsive tender is one which conforms to all terms and condition and specifications of the tender document without material deviation or reservation and has a valid Bank/Insurance guarantee".*

- b) The employer/procuring entity may seek further clarification/confirmation if necessary to confirm authenticity/compliance of any condition of the tender. Further, in case of a discrepancy between the amounts stated in the appendix to instruction to tenderers and the one stated in the advertisement or invitation letter, the bid security shall be taken as the amount in the advertisement/ letter of invitation.

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

STAGE 2 TECHNICAL EVALUATION

The tender document shall be examined based on clause 2.2 of the Instruction to Tenderers which states as follows:

'In accordance with clause 2.2 of Instruction to Tenderers, the tenderers will be required to provide evidence for eligibility of the award of the tender by satisfying the employer of their eligibility under sub clause 2.1 of Instruction to Tenderers and their capability and adequacy of resources to effectively carry out the subject contract.

In order to comply with provisions of clause 2.2 of Instruction to Tenderers, the tenderers shall be required;

- a) *To fill the Standard Forms* provided in the bid document for the purposes of providing the required information. The tenderers may also attach the required information if they so desire;
- b) *On compliance with Technical Specifications, bidders shall supply equipment/items which comply with the technical specifications set out in the bid document. In this regard, the bidders will be required to submit relevant technical brochures/catalogues with the tender document, highlighting (using a mark-pen or highlighter) the Catalogue Number/model of the proposed items. Such brochures/catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:*
 - (i) *Standards of manufacture;*
 - (ii) *Performance ratings/characteristics;*
 - (iii) *Material of manufacture;*
 - (iv) *Electrical power ratings; and*
 - (v) *All other requirements as indicated in the technical specifications of the bid.*

The bid will then be analyzed, using the information in the technical brochures, to determine compliance with key technical specifications for the works/items as indicated in the tender document. Bidders not complying with any of the key technical specifications shall be awarded 0 marks while those meeting all the key technical specifications shall be awarded 40 marks (evaluation committee may add more key requirements from the bid technical specifications).

The tenderer shall also fill in the Technical Schedule as specified in the tender document for Equipment and Items indicating the Country of Origin, Model/Make/Manufacturer and catalogue numbers of the Items/Equipments they propose to supply.

The award of points considered in this section shall be as shown below:

<u>PARAMETER</u>	<u>MAXIMUM POINTS</u>
(i) Compliance with Technical Specifications -----	40
(ii) Tender Questionnaire -----	3
(iii) Key personnel -----	12
(iv) Contract Completed in the last Five (5) years -----	9
(v) Schedules of on-going projects -----	4
(vi) Schedules of contractors equipment -----	12
(vii) Audited Financial Report for the last 3 years -----	6
(viii) Evidence of Financial Resources -----	9
(ix) Name, Address and Telephone of Banks (Contractor to provide) ---	3
(x) Litigation History -----	2
TOTAL	<u>100</u>

The pass-mark under the Technical Evaluation is 70 percent.

The detailed scoring plan shall be as shown in table 1 below: -

TABLE 1: Assessment for Eligibility

Item	Description	Point Scored	Max. Point
1	Compliance with Technical Specifications <ul style="list-style-type: none"> Compliant----- 40 Non-compliant ----- 0 <p>(Note: Tender Evaluation Committee to carry out analysis showing how decision on this requirement has been arrived at. Attach analysis on this as an Appendix)</p>		40
2	Tender Questionnaire Form <ul style="list-style-type: none"> Completely filled ----- 3 Not filled ----- 0 		3
3	Key Personnel (Attach evidence)		
	Director of the firm <ul style="list-style-type: none"> Holder of degree in relevant Engineering field ----- 4 Holder of diploma in relevant Engineering field ----- 3 Holder of certificate in relevant Engineering field ----- 2 Holder of trade test certificate in relevant Engineering field --1 No relevant certificate ----- 0 		4
	At least 1No. degree/diploma of key personnel in relevant field <ul style="list-style-type: none"> With over 10 years relevant experience ----- 4 With over 5 years relevant experience----- 2 With under 5 years relevant experience ----- 1 		4
	At least 1No certificate holder of key personnel in relevant field <ul style="list-style-type: none"> With over 10 years relevant experience----- 2 With over 5 years relevant experience ----- 1 With under 5 years relevant experience -----0.5 		2
	At least 2No artisan (trade test certificate in relevant field) <ul style="list-style-type: none"> Artisan with over 10 years relevant experience ----- 2 Artisan with under 10 years relevant experience ----- 1 Non skilled worker with over 10 years relevant experience -- 0 		2
4	Contract completed in the last five (5) years (Max of 3 No. Projects)- Provide Evidence <ul style="list-style-type: none"> Project of similar nature, complexity and magnitude ----- 3 Project of similar nature but of lower value than the one in consideration ----- 2 No completed project of similar nature -----0 		9

Item	Description	Point Scored	Max. Point
5	On-going projects – Provide Evidence <ul style="list-style-type: none"> No Project of similar nature, complexity and magnitude - 4 Three and below Project of similar, nature complexity and magnitude -----3 Four and above project of similar, nature complexity and magnitude -----2 		4
6	Schedule of contractors equipment and transport (proof or evidence of ownership/Lease)		12
	a) Relevant Transport <ul style="list-style-type: none"> Means of transport (Vehicle) ----- 6 No means of transport ----- 0 	6	
	b) Relevant Equipment <ul style="list-style-type: none"> Has relevant equipment for work being tendered----- 6 No relevant equipment for work being tendered----- 0 	6	
7	Financial report		6
	a) Audited financial report (last three (3) years) <ul style="list-style-type: none"> Average Annual Turn-over equal to or greater the cost of the project ----- 6 Average Annual Turn-over above 50% but below 100% of the cost of the project ----- 3 Average Annual Turn-over below 50% of the cost of the project ----- 1 		
	b) Evidence of Financial Resources (cash in hand, lines of credit, over draft facility etc.) <ul style="list-style-type: none"> Has financial resources to finance the projected monthly cash flow* for three months -----9 Has financial resources equal to the projected monthly cash flow* ----- 6 Has financial resources less than the projected monthly cash flow* -----3 Has not indicated sources of financial resources ----- 0 		
8	Name, Address and Telephone of Banks (Contractor to Provide) <ul style="list-style-type: none"> Information Provided ----- 3 No Information Provided ----- 0 		3
9	Litigation History <ul style="list-style-type: none"> Filled ----- 2 Not filled ----- 0 		2
	TOTAL		100

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

**Monthly Cash Flow = Tender Sum/Contract Period*

STAGE 3 - FINANCIAL EVALUATION

Upon completion of the technical evaluation a detailed financial evaluation shall follow.

The evaluation shall be in three stages

- a) Determination of Arithmetic Errors;
- b) Comparison of Rates; and
- c) Consistency of the Rates.

A) Determination of the Arithmetic Errors

Arithmetic Errors will be corrected by the Procuring Entity as follows:

- i) In the event of a discrepancy between the amount as stated in the form of Tender and the corrected tender figure in the Main summary of the Bills of Quantities, the amount as stated in the Form of tender shall prevail. Pursuant to Section 82 of the Public Procurement and Asset Disposal Act 2015, the tender sum as submitted and read out during the tender opening shall be absolute and final and shall not be the subject of correction, adjustment or amendment in any way by any person or entity;
- ii) Error correction factor shall be computed by expressing the difference between the amount and the corrected tender sum as a percentage of the corrected contract works (i.e. corrected tender sum less P.C; and Provisional Sums);
- iii) The Error correction factor shall be applied to all contract works (as a rebate or addition as the case may be) for the purposes of valuations for Interim Certificates and valuations of variations.

B) Comparison of rates-

Items that are underpriced or overpriced may indicate potential for non-delivery and front loading respectively. The committee shall promptly write to the tenderer asking for detailed breakdown of costs for any of the quoted items, relationship between those prices, proposed construction/installation methods and schedules.

The evaluation committee shall evaluate the responses and make an appropriate recommendation to the procuring entity's tender committee giving necessary evidence. Such recommendations may include but not limited to:

- a) Recommend no adverse action to the tenderer after a convincing response;
- b) Employer requiring that the amount of the performance bond be raised at the expense of the successful tenderer to a level sufficient to protect the employer against potential financial losses;
- c) Recommend non-award based on the response provided and the available demonstrable evidence that the scope, quality, completion timing, administration of works to be undertaken by the tenderer, would adversely be affected or the rights of the employer or the tenderers obligations would be limited in a substantial way.

C) Consistency of the Rates

The evaluation committee will compare the consistency of rates for similar items and note all inconsistencies of the rates for similar items.

STAGE 4 - RECOMMENDATION FOR AWARD

The successful bidder shall be the responsive tenderer with the lowest evaluated tender price.

SECTION B

CONDITIONS OF CONTRACT

CONDITIONS OF CONTRACT

1.0 Definitions

In this contract, except where context otherwise requires, the following terms shall be interpreted as indicated;

"Bills 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.

"The Contract" Means the agreement entered into between the Employer and the Contactor 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,

"The Contractor" refers to the person or corporate body whose tender to carry out the Works has been accepted by the Employer.

"The Contractor's Tender" is the completed tendering document submitted by the Contactor to the Employer.

"The Contract Price" is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

"Days" are calendar days; **"months"** are calendar months.

"Defects" is any piece of work not completed in accordance with the Contract.

"The Defects Liability Certificate" is the certificate issued by project Manager upon correction of defects by the Contractor.

"The Defects Liability Period" is the period named in the 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 Contract.

"Dayworks" 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 Contractor to carry out the Works.

"Equipment" is the Contractor's machinery and vehicles brought temporarily to the Site for the execution of the Works.

"The intended completion date" is the date on which it is intended that the Contractor shall complete the works. The intended Completion Date may be revised only by the Project manager by issuing an extension of time or acceleration in the Works.

"Materials" are all supplies, including consumables, used by the Contractor for incorporation in order.

"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 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 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" means the place or places where the permanent Works are to be carried out including workshops where the same is being prepared.

"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 Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.

"Start Date" is the date when the Contractor shall commence execution of the Works.

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

"Temporary works" are works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.

"Employer's Representative" is the person appointed by the Employer and notified to the Contractor for the purpose of supervision of the Works.

"A Variation" is an instruction given by the Employer's Representative which varies the Works.

"The Works" are what the Contract requires the Contractor to construct, install, and turnover to the Employer.

2. Interpretation

- 2.1 In interpreting the Conditions of 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 Contract.
- 2.2 If sectional completion is specified in the Appendix to Conditions of Contract, reference in the Conditions of 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 Contract documents and shall be interpreted in the following order of priority;
- (1) Agreement,
 - (2) Letter of acceptance,
 - (3) Contractor's Tender,
 - (4) Appendix to Conditions of Contract,
 - (5) Conditions of Contract,
 - (6) Specifications,
 - (7) Drawings,
 - (8) Bills of Quantities,
 - (9) Any other documents listed in the Appendix to Conditions of Contract as forming part of the contract.
- 2.4 Immediately after the execution of the contract, the Project Manager shall furnish both the Employer and the Contractor with two copies each of all the Contract documents. Further, as and when necessary the Project manager shall furnish the 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 Contract drawings or to enable the Contractor to carry out and complete the Works in accordance with these Conditions.

3. Language and Law

- 3.1 Language of Contract and the law governing the Contract shall be English language and the Laws of Kenya respective 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 Contract 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 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. Subcontracting

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

8. Other Contractors

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

9. Personnel

- 9.1 The 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 Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within Seven days and has no further connection with the Work in the Contract.

10. Works

- 10.1 The 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 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 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 Contractor's responsibility for design of the Temporary works and all drawings prepared by the 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 Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary works and all drawings prepared by the 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.

11.4 The 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 Contract, the 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 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 Contract. If the 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 Contractor's obligations. The 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 Contractor. If possession of a part is not given by the date stated in the Appendix to Conditions of Contract, the Employer will be deemed to have delayed the start of the relevant activities, and this will be Compensation Event.

15. Access to Site

15.1 The 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 Contract is being carried out or is intended to be carried out.

16. Instructions

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

17. Extension of 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 Contractor taking steps to accelerate the remaining work, which would cause the 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 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 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 Contractor by the Employer

18. Management Meetings

- 18.1 A Contractor management meeting shall be held monthly and attended by the Project Manager and the 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 Contractor shall warn the Project at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the Work increase the Contract Price or delay the execution of the Works. The Project Manager may required the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.
- 19.2 The 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 instruction of the Project Manager.

20. Defects

- 20.1 The Project Manager shall inspect the Contractor's work and notify the Contractor of any defects that are found. Such inspection shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a defect and to uncover and test any work that the Project manager considers may have defects. Should the defect be found, the cost of uncovering and making good shall be borne by the 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 Contract Price.
- 20.2 The Project Manager shall give notice to the Contractor of any defects before the end of the Defect Liability Period, which begins at completion, and is defined in the Appendix to Conditions of 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 Contractor shall correct the notified defect within the length of time specified by the Project Manager's notice. If the 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 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 Contractor. The 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 Contractor price, the Project Manager shall adjust the rate to allow for the change.
- 21.3 If requested by the Project Manager, the 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 Contractor.
- 22.2 The 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 do not correspond with items in the Bills of Quantities, the quotation by the contractor shall be in the form of new rates for the relevant items of work.
- 22.4 If the Contractor's quotation is unreasonable, the Project manager may order the variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the variation on the Contractor's cost
- 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 works, no quotation shall be given and the variation shall be treated as a Compensation Event.
- 22.6 The Contractor shall not be entitled to additional payment for cost that could have been avoided by giving early warning.
- 22.7 When the Program is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast.

23. Payment Certificates, Currency of Payments and Advance Payments

- 23.1 The 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 Contractor considers himself to be entitled to. The Project Manager shall check the monthly application and certify the amount to be paid to the 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 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 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 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 of a result of an award by an Arbitrator, the 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 Contract.
- 23.6 The Contract Price shall be stated in Kenya Shillings. All payments to the 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 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 Contract. If the 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.
- 23.7 The Employer and the Project manager shall be notified promptly by the Contractor of any changes in the expected foreign currency requirements of the 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 Contract Price shall then be amended by agreement between Employer and the Contractor in order to reflect appropriately such changes.
- 23.8 In the event that an advance payment is granted, the following shall apply:-
- a) On signature of the Contract, the 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 contract. The advance shall not be subject to retention money.
 - b) No advance payment may be made before the 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 contractor. Reimbursement shall begin when the amount of the sums due under the Contract reaches 20% of the original amount of the 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:

R = the amount to be reimbursed

A = the amount of the advance which has been granted

X¹ = the amount of proposed cumulative payments as a percentage of the original amount of the Contract. This will exceed 20% but not exceed 80%.

X¹¹ = the amount of the previous cumulative payments as a percentage of the original amount of the 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 Contract.
- b) The Employer modifies the List of Other Contractors, etc., in a way that affects the Work of the Contractor under the 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 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 subcontract to be let.
- f) Ground conditions are substantially more³ 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 works required for safety or other reasons.
 - h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
 - i) The effects on the 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 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 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 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 Contractor's forecast cost has been provided by the Contract, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly.
- 24.4 If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.
- 24.5 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having co-operated with the Project Manager.
- 24.6 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the Appendix to Conditions of Contract.
- 24.7 The 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. Provided always that should the event giving rise to the claim of continuing effect, the 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 Contract Price if taxes, duties and other levies are changed between the date 30 days before the submission of tenders for the Contract and the date of Completion. The adjustment shall be the change in the amount of tax payable by the Contractor.
- 25.2 The Contract Price shall be deemed to be based on exchange rates current at the date of tender submission in calculating the cost to the Contractor of materials to be specifically imported (by express provision in the Contract Bills of Quantities or Specifications) for permanent incorporation in the Works.
- 25.3 Unless otherwise stated in the Contract, if any time during the period of the Contract exchange rates shall be varied and this shall affect the cost to the 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 Contract Price, as the case may be.
- 25.4 Unless otherwise stated in the Contract, the 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 price contained in the 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 (J.B.C.) 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 Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.
 - ii) Upon J.B.C. determining that any of the said rates of wages or other emoluments and expenses are increased or decreased, then the 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 J.B.C. 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.
- 25.5 The price contained in the 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 J.B.C. 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 Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.

- 25.6 Upon the J.B.C. determining that any of the said basic prices are increased or decreased then the 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 J.B.C. 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.
- 25.7 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.
- 25.8 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 rate.

26. Retention

- 26.1 The Employer shall retain from the payment due to the Contractor the proportion stated in the Appendix to Conditions of 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 Contractor and the remaining half when the Defects Liability Period has passed and the Project manager has certified that all defects notified to the Contractor before the end of this period have been corrected.

27. Liquidated damages

- 27.1 The Contractor shall pay liquidated damages to the Employer at the rate stated in the Appendix to Conditions of Contract for each day that the actual Completion Date is later than the Intended Completion Date. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not alter the Contractor's liabilities.
- 27.2 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 Contractor by adjusting the next payment certificate. The 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 not 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. Day works

- 29.1 If applicable, the Day works rates in the 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 Day works shall be recorded by the 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 Contractor shall be paid for Day works subject to obtaining signed Day works 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 contracted to him except the 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 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 contractor's risks.

- 30.4 The Contractor shall provide, in the joint names of the Employer and the 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 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 Contract, and
 - d) personal injury or death.
- 30.5 Policies and certificates for insurance shall be delivered by the 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.
- 30.6 If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.
- 30.7 Alterations to the terms of 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 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 Contractor shall issue the Project Manager with a detailed account of the total amount that the Contractor considers payable to him by the Employer under 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 Contractor within 30 days of receiving the Contractor's account if it is correct and complete.
- 32.2 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 Contractor and issue a Payment Certificate.
- 32.3 The Employer shall pay the Contractor the amount due in the Final certificate within 60 days.

33. Termination

- 33.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. These fundamental breaches of Contract shall include, but shall not be limited to, the following;
- a) The 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 Contractor to delay the progress of the works, and the instruction is not withdrawn within 30 days.
 - c) The 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 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 Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager.
 - f) the Contractor does not maintain a security, which is required.
- 33.2 When either party to the contract gives notice of 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 Contract for convenience.
- 33.4 If the Contractor is terminated, the contractor shall stop work immediately, make the site safe and secure, and leave the site as soon as reasonably possible.
- 33.5 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 Contract is terminated because of a fundamental breach of Contract by the 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 issue of the certificate. Additional liquidated damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable by the contractor.

- 34.2 If the contract is terminated for the Employer's convenience or because of a fundamental breach of 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 Contractor's personnel employed solely on the works, and the 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 and defects and may enter upon the works and use all materials on the site, plant, equipment and temporary works.
- 34.4 The contractor shall, during the execution or after the completion o 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 building, 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 Contractor, hold the proceeds less all costs incurred to the credit of the Contractor.
- 34.5 Until after completion of the works under this clause the Employer shall not be bound by any other provision of this Contract to make any payment to the 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 Contractor before such determination exceeds the total amount which would have been payable on due completion in accordance with this Contract the difference shall be a debt payable to the Employer by the Contract; 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 Contractor.

35. Release from Performance

- 35.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The 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 Payment of Commission

- 36.1 The Contractor shall not;
- a) Offer or give or agree to give to any person in the service of the 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 Contract for the Employer or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract for the Employer.

- b) Enter into this or any other 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 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.

36.2 Any breach of this Condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) shall be an offence under the provisions of the Public Procurement 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 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) Institute of Engineers of Kenya

On the request of the applying party, 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 Contract or on any matter or thing of whatsoever nature arising hereunder or in connection therewith, including any matter or thing left by this Contract to the discretion of the Project Manager, or the withholding by the Project Manager of any certificate to which the 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 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 Contract by either part:
- 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 matter shall only be referred to arbitration after the completion or alleged completion of the works or termination or alleged termination of the Contract, unless the Employer and the 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 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.
- 37.8 The award of such Arbitrator shall be final and binding upon the parties.

APPENDIX TO CONDITIONS OF CONTRACT

CONDITIONS OF CONTRACT CLAUSE 1

The Employer is: Board of Management, Centre for Mathematics, Science and Technology Education in Africa (CEMASTEА)

Represented by: The Director, Centre for Mathematics, Science and Technology Education in Africa (CEMASTEА)

Address: P.O. Box 24214- 00502, NAIROBI

CONDITIONS OF CONTRACT CLAUSE 1

The Project Manager is: Chief Engineer (Electrical), State Department of Public Works, Nairobi

Address: P.O. Box 41191 - 00100, NAIROBI

Telephone: 2723101

CONDITIONS OF CONTRACT CLAUSE 1

The name (and identification number) of the Contract is: Proposed Supply installation, Testing and Commissioning of Solar Streetlight at CEMASTEА, Karen-Nairobi.

CONDITIONS OF CONTRACT CLAUSE 1

The Contract Works consist of Supply, installation, testing and commissioning of Solar Street lighting Works.

CONDITIONS OF CONTRACT CLAUSE 1

The start date shall be as stated in the letter of acceptance

CONDITIONS OF CONTRACT CLAUSE 1

The Intended Completion Date for the whole of the Works shall be as stated in the Letter of Acceptance.

CONDITIONS OF CONTRACT CLAUSE 2

The following documents also form part of the Contract: Only as listed in Clause 2 of the conditions of contract.

The Site Possession Date shall be as stated in the Letter of Acceptance.

CONDITIONS OF CONTRACT CLAUSE 1

The Site is located at The Centre for Mathematics, Science and Technology Education in Africa (CEMASTEА), Karen- Nairobi.

CONDITIONS OF CONTRACT CLAUSE 13

The contractor shall submit a revised program for the works within 7 days of delivery of the letter of acceptance.

CONDITIONS OF CONTRACT CLAUSE 1

The Defects Liability Period is 12 months from practical completion date

CONDITIONS OF CONTRACT CLAUSE 32

Period of final measurement: 6 months after practical completion

CONDITIONS OF CONTRACT CLAUSE 27

Liquidated and Ascertained damages: At the rate of Kshs. 5,000.00 per week or part thereof

CONDITIONS OF CONTRACT CLAUSE 23

Period of honouring certificate : 45 days

Percentage of certified value retained : 10%

Limit of certified value retained : 5%

CONDITIONS OF CONTRACT CLAUSE 13.2

Period between program updates is : 14 days

OMIT CLAUSE 23.7

SECTION C

CONTRACT PRELIMINARIES

AND

GENERAL CONDITIONS

CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

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SECTION C

CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1.01 Examination of Tender Documents

The tenderer is required to check the number of pages of this document and should he find any missing or indistinct, he must inform the Engineer at once and have the same rectified.

All tenderers shall be deemed to have carefully examined the following:

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

He shall also be deemed to have included for any expenditure which may be incurred in conforming with the above items (a), (b), (c) and observe this expense as being attached to the contract placed for the whole or any part of the work.

The tenderer shall ensure that all ambiguities, doubts or obscure points of detail, are clarified with the Engineer before submission of his tender, as no claims for alleged deficiencies in the information given shall be considered after this date.

1.02 Discrepancies

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

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

1.03 Conditions of Contract Agreement

The contractor shall be required to enter into a contract with the Employer.

The Conditions of the Contract between the Contractor and the Employer as hereinafter defined shall be the latest edition of the Agreement and Schedule of Conditions of Kenya Association of Building and Civil Engineering Contractors as particularly modified and amended hereinafter.

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

1.04 Payment

Payment will be made through certificates to the Contractor. All payments will be less retention as specified in the Main Contract. No payment will become due until materials are delivered to site.

1.05 Definition of Terms

Throughout these contract documents units of measurements, terms and expressions are abbreviated and wherever used hereinafter and in all other documents they shall be interpreted as follows:

- i) **Employer:** The term “**Employer**” shall mean **Board of Management, Centre for Mathematics, Science and Technology Education in Africa (CEMASTE A)**; as represented by **The Director, CEMASTE A, P o box 24214-00502 Nairobi**
- ii) **Architect:** The term “**Architect**” shall mean **The Chief Architect, State Department of Public Works.**
- iii) **Quantity Surveyor:** The term “**Quantity Surveyor**” shall mean **The Chief Quantity Surveyor, State Department of Public Works**
- iv) **Civil/Structural Engineers:** The term “**Civil/Structural Engineers**” shall mean **The Chief Engineer(Structural), State Department of Public Works**
- v) **Electrical Engineer:** The term “**Engineer**” shall mean **Chief Engineer (Electrical), State Department of Public Works**
- vi) **Mechanical Engineer:** The term “**Engineer**” shall mean **Chief Engineer (Mechanical), State Department of Public Works**
- vii) **Contractor:** The term “**Contractor**” shall mean the firm or company appointed to carry out the Electrical installation works and shall include his or their heir, executors, assigns, administrators, successors, and duly appointed representatives.
- vii) **Contract Works:** The term “**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 contract and whether the same may be on site or not.
- viii) **Contract Drawings:** The term “**Contract Drawings**” shall mean those drawings required or referred to herein and forming part of the Bills of Quantities.
- ix) **Working Drawings:** The term “**Working Drawings**” shall mean those drawings required to be prepared by the contractor as hereinafter described.
- x) **Record Drawings:** The term “**Record Drawings**” shall mean those drawings required to be prepared by the contractor showing “as installed” and other records for the contract Works.

xi) **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 shall mean **Kenya Bureau of Standards**

BS shall mean. **Current standard British Standard Specification published by the British Standard Institution, 2 Park Street, London W1, England**

"Ditto" shall mean the whole of the preceding description in which it occurs. Where it occurs in description of succeeding item it shall mean the same as in the first description of the series in which it occurs except as qualified in the description concerned. Where it occurs in brackets it shall mean the whole of the preceding description which is contained within the appropriate brackets.

1.06 **Site Location**

The site of the Contract Works is situated at **The Centre for Mathematics, Science and Technology Education in Africa (CEMASTEa), Karen- Nairobi.**

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 contract Works shall have to be carried out and no claims for extras will be considered on account of lack of knowledge in this respect.

1.07 **Duration of Contract**

The Contractor shall be required to phase his work in accordance with the works programme (or its revision). The programme is to be agreed with the Project Manager.

1.08 **Scope of Contract Works**

The contractor shall supply, deliver, unload, hoist, fix, test, commission and hand-over in satisfactory working order the complete installations specified hereinafter and/or as shown on the Contract Drawings attached hereto, including the provision of labour, transport and plant for unloading material and storage, and handling into position and fixing, also the supply of ladders, scaffolding the other mechanical devices to plant, installation, painting, testing, setting to work, the removal from site from time to time of all superfluous material and rubbish caused by the works.

The contractor shall supply all accessories, whether of items or equipment supplied but to be fixed and commissioned under this contract.

1.09 Extent of the contractor's Duties

At the commencement of the works, the contractor shall investigate and report to the Engineer if all materials and equipment to be used in the work and not specified as supplied by the others are available locally. If these materials and equipment are not available locally, the contractor shall at this stage place orders for the materials in question and copy the orders to the Engineer. Failure to do so shall in no way relieve the contractor from supplying the specified materials and equipment in time.

Materials supplied by others for installation and/or connection by
The contractor shall be carefully examined in the presence of the Supplier before installation and connection. Any defects noted shall immediately be reported to the Engineer.

The contractor shall be responsible for verifying all dimensions relative to his work by actual measurements taken on site.

The contractor shall mark accurately on one set of drawings and indicate all alterations and/or modifications carried out to the designed system during the construction period. This information must be made available on site for inspection by the Engineer.

1.10 Execution of the Works

The works shall be carried out strictly in accordance with:

- a) All relevant Kenya Bureau of Standards Specifications.
- b) All relevant British Standard Specifications and Codes of Practice (hereinafter referred to as B.S. and C.P. respectively).
- c) This Specification.
- d) The Contract Drawings.
- e) The Bye-laws of the Local Authority.
- f) The Engineer's Instructions.

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

1.11 Validity of Tender

The tender shall remain valid for acceptance within 120 days from the final date of submission of the tender, and this has to be confirmed by signing the Tender Bond. The tenderer shall be exempted from this Bond if the tender was previously withdrawn in writing to the Employer before the official opening.

1.12 **Firm – Price contract**

Unless specifically stated in the documents or the invitation to tender, this is a firm-price Contract and the contractor must allow in his tender for the increase in the cost of labour and/or materials during the duration of the contract. No claims will be allowed for increased costs arising from the fluctuations in duties and/or day to day currency fluctuations. The contractor will be deemed to have allowed in his tender for any increase in the cost of materials which may arise as a result of currency fluctuation during the contract period.

1.13 **Variation**

No alteration to the contract Works shall be carried out until receipt by the contractor of written instructions from the Project Manager.

Any variation from the 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 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 Project Manager requires additional work to be performed, the contractor, if he considers it necessary, will give notice within seven (7) days to the Project Manager of the length of time he (the contractor) requires over and above that allotted for completion of the contract. If the 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 Contractor may be nominated by the Project Manager to supply and/or install any equipment covered by the Prime Cost or Provisional Sums contained within the Contract documents.

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

The whole or any part of these sums utilised by the contractor shall be deducted from the value of the contract price when calculating the final account.

1.15 **Bond**

The tenderer must submit with his tender the name of one Surety who must be an established Bank only who will be willing to be bound to the Employer for an amount equal to 7½ % of the contract amount as Clause 31 of the Main Contract.

1.16 **Government Legislation and Regulations**

The contractor's attention is called to the provision of the Factory Act 1972 and subsequent amendments and revisions, and allowance must be made in his tender for compliance therewith, in so far as they are applicable.

The contractor must also make himself acquainted with current legislation and any Government regulations regarding the movement, housing, security and control of labour, labour camps, passes for transport, etc.

The contractor shall allow for providing holidays and transport for work people, and for complying with Legislation, Regulations and Union Agreements.

If the 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.

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The contractor must also make himself acquainted with current legislation and any Government regulations regarding the movement, housing, security and control of labour, labour camps, passes for transport, etc.

The contractor shall allow for providing holidays and transport for work people, and for complying with Legislation, Regulations and Union Agreements.

1.17 Import Duty and Value Added Tax

The contractor will be required to pay full Import Duty and Value Added Tax on all items of equipment, fittings and plant, whether imported or locally manufactured. The tenderer shall make full allowance in his tender for all such taxes.

1.18 Insurance Company Fees

Attention is drawn to the tenderers to allow for all necessary fees, where known, that may be payable in respect of any fees imposed by Insurance Companies or statutory authorities for testing or inspection.

No allowance shall be made to the contractor with respect to fees should these have been omitted by the tenderer due to his negligence in this respect.

1.19 Provision of Services by the Contractor

Contractor shall make the following facilities available for his use:

- a) Attendance 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, all plugging for fixing, fittings, machinery, fan ducting, etc., and all drilling and tapping of steel work. Any purpose made fixing brackets shall not constitute Builder's Work and shall be provided and installed by the contractor unless stated hereinafter otherwise.
- b) The provision of temporary water, lighting and power: All these services utilized shall be paid for by the Contractor
- c) Fixing of anchorage and pipe supports in the shuttering, anchorage 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 Contract Works
 - ii) Any specialist scaffolding, cranes, etc. to be used by any Contractor for his own exclusive use shall be paid for by the Contractor.

1.20 Suppliers

The contractor shall submit names of any supplier for the materials to be incorporated, to the Engineer for approval. The information regarding the names of the suppliers may be submitted at different times, as may be convenient, but no sources of supply will be changed without prior approval. Each supplier must be willing to admit the Engineer or his representative to his premises during working hours for the purpose of examining or obtaining samples of the materials in question.

1.21 Samples and Materials Generally

The contractor shall, when required, provide for approval at no extra cost, samples of all materials to be incorporated in the works. Such samples, when approved, shall be retained by the Engineer and shall form the standard for all such materials incorporated.

1.22 Administrative Procedure and Contractual Responsibility

The Contractor is entirely responsible to the Employer for the whole of the works including any Contract Works and shall deal direct with the Employer or Engineer.

1.23 **Bills of Quantities**

The Bills of Quantities have been prepared in accordance with the standard method of measurement of Building Works for East Africa, first Edition, Metric, 1970. All the Quantities are based on the Contract Drawings and are provisional and they shall not be held to gauge or to limit the amount or description of the work to be executed by the contractor but the value thereof shall be deducted from the Contract Sum and the value of the work ordered by the Engineer and executed thereunder shall be measured and valued by the Engineer in accordance with the conditions of the contract.

All work liable to adjustment under this contract shall be left uncovered for a reasonable time to allow measurements needed for such adjustment to be taken by the Quantity Surveyor or Engineer. Immediately the work is ready for measuring the Contractor shall give notice to the Quantity Surveyor or Engineer to carry out measurements before covering up. If the contractor shall make default in these respects he shall, if the Project Manager so directs, uncover the work to enable the necessary measurements to be taken and afterwards reinstate at his own expense.

1.24 **Contractor's Office in Kenya**

The contractor shall maintain (after first establishing if necessary) in Kenya an office staffed with competent manager and such supporting technical and clerical staff as necessary to control and coordinate the execution and completion of the contract Works.

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

It shall be the contractor's responsibility to procure work permits, entry permits, licenses, registration, etc., in respect of all expatriate staff.

The Contractor shall prepare a substantial proportion of his Working Drawings at his office in Kenya. No reasons for delays in the preparation or submission for approval or otherwise of such drawings or proposals will be accepted on the grounds that the contractor's Head Office is remote from his office in Nairobi or the site of the contract Works or otherwise.

1.25 **Builder's Work**

All chasing, cutting away and making good will be done by the Contractor. The contractor shall also mark out in and be responsible for accuracy of the size and position of all holes and chases required.

The contractor shall drill and plug holes in floors, walls, ceiling and roof for securing services and equipment requiring screw or bolt fixings.

The contractor shall also provide and install any purpose made fixing brackets.

1.26 **Structural Provision for the Works**

Preliminary major structural provision has been made for the contract works based on outline information ascertained during the preparation of the Specification.

The preliminary major structural provision made will be deemed as adequate unless the contractor stated otherwise when submitting his tender.

Any major structural provision or alteration to major structural provisions required by the Contractor shall be shown on Working Drawings to be submitted to the Engineer within 30 days of being appointed.

No requests for alterations to preliminary major structural provisions will be approved except where they are considered unavoidable by the Engineer. In no case will they be approved if building work is so far advanced as to cause additional costs or delays in the work of the contractor.

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

The Contract Drawings give a general indication of the intended layout. The position of the equipment and apparatus, and also the exact routes of the ducts, main and distribution pipework shall be confirmed before installation is commenced. The exact sitting of appliances, pipework, etc., may vary from that indicated.

The routes of services and positions of apparatus shall be determined by the approved dimensions detailed in the Working Drawings or on site by the Engineer in consultation with the contractor.

Services 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 in this respect shall be the contractor's responsibility.

The contractor shall be deemed to have allowed in his contract sum for locating terminal points of services (e.g. lighting, switches, socket outlets, lighting points, control switches, thermostats and other initiating devices, taps, stop cocks) in positions plus or minus 1.2m horizontally and vertically from the locations shown on Contract Drawings. Within these limits no variations in the Contract Sum will be made unless the work has already been executed in accordance with previously approved Working Drawings and with the approval of the Engineer.

1.28 **Checking of Work.**

The Contractor shall satisfy himself to the correctness of the connections he makes to all items of equipment supplied under the contract agreement and equipment supplied under other contracts before it is put into operation. Details of operation, working pressures, temperatures, voltages, phases, power rating, etc., shall be confirmed to others and confirmation received before the system is first operated.

1.29 **Setting to Work and Regulating System.**

The contractor shall carry out such tests of the contract Works as required by British Standard Specifications or equal and approved codes as specified hereinafter and as customary.

No testing or commissioning shall be undertaken except in the presence of and to the satisfaction of the Engineer unless otherwise stated by him (Contractor's own preliminary and proving tests accepted).

It will be deemed that the contractor has included in the contract Sum for the costs of all fuel, power, water and the like, for testing and commissioning as required as part of the contract Works. He shall submit for approval to the Engineer a suitable programme for testing and commissioning. The Engineer and Employer shall be given ample warning in writing, as to the date on which testing and commissioning will take place.

The contractor shall commission the contract Works and provide attendance during the commissioning of all services, plant and apparatus connected under the contract Agreement or other Contract Agreements, related to the project.

Each system shall be properly balanced, graded and regulated to ensure that correct distribution is achieved and where existing installations are affected, the Contractor shall also regulate these systems to ensure that their performance is maintained.

The proving of any system of plant or equipment as to compliance with the Specification shall not be approved by the Engineer, except at his discretion, until tests have been carried out under operating conditions pertaining to the most onerous conditions specified except where the time taken to obtain such conditions is unreasonable or exceeds 12 months after practical completion of the contract Works.

1.30 Identification of Plant Components

The contractor shall supply and fix identification labels to all plant, starters, switches and items of control equipment including valves, with white traffolyte or equal labels engraved in red lettering denoting its name, function and section controlled. The labels shall be mounted on equipment and in the most convenient positions. Care shall be taken to ensure the labels can be read without difficulty. This requirement shall apply also to major components of items of control equipment.

Details of the lettering of the labels and the method of mounting or supporting shall be forwarded to the Engineer for approval prior to manufacture.

1.31 Contract Drawings

The Contract Drawings when read in conjunction with the text of the Specification, have been completed in such detail as was considered necessary to enable competitive tenders to be obtained for the execution and completion of the contract works. The Contract Drawings are not intended to be Working Drawings and shall not be used unless exceptionally they are released for this purpose.

1.32 Working Drawings

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

If the contractor requires any further instructions, details, Contract Drawings or information drawings to enable him to prepare his Working Drawings or proposals, the Contractor shall accept at his own cost, the risk that any work, commenced or which he intends to commence at site may be rejected.

The Engineer, in giving his approval to the Working Drawings, will presume that any necessary action has been, or shall be taken by the contractor to ensure that the installations shown on the Working Drawings have been cleared with the Project Manager and any other Contractors whose installations and works might be affected.

If the contractor submits his Working Drawings to the Engineer without first liaising and obtaining clearance for his installations from the Project Manager and other Contractors whose installations and works might be affected, then he shall be liable to pay for any alterations or modification to his own, the Contractor's or other Contractor's installations and works, which are incurred, notwithstanding any technical or other approval received from the Engineer.

Working Drawings to be prepared by the contractor shall include but not be restricted to the following:

- a) Any drawings required by the 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 Contractor indicating approval or amendment therein.

Six copies of the approved Working Drawings shall be given to the employer by the contractor for information and distribution to other Contractors carrying out work associated with or in close proximity to or which might be affected by the contract Works.

Approved Working Drawings shall not be departed from except as may be approved or directed by the Engineer.

Approval by the Engineer of Working Drawings shall neither relieve the contractor of any of his obligations under the contract nor relieve him from correcting any errors found subsequently in the Approved Working Drawings or other Working Drawings and in the contract Works on site or elsewhere associated therewith.

The 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 contractor of his obligation to complete the contract Works within the agreed Contract Period and in a manner that would receive the approval of the Project Manager.

1.33 **Record Drawings (As Installed) and Instructions**

During the execution of the contract Works the contractor shall, in a manner approved by the Engineer record on Working or other Drawings at site all information necessary for preparing Record Drawings of the installed contract Works. Marked-up Working or other Drawings and other documents shall be made available to the Engineer as he may require for inspection and checking.

Record Drawings, may, subject to the approval of the Engineer, include approved Working Drawings adjusted as necessary and certified by the contractor as a correct record of the installation of the contract Works.

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

- a) Working Drawings amended as necessary but titled "Record Drawings" and certified as a true record of the "As Installed" 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 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 Instruction

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

Marked-up drawings of the installation of the contract Works shall be kept to date and completed by the date of practical or section completion. Two copies of the Record Drawings of contract Works and two sets of the relay adjustment and grading charts and schematic diagrams on stiff backing shall be provided not later than one month later.

The contractor shall supply for fixing in sub-stations, switch-rooms, boiler houses, plant rooms, pump houses, the office of the Maintenance Engineer and other places, suitable valve and instructions charts, schematic diagrams of instrumentation and of the electrical reticulation as may be requested by the Engineer providing that the charts, diagrams, etc., relate to installations forming part of the Contract Works. All such charts and diagrams shall be of suitable plastic material on a stiff backing and must be approved by the Engineer before final printing.

Notwithstanding the contractor's obligations referred to above, if the contractor fails to produce to the Engineer's approval, either:-

- a) The Marked-up Drawings during the execution of the 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 contractor.

1.34 **Maintenance Manual**

Upon Practical Completion of the contract Works, the contractor shall furnish the Engineer four copies of a Maintenance Manual relating to the installation forming part of all of the contract Works.

The manual shall be loose-leaf type, International A4 size with stiff covers and cloth bound. It may be in several volumes and shall be sub-divided into sections, each section covering one Engineering service system. It shall have a ready means of reference and a detailed index.

There shall be a separate volume dealing with Air Conditioning and Mechanical Ventilation installation where such installations are included in the Contract Works.

The manual shall contain full operating and maintenance instructions for each item of equipment, plant and apparatus set out in a form dealing systematically with each system. It shall include as may be applicable to the contract Works the following and any other items listed in the text of the Specifications:

- 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 contract Works and manufacturer's standard descriptive literature and plant operating instruction cards will not be accepted for inclusion unless exceptionally approved by the Engineer. The contractor shall, however, affix such cards, if suitable, adjacent to plant and apparatus. One spare set of all such cards shall be furnished to the Engineer.

1.35 **Hand-over**

The contract Works shall be considered complete and the Maintenance and Defects Liability Period shall commence only when the contract Works and supporting services have been tested, commissioned and operated to the satisfaction of the Engineer and officially approved and accepted by the Employer, provided always that the handing over of the contract Works shall be coincident with the handing over of the sub-Contract Works.

The procedure to be followed will be as follows:

- a) On the completion of the contract Works to the satisfaction of the Engineer and the Employer, the contractor shall request the Engineer, at site to arrange for handing over.
- b) The Engineer shall arrange a Hand-over Meeting or a series thereof, at site.

- c) The contractor shall arrange with the Engineer and Employer for a complete demonstration of each and every service to be carried out and for instruction to
- d) be given to the relevant operation staff and other representatives of the Employer.
- e) In the presence of the Employer and the Engineer, Hand-over will take place, subject to Agreement of the Hand-over Certificates and associated check lists.

1.36 **Painting**

It will be deemed that the contractor allowed for all protective and finish painting in the contract Sum for the contract Works, including 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 contractor shall supply and deliver such spares suitably protected and boxed to the Engineer's approval as are called for in the Specifications or in the Price Schedules.

1.38 **Testing and Inspection – Manufactured Plant**

The Engineer reserves the right to inspect and test or witness of all manufactured plant equipment and materials.

The right of the Engineer relating to the inspection, examination and testing of plant during manufacture shall be applicable to Insurance companies and inspection authorities so nominated by the Engineer.

The contractor shall give two week's notice to the Engineer of his intention to carry out any inspection or tests and the Engineer or his representative shall be entitled to witness such tests and inspections.

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

Plant or equipment which is shipped before the relevant test certificate has been approved by the Engineer shall be shipped at the contractor's own risk and should the test certificate not be approved new tests may be ordered by the Engineer at the contractor's expense.

The foregoing provisions relate to tests at manufacturer's works and as appropriate to those carried out at site.

1.39 **Testing and Inspection -Installation**

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

1.40 **Labour Camps**

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

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

If practicable, W.C. accommodation shall be allocated for the sole use of the contractor's workmen and the 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**

Space for storage and provision of any lock-up sheds or stores required will be provided by the contractor

Nominated Contractors are to be made liable for the cost of any storage accommodation provided specially for their use. No materials shall be stored or stacked on suspended slabs without the prior approval of the Project manager.

1.42 **Initial Maintenance**

The contractor shall make routine maintenance once a month during the liability for the Defects Period and shall carry out all necessary adjustments and repairs, cleaning and oiling of moving parts. A monthly report of the inspection and any works done upon the installation shall be supplied to the Engineer.

The contractor shall also provide a 24 -hour break-down service to attend to faults on or malfunctioning of the installation between the routine visits of inspection.

The contractor shall allow in the contract Sum of the initial maintenance, inspection and break-down service and shall provide for all tools, instruments, plant and scaffolding and the transportation thereof, as required for the correct and full execution of these obligations and the provision, use or installation of all materials as oils, greases, sandpaper, etc., or parts which are periodically renewed such as brake linings etc., or parts which are faulty for any reason whatsoever excepting always Acts of God such as storm, tempest, flood, earthquake and civil revolt, acts of war and vandalism.

1.43 **Maintenance and Servicing After Completion of the Initial Maintenance**

The contractor shall, if required, enter into a maintenance and service agreement with the employer for the installation for a period of up to five years from the day following the last day of the liability for Defects Period which offers the same facilities as specified in Clause 1.42 (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 contractor shall submit with his tender for the works, where called upon a firm quotation for the maintenance and service of the installation as specified herein,

which shall be based upon the present day costs and may be varied only to take into account increases in material and labour unit rate costs between the time of tendering and the signing of the formal maintenance and service agreement and which shall remain valid and open for acceptance by the Employer to and including the last day of the fifth complete calendar month following the end of the liability for Defects Period.

1.44 **Trade Names**

Where trade names of manufacturer's catalogue numbers are mentioned in the Specification or the Bills of Quantities, the reference is intended as a guide to the type of article or quality of material required. Alternate brands of equal and approved quality will be acceptable.

1.45 **Water and Electricity for the Works**

These will be made available by the Contractor who shall be liable for the cost of any water or electric current used and for any installation provided for their own use.

1.46 **Protection**

The contractor shall adequately cover up and protect his own work to prevent injury and also to cover up and protect from damage all parts of the building or premises where work is performed by him under the Contract.

1.47 **Defects after Completion**

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

1.48 **Damages for Delay**

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

1.49 **Clear Away on Completion**

The contractor shall, upon completion of the works, at his own expense, remove and clear away all plant, equipment, rubbish and unused materials, and shall leave the whole of the works in a clean and tidy state, to the satisfaction of the Engineer. On completion, the whole of the works shall be delivered up clean, complete and perfect in every respect to the satisfaction of the Engineer.

1.50 **Final Account**

On completion of the works the contractor shall agree with the Engineer the value of any variations outstanding and as soon as possible thereafter submit to the Engineer his final statement of account showing the total sum claimed sub-divided as follows:

- Statement A - detailing the tender amounts less the Prime Cost and Provisional Sums, included therein.
- Statement B - detailing all the variation orders issued on the contract.
- Statement C - Summarizing statement A and B giving the net grand total due to the Contractor for the execution of the Contract.

1.51 **Fair Wages**

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

- a) The contractor shall pay rates of the wages and observe hours and conditions of labour not less favourable than those established for the trade or industry in the district where work is carried out.
- b) In the absence of any rates of wages, hours or conditions of labour so established the contractor shall pay rates and observe hours and conditions of labour are not less favourable than the general level of wages, hours and conditions observed by other employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.

1.52 **Supervision**

During the progress of the works, the contractor shall provide and keep constantly available for consultation on site experienced English - speaking Supervisor and shall provide reasonable office facilities, attendance, etc., for the Supervisor.

In addition, during the whole of the time the works are under construction, the contractor shall maintain on site one experienced foreman or charge-hand and an adequate number of fitters, etc., for the work covered by the Specification. The number of this staff shall not be reduced without the prior written approval of the Project manager or Engineer.

Any instructions given to the Supervisor on site shall be deemed to have been given to the contractor.

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

1.53 **Test Certificates**

The contractor shall provide the Engineer with three copies of all test reports or certificates that are or may be required by this Specification.

1.54 **Labour**

The contractor shall provide skilled and unskilled labour as may be necessary for completion of the contract.

1.55 Discount to the Employer

No discount to the Employer 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 contractor shall remedy at his expense all defects in materials and apparatus due to faulty design, construction or workmanship which may develop in that period.

1.57 Direct Contracts

Notwithstanding the foregoing conditions, the Government reserves the right to place a "Direct Contract" for any goods or services required in the works which are covered by a P.C Sum in the Bills of Quantities and to pay for the same direct. In any such instance, profit relative to the P.C Sum in the priced Bills of Quantities will be adjusted as deserved for P.C Sum allowed.

1.58 Attendance Upon the Tradesmen etc

The Contractor shall allow for the attendance of trade upon trade and shall afford any tradesmen or other persons employed for the execution of any work not included in this contract every facility for carrying out their work and also for the use of ordinary scaffolding. The contractor however, shall not be required to erect any special scaffolding for them.

1.59 Trade Unions

The contractor shall recognize the freedom of his work people to be members of trade unions.

1.60 Local and other Authorities notices and fees

The contractor shall comply with and give all notices required by any Regulations, Act or by Law of any Local Authority or of any Public Service, Company or Authority who have any jurisdiction with regard to the works or with those systems the same are or will be connected and he shall pay and indemnify the Government against any fees or charges legally demandable under any regulation or by-law in respect of the works; provided that the said fees and charges if not expressly included in the contract sum or stated by way of provisional sum shall be added to the contract sum.

The contractor before making any variation from the contract drawings or specification necessitated by such compliance shall give the Project Manager written notice specifying and giving the reason for such variation and applying for instructions in reference thereto.

If the contractor within seven days of having applied for the same does not receive such instructions, he shall proceed with the works in conforming to the provision regulation or by-law in question and any variation thereby necessitated shall be deemed to be a variation in accordance to the conditions of contract.

1.61 Assignment or subletting

The contractor shall not without the written consent of the Project Manager assigns this contract or sublet any portion of the works, provided that such consent shall not be unreasonably withheld to the prejudice of the contractor.

1.62 Partial Completion

If the Government shall take over any part or parts works, apparatus, equipment etc. then within seven days from the date on which the Government shall have taken possession of the relevant part, the Project Manager shall issue a Certificate stating his estimate of the approximate total value of the works which shall be the total value of that part and practical completion of the relevant part shall be deemed to have occurred, and the Defects Liability Period in respect of the relevant part be deemed to have commenced on the date Government shall have taken possession thereof.

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

The contractor shall reduce the value of insurance by the full value of the relevant part

The contractor shall be paid for the part of works taken possession by the Government

1.63 Temporary Works

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

The contractor shall include for the cost of and make necessary arrangements with the Project Manager for such temporary works. For temporary lighting, electricity shall be metered and paid for by the contractor.

1.64 Patent Rights

The contractor shall fully indemnify the Government of Kenya; against any action, claim or proceeding relating to infringement of any patent or design rights, and pay any royalties which may be payable in respect of any article or any part thereof, which shall have been supplied by the contractor to the Project Manager. In like manner the Government of Kenya shall fully indemnify the contractor against any such action, claim or proceedings for infringement under the works, the design thereof of which shall have been supplied by the Project Manager to the contractor, but this indemnify shall apply to the works only, and any permission or request to manufacture to the order of the Project Manager shall not relieve the contractor from liability should he manufacture for supply to other buyers.

1.65 Mobilization and Demobilization

The contractor shall mobilize labour plant and equipment to site according to his programme and schedule of work He shall ensure optimum presence and utilization of labour, plant and equipment. He should not pay and maintain unnecessary labour force or maintain and service idle plant and equipment. Where necessary he shall demobilize and mobilize the labour, plant and equipment, as he deems fit to ensure optimum progress of the works and this shall be considered to be a continuous process as works progress. He shall make provision for this item in his tender.

No claim will be entertained where the contractor has not made any provision for mobilization and demobilization of labour, plant and equipment in the preliminary bills of quantities or elsewhere in this tender.

1.66 Extended Preliminaries

Where it shall be necessary to extend the contract period by the Project manager the contractor shall still ensure availability on site, optimum labour, materials, plant and equipment. The contractor shall make provision for extended preliminaries, should the contract period be extended and this shall be in a form of a percentage of the proportion of the Contract works remaining as at that time of extension. Where called upon in the Appendix to these Preliminaries the Contractor shall insert his percentage per month for extended preliminaries that shall form basis for compensation.

Lack of inserting the percentage shall mean that the contractor has provided for this requirement elsewhere in the Bills of Quantities.

1.67 Supervision by Engineer and Site Meetings

A competent Project Engineer appointed by the Engineer as his representative shall supervise the Contract works. The Project Engineer shall be responsible for issuing all the site instructions in any variations to the works and these shall be delivered through the Contractor with the authority of the Project Manager. Any instructions given verbal shall be confirmed in writing.

The project engineer and (or) the Engineer shall attend management meetings arranged by the Project Manager and for which the Contractor or his representative shall also attend. For the purpose of supervising the project, provisional sums are provided to cover for transport and allowances. The Contractor shall in his tender allow for the provision of management meetings and site inspections, as instructed by the Engineer, and also profit an attendance on these funds. The funds shall be expended according to Project Manager's instructions to the contractor.

1.68 Amendment to Scope of Contract Works

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

No claims shall be entertained on account of variation to scope of works either to increase the works (pre-financing) or reduction of works (loss of profit-see clause 1.69)

1.69 Contractors Obligation and Employers Obligation

The Contractor will finance all activities as part of his obligation to this contract. The employer shall pay interim payment for materials and work completed on site as his obligation in this contract, as the works progresses. No claims will be entertained for pre-financing of the project by the Contractor, or for loss of profit (expectation loss) in case of premature termination, reduction or increase of works as the Contractor shall be deemed to have taken adequate measures in programming his works and expenditure and taken necessary financial precaution while executing the works. No interest shall be payable to the Contractor, except as relates to late payment as in the conditions of contract clause 23.3.

The contractor shall where called upon, insert his price to compensate for any of the occurrence stated here (premature termination, reduction or increase of works), as a percentage of the contract sum in the Appendix to this section.

1.70 APPENDIX TO 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 Schedule No.1 page G/5 section G. However, this amount of the extended preliminaries **SHALL NOT** exceed the Liquidated and Ascertained Damages indicated on page **B-21** of Section B of this tender document

3. ADD TO CLAUSE 1.17

Prices quoted shall include **VAT, withholding tax** and all other taxes applicable at the time of tender.

5. OMIT CLAUSE 1.12

6. MODIFY CLAUSE 1.15

Replace 7 1/2% with 5%

SECTION D

**GENERAL SPECIFICATION
OF
MATERIALS AND WORKS**

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

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PART 3

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PART 1

1.01 REGULATIONS

In the execution of the works, the following provisions should be complied with as necessary and relevant;

- Kenya “Standard Specification for Road and Bridge Construction”
- The Kenya Power and Lighting Company Limited Bye-Laws.
- The current edition of the “Regulations for the Electric Equipment of Buildings” issued by the Institution of Electrical Engineers.
- The requirements of the Chief Inspector of Factories for the Kenya Government.
- Kenya Bureau of Standards (KEBS) Standard Specifications and Codes of Practice, or other equal and approved standard specifications and codes.
- The Bye-Laws of the Local Authority.
- BS-EN 40-3 : Lighting Column Design and Verification testing
- BS-EN 40-3: Lighting Column Design and Verification loading
- BS-EN 40-3-3: Lighting Columns Design and Verification calculation
- AN74 –ZXLD1374 - for solar streetlighting
- Any other regulations applicable to Electric and Electronic Installations or Communications systems in Kenya.
- The Employer’s Safety Regulations.
- and any other Kenyan Specifications, as applicable.

1.02 POSITION OF SERVICES AND EQUIPMENT

The route services and approximate positions of apparatus are shown on the contract drawings but their exact positions shall be determined by approved dimensional details on working drawings or on site by the project manager (PM).

The contractor shall ascertain on site that his work will not foil other services or furniture and all services through the ducts must be readily accessible for maintenance and arranged to allow maximum access along the ducts. Any work which has to be redone due to negligence in this respect will be the contractor’s responsibility.

1.03 SETTING TO WORK AND REGULATING SYSTEMS

The contractor shall carry out such tests of the contract works as are required by KEBS Standard Specifications and Codes of Practice, I.E.E Regulations or equal and approved codes, or the competent Authority.

No testing or commissioning shall be under taken except in the presence of and to the satisfaction of the P.M. unless approved otherwise by him (contractor's own preliminary and proving tests are exempted).

The contractor shall include in his tender for the costs for testing and commissioning the contract works as herein described. He shall submit for approval to the P.M. a suitable programme for testing and commissioning. The P.M. and the Employer shall be given ample warning as to the dates on which testing and commissioning will take place.

The proving of any system of plant or equipment as to compliance with the specification shall not be approved by the P.M. except at his discretion until tests have been carried out under operating conditions appertaining to the most onerous conditions specified except where the time taken to obtain such conditions is unreasonable or exceeds 12 months after practical completion of the contract works.

1.04 BOND FOR SOLAR SYSTEM WITH PROVISIONAL TYPE APPROVAL

Where the SOLAR SYSTEM offered for this tender does not possess full type approval from KeBS but has provisional type approval, the tenderer will be required to submit the name of a separate surety who will be willing to be bound to the Kenya Government in an amount equal to the full value of the solar system for a period of 18 months from the date the solar system is commissioned into service. The surety will be subject to the approval of the government.

1.05 IDENTIFICATION OF PLANT AND COMPONENTS

The contractor shall supply and install identification labels to all plant and to all switches and items of control equipment with, where no excessive heating is involved, white Traffolyte or equal labels engraved in block lettering denoting the name/function and/or section controlled. Where heating is likely to distort Traffolyte, approved alluminium labels with stamped or engraved lettering shall be used.

The labels shall be mounted on equipment and in most suitable positions. They shall be in English or in internationally understood symbols capable of being read without difficulty. The labels shall conform to descriptions used on record drawing. Details of the lettering of the labels and the method of mounts or supporting shall be forwarded to the P.M. for approval prior to manufacture.

1.06 WORKING DRAWINGS

The contractor shall prepare such Drawings as may be necessary. The working Drawings shall be completed in such details not only that the contract works can be executed on site but also that the P.M can approve the contractor's designs and intentions in execution of the contract works.

Approved working drawings shall not be departed from except where provided for. Approval by the P.M. of working Drawings shall neither relieve the contractor of any of his obligations under the contract nor relieve him from correcting any errors found subsequently in the approved working Drawings or elsewhere associated therewith or with the works.

1.07 RECORD DRAWINGS

During the execution of works on site the contractor shall, in a manner approved by the P.M. record on site all information necessary for preparing Record Drawings of the installed contract Works. Marked-up working or other Drawings and other documents shall be made available to the P.M. as he may require for inspection and checking.

Record Drawing shall include but are not restricted to the following drawings or information:-

- Working Drawings amended as necessary but titled "Record Drawings" and certified as a true record of the as installed" contract works.
- Fully dimensioned drawings of all plant and apparatus.
- System Schematic and trunking diagrams showing all salient information relating to control and instrumentation.
- Wiring diagrams of individual plant, apparatus and switch and control boards.

One reproducible copy of the Record Drawings of the contract works and Schematic Diagrams shall be provided not later than one month afterwards.

Notwithstanding the contractor's obligation referred to above, if the contractor fails to produce to the P.M.'s approval of the Record Drawings, within one month of partial or Practical Completion the Employer shall be at liberty to have these drawings produced by others. The cost of obtaining the necessary information shall be deducted from the out-standing payments due to the contractor.

1.08 TESTS

Both on completion of his work and at the end of the guarantee period the contractor shall carry out such tests as may be required in the presence of the P.M. or his representative, or the competent Authority and shall provide all necessary Instruments and labour to do so. The Contractor shall pay such charges related to such tests if any.

1.09 QUALITY OF MATERIALS

Materials and apparatus required for the complete installation as called for in the specifications or Contract Drawings shall be supplied by the contractor unless specified otherwise.

Unless otherwise specified all materials (including equipment, fittings, cables) shall be new, of the best quality and approved origin.

1.10 TRAINING

As directed by and to the satisfaction of the Project Manager, the contractor shall arrange for the training of the technical personnel and at the site or the contractor's office on the maintenance of solar system. The cost of such training shall be included in the contractor's prices.

1.11 EQUIPMENT GUARANTEE

The contractor shall undertake in writing to rectify free of charge, all faults arising from faulty components, materials, design or workmanship by the manufacturer or contractor whichever is applicable. This liability shall be for a minimum period of one calendar year from the date of acceptance of the equipment. Twelve months limitation notwithstanding, the period of liability shall not end until all defects which appear during the liability period have been rectified.

1.12 PATENT RIGHTS

The contractor shall fully indemnify the Government of Kenya, against any action, claim or proceeding relating to infringement of any patent or design rights, and shall pay any royalties which may be payable in respect of any article or any part thereof which shall have been supplied by the contractor to the P.M. and in like manner the government of Kenya shall fully indemnify the contractor against any such action, claim or proceeding for infringement or alleged infringement under the works the design thereof which shall have been supplied by the P.M. to the contractor, but this indemnity shall apply to the works only, and any permission or request to manufacture to the order of the P.M. shall not relieve the contractor from liability should he manufacture for, or supply to other buyers.

PART 2

TECHNICAL SPECIFICATIONS

2.0 MINIMUM REQUIREMENTS

This specification defines minimum requirements, but tenderers who offer superior facilities will be considered.

Any tender which does not comply with the minimum requirements will be rejected.

2.1 CONVENTIONAL AND SOLAR STREET LIGHTING INSTALLATION USING LED LUMINAIRE

2.2 Scope

This specification covers supply, testing at works and site, erection, testing and commissioning and handing over of complete street lighting and area lighting installation using LED based luminaire. The Light Emitting Diode (LED) is a p-n junction device which emits light when forward electric current passes through it.

2.3 Standards

All codes and standards mean the latest. Where not specified otherwise the installation shall generally follow the Kenyan Standard Code of Practice or the British Standard Code of Practice in the absence of Kenyan Standard.

- i) The specification
- ii) The current edition of the Institution of Electrical Engineers(I.E.E) regulations
- iii) The Electric Power Act of Kenya
- iv) The Kenya Power & Lighting Co. Bylaws
- v) The IEC or Kenya Standard specification and relevant and applicable IEC code of practice.

2.4 Technical Specifications for Streetlighting with LED Luminaire

2.4.1 Conventional Streetlighting with LED Luminaire

2.4.2 General

The street lighting installation for the project shall be carried out by use of out door type, weatherproof luminaries, to be mounted on tubular steel poles or galvanized iron poles or FRP coated steel poles.

Electric power supply at 415 volt, three phase, four wire, 50 Hz to be tapped from the street lighting Feeder Pillar shall be used for the conventional street lighting.

The electric power shall be distributed to the street lighting poles through electric cables laid below ground or through PVC sleeve embedded into concrete and shall be distributed equally on three phase of the electric power supply system.

Individual control MCB/Fuses with Pole junction box shall be provided on each pole. The terminal box shall be weather proof, having gasketed cover.

The street light poles shall be earthed individually with pipe electrode type earth station as detailed in the drawing using 25 mm diameter galvanized iron pipe 2.5 m long.

Electric cable required for the street lighting installation shall be 1100 Volt grade, PVC insulated and sheathed, armoured cable having stranded Aluminium conductor of rating as mentioned in the drawing.

For automatic ON/OFF operation of the street lights, quality make automatic timer, type TSQ-T (Day dial – 1 x 24 hour) or equivalent shall be provided in the street light feeder pillar.

All street lights shall be controlled from the outdoor type street light control pillars the locations of which are shown on the drawings.

2.4.3 System of wiring

Wiring to poles shall be in PVC/SWA/PVC cables installed in 450mm deep cable trench as per cable size and routes. A layer of soft sand underneath and above the cable laid in trench shall be provided by the Contractor. Fused cut-outs shall be used to loop the cables in pole at lower level and wiring from cut-out to lantern shall be in 1.5mm² twin core PVC insulated sheathed cable with earth. Copper earth clips shall be used on galvanized armouring while looping in poles and earthwire to lantern shall be connected from there by using copper connectors. "DANGER/HATARI" cable tiles shall be supplied and installed throughout the length

of the trench to protect the cables except for the road crossing and plot entrances where cables shall be passed through PVC ducts.

2.4.4 Street Lighting Poles

The street lighting installation for the project shall be carried out by use of out door type, weatherproof luminaires, to be mounted on tubular steel poles or galvanized iron poles or FRP coated (coating thickness to be 2.0 mm minimum) as steel poles. The street light poles shall be fabricated from heavy duty cold rolled steel tubes confirming BS 1840 as appropriate tubular, swaged welded poles.

The street light pole shall be swaged poles made from steel of ultimate tensile strength of 410 MPa (42 Kg/mm²). The pole height above ground shall be 9.2 Mtrs with a luminaire mounting height of 8M. Hot dip galvanized inside and outside confirming to BS 729 Part I, BS 5135, The galvanizing shall be 65 microns and shall be recorded and results finished while bidding.

The street light poles shall be provided with suitable size base plate/sleeve, and necessary fixture mounting bracket at top.

The terminal box shall be provided with Epoxy terminals and fuses to be mounted on the pole with damp.

Pole shall have large diameter entries for outgoing wires and one earth stud.

The pole fabrication shall conform to the drawings and where such drawing is not available; the Contractor shall make such drawing and get it approved before fabrication. The pole foundation shall house as shown on the drawings.

For fixing earth wire one bolt shall be welded to the pole and provided with suitable nut washer and spring washer.

The pole shall be manufactured as per BS code and test certificates shall be submitted to Engineer-in-Charge for approval.

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.

2.4.5 Pole Terminal Box

The junction box enclosure shall be made up of cast Aluminium or FRP weather proof, splash proof, vandal proof enclosure suitable for mounting on pole externally with suitable clamping arrangement. The enclosure shall have recessed hinged door with neoprene gasket and locking arrangement.

Each enclosure shall be adequately sized to house terminal blocks to loop in and out 2 Nos. 4C x 25/35 mm² cables, Neutral link and 2 Nos., 10 A MCB s/HRC Fuses with base. All above components to be rigidly mounted on back plate.

Suitable size removable type gland plate at the bottom shall be provided for loop in and out of 2 Nos., 4c x 25 mm² armoured cables by means of heavy duty compression type brass gland with brass cone and ring arrangement for effective earthing/bonding of cable armour and pole body. Non Fading/Non Chalking point colour to the approved shade shall be provided in case of FRP coated poles. The box shall have earth terminal on inside and outside for connecting earthwire.

3C x 2.5 mm² lead wire shall be multi strand copper conductor, Special heat resistant PVC/PVC insulated cable to be provided from the pole terminal box to the street light fittings.

2.4.6 Pole Bracket

The pole bracket shall be suitable for erection of street light fittings with LED/ Sodium Vapour/Mercury Vapour Lamp, on the pole top, the solar panels and battery box. Pole bracket shall be made from 60 mm diameter 'B' class galvanized iron pipes.

A stopper shall be provided with 3 nos., holes at 120 degrees for proper fixing of the bracket on the pole top as shown on the drawing.

2.4.7 Street Lighting Fittings Suitable for LED

Street light fittings shall be integral type and suitable for 61W LED/84W LED lamps and of the makes and other quality brands as specified by the Engineer:

The body and the control gear housing shall be in single piece and made from full die cast housing made out of LM6 aluminium. The body shall be phosphated, primer coated and finished with hammer and tone Grey epoxy powder coated on the outside and white inside.

The fitting shall be complete with control gear tray including Electronic igniters, PF improvement capacitor, copper wound heavy duty polyester filled ballast, earthing terminal, connector block etc. 250W hi-pressure metal halide lamp in IP 54 shall have an average 100 lux and uniformity factor of >0.5.

The Control gear tray shall be detachable so as to remove the same for maintenance without disturbing the fitting fixed on the pole.

The fitting shall have porcelain 3-pin BC/ES or GES screwed type (depending on the lamp) lamp holder fitted on a special bracket so as to raise or lower the same to achieve cut-off or semi cut-off light distribution.

Electro chemically brightened and anodized, scratch free, pot mirror type reflectors with smooth and glossy surface for optimum light reflection shall be provided. It should be possible to remove the reflectors for cleaning without disturbing the lamps.

The cover shall be made from toughened, heat resistant glass uniform thickness and moulded. The cover shall be fixed with to the fitting toggle switches and with neoprene rubber/synthetic/felt gasket impregnated with insect repellent solution.

Lanterns shall be of completely enclosed type designed for side entry mounting on brackets with a nipple of plane tube.

The lanterns will be with control gear complete with the specified lamp and reflector

The fitting shall be fixed to pole bracket or directly on the pole as the case may be, with fixing clamps.

The fitting shall be insect and weather proof confirming to relevant BS protection rating.

2.4.8 Street Light Control Pillar

The control pillar shall be suitable for outdoor installation and all relevant codes of practices shall be applicable. The pillar shall be weather proof and water proof and shall be as per the details shown on the drawing.

The control pillar shall be made from 2.5 mm CRCA sheet steel/or FRP enclosure of adequate thickness.

The control pillar shall have 2 separate compartments with separate doors. One compartment shall be for incoming supply switch gears and energy meter etc., and for KPLC ltd use and shall have sealing arrangement. The other compartment for consumer use shall have control and power switchgears for outgoing. All the equipment in the pillar shall be erected on 2mm thick galvanized iron plate, and this plate shall be properly connected to the earth bar.

All power and control wiring inside the control pillar shall be with stranded copper conductor wires with lugs clamped at both the ends.

For termination of incoming and outgoing cables, epoxy insulators with studs and locknuts shall be provided.

A detachable gland plate made out of 3 mm thick galvanized iron/aluminium sheet shall be provided at the pillar bottom.

This shall be a metal pillar manufactured from mild steel to BS 15 as per the drawing. The control pillar shall be installed on 300mm. thick concrete plinth. The control pillar shall be with all switchgear, interconnections, labels and earthing as approved by the Engineer. The control of the street lighting shall be through a photocell mounted on a 4.6m pole close to the pillar.

Contractor to provide KWH meter as approved by KPLC ltd and get the same calibrated before installation. Test certificates shall be submitted after commissioning the equipment.

Cables at feeder pillar shall be terminated at the bottom gland plate, by heavy duty compression type of gland plate, earthing tags for effective earthing of cable armour and PVC cable shroud shall be provided.

Feeder pillar foundation shall be class 20/20 Concrete, 600 mm above ground level.

2.4.9 Pole Foundation

The pole foundation shall be of concrete class 20/20 and size shown in the drawing with necessary excavation in all types of soil, murum or rock.

A circular shaped plinth of size shown on the drawing above ground level shall be provided. The plinth shall be plastered smoothly and painted with 2 coats of Cement paint from all sides and the pole terminal box shall be embedded in the plinth in such a way that the outer cover is flushed with the plinth plaster. The plinth shall be of concrete class 20/20 and it shall be cast along with foundation.

2.4.10 Pipe Type Earthing for Street Light Feeder Pillar

A GI Pipe of 38 mm. dia. 3.5 meter long shall be provided with a funnel on the top of pipe. A funnel with wire mesh that is used for pouring of water shall be screwed to the pipe. The pit shall be free from hard rock and surrounding soil shall be damp. Alternate layers of a homogenous mix of charcoal alt and low restivity soil shall be provided for refilling the earthpit. The depth of earthing pit should be 3.5 meter. The lower part of pipe (about 1.5 meter) shall have holes of 12 mm dia. At the interval 150 mm. Earthing resistance shall not exceed more than 3 Ohms.

2.4.11 Earthing

One number with 25 mm diameter 2.5 metre long galvanized iron pipe electrode with perforation holes shall be provided for each pile. For earthing of the poles and pillars 2 nos. 8 SWG galvanized iron earth wires from each earthing electrodes shall be connected with nuts and washers to the earthing bolts welded to the electrode and pole.

For earthing poles on RCC structures, 8 SWG GI-earth wire shall be laid along with the cable inside the duct provided in structure to be terminated at pole terminal box. The earthpit shall be provided at both ends at ground level, to connect with the solid earth. For earthing of the pole terminal box an earth wire of size 12 SWG galvanized iron shall be provided and connected between earth nut bolt on the pole and the pole and the pole terminal box.

For earthing of the lighting fittings third core of the lead wire shall be used and connected between pole terminal box to the fittings.

All poles, lanterns and other metal parts shall be properly earthed. Electrical and Mechanical continuity shall be preserved throughout the whole system from the

Consumer unit to the remotest pole and the earth resistance must not exceed 0.5ohms. Every 4th pole shall be efficiently earthed through earth electrode by means of substantial copper clamps secured by non-rusting bolts. The lead must be visible and adequately protected. No earthing lead shall be less than 6mm² in size except for the one used for earthing lanterns where 1.5mm² twin with earth wire shall be used.

Cable glands shall be used at every underground cable termination to bond the Cable armour onto the steel parts of the column and control pillar. The 1.5mm² copper wire of the twin and earth cable shall be used to provide the earth terminal continuity from the lantern to the columns earth terminal.

2.4.12 Earth pits

Solid block masonry chamber plastered smooth inside shall be constructed up to 450 mm resting on PCC below ground. A Cast Iron Chamber Frame with concealed hinged CI cover with lifting look shall be embedded in concrete on top of the chamber.

An earthing lead shall be brought out by fixing GI strip of 50 x 6 mm and by using 9 mm dia GI/Brass nut bolt, and set of washers. Suitable GI Clamps shall be provided on the GI pipe inside chamber for taking tap off for earthing leads.

(a) Testing of the Installation

The Contractor shall carry out tests of the completed installation, copies of the test results shall be provided to the Engineer.

(b) Insulation Resistance

The insulation resistance between line (phase) and neutral, the line (phase) and earth and the neutral and earth shall not be less than one mega ohms when tested with 500 volts direct circuit (D.C.) supply

(c) Earth Continuity

The resistance measured from every earth electrode to the farthest point of the installation shall not exceed 0.5 ohms.

(d) Earth Electrode Resistance

Test for earth electrode resistance shall not exceed 3 ohms using a null balance tester

(e) Polarity Check

Checks shall be carried out to verify that the neutral is correctly connected and that all fuses and switching (control) devices are connected to the phase ("LIVE") conductors only.

The Contractor shall be expected to test and inspect the installation particularly those parts that are to be concealed, during the erection, as he shall be held responsible for and shall rectify at his own expense all faults, defects, omissions, faulty workmanship, incorrectly positioned or installed parts of the installation revealed by such inspection and tests.

The Contractor shall provide accurate instruments and/or apparatus and the labour to carry out the above tests independently of any tests made by the Engineer or Kenya Power & Lighting Co. The instruments and apparatus shall be made available to the Engineer for him to carry out the tests as he may require. The Contractor shall give a seven days notice of his intention to carry out the test so as to enable the Engineer to witness the tests if he so wishes

2.5 Solar Streetlighting with LED Luminaire

2.5.1 General

A stand alone solar photovoltaic street lighting system (SLS) is an outdoor lighting unit used for illuminating a street or an open area.

The Solar Street Lighting System consists of solar photovoltaic (SPV) module, a luminaire, storage battery, control electronics, inter-connecting wires/cables, module mounting pole including hardware and battery box.

The luminaire is based on White Light Emitting Diode (W-LED), a solid state device which emits light when electric current passes through it. The luminaire is mounted on the pole at a suitable angle to maximize illumination on the ground.

The PV module is placed at the top of the pole at an angle facing south so that it receives solar radiation throughout the day, without any shadow falling on it. A battery is placed in a secured box attached to the pole.

Electricity generated by the PV module charges the battery during the day time which powers the luminaire from dusk to dawn. The system lights at dusk and switches off at dawn automatically.

The broad performance specifications of a White Light Emitting Diode (W-LED) light source based solar street lighting system are given below.

Light Source	White Light Emitting Diode (W-LED)
Light Output	White colour (colour temperature 5500 ⁰ -6500 ⁰ K) minimum 15 LUX when measured at the periphery of 4 meter diameter from a height of 4 meter. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred.
Mounting of light	Minimum 8 metre pole Mounted
PV Module	45 Wp under STC, measured at 16.4 V at load. Module Voc minimum of 21V
Battery	Tubular Lead acid or gel type VRLA, 12 V- 120 AH @ C/10, Max DoD 75%
Electronics	Min 85% total efficiency
Average duty cycle	Dusk to dawn
Autonomy	3 days (Minimum 42 operating hours per permissible discharge)

2.5.2 Duty Cycle

The LED solar street lighting system should be installed to operate from dusk to dawn, under average daily insolation of 5.5 kWh /sq.m on a horizontal surface.

2.5.3 Light Source

The light source will be of white LED type. Single lamp or multiple lamps can be used. Wider view angles of a minimum of 120° or more. The luminous performance of individual LED used should not be less than 90 lumen/watt when measured luminaire as whole. The colour temperature of white LEDs used in the system should be in the range of 5500° K - 6500° K. Use of LEDs which emits ultraviolet light will not be permitted.

The light output from the white LED light source should be constant throughout the duty cycle.

The lamps should be housed in an assembly suitable for outdoor use. The temperature of LED should not increase more than 15° above ambient temperature. This condition should be compiled even after two hours of operation at its maximum operation voltage (i.e. just before over-voltage cut-off).

The make, model number, country of origin and technical characteristics of white LEDs used in the lighting system must be furnished to the test centers and to the Engineers. In absence of this data the solar street lighting system will not be tested by the test center and accepted by the Engineer.

The lamp to have 50,000 hours life at 25°C:

Total power ≤ 61 W

Lumen Output ≥ 5,300 Lm

Efficacy ≥ 90 Lm/W

Power factor ≥ 0.9

Frequency range of 45 - 50Hz

Operating Voltage range of 130V - 250V AC

2.5.4 Battery

Tubular Lead acid or gel type VRLA battery should conform to latest KEBS standards.

The Electrolyte shall be Concentrated Sulphuric Acid while the anode (Positive) plate shall be a grid type with each grid holding lead oxide paste as the active electrochemical ingredient and the grid mesh made of pure lead as current conductor to the terminal. The Cathode (negative) plate shall be of similar construction similarly be of grid type with the paste being of pure lead paste. Several part of positive and negative plates the minimum being suitably interlinked shall form a cell. The battery shall be composed of minimum six cells all interlinked with positive plate connected to negative plates and all terminations of positive and negative plate brought to single termination of positive and negative respectively.

The battery will have a minimum rating of 12V, 120Ah (at C/10) discharge rate.

At least 75 % of the rated capacity of the battery should be between fully charged & load cut-off conditions

The batteries shall be of long lasting maintenance free capable of a 4 year optimal operation with little or no change of Electrolyte.

The number of batteries in the bank has been predetermined taking into consideration the load requirement, climatic factor, Electricity supply panel's specification, and the type of battery to be supplied. The tenderer is required to supply batteries as specified.

A copy of the test certificate for the battery (including its make, country of origin and model number) used in the system should be provided to the test center and the results forwarded to the Engineer for approval.

2.5.5 Electronics

The total electronic efficiency of DC-Dc converter should be at least 85%

Electronics should operate at 12 V and should have temperature compensation for proper charging of the battery throughout the year

The light output should remain constant with variations in the battery voltages.

2.5.6 PV Module (s)

Each panel shall be capable of providing power output at maximum solar input (at midday). The minimum power output at the lowest level of sunlight (sunset or cloudy weather shall not be below the specified output.

All panels shall be fixed securely on a platform as shown in Drawings shall the position, and layout of the panel. They shall be installed tilted at the specified angle designed to maximum sunlight lowest and such that the entire sun rays are approximately directly perpendicular the panel throughout the day.

The PV module(s) shall contain mono-crystalline silicon solar cells with IEC 61215(revised) certification or equivalent National or International Standards.

The operating voltage corresponding to the power output mentioned above should be 12V. Modules shall be arranged in interconnected to form an array. Each has inbuilt diode to prevent reverse current from flowing to any of the module.

Each solar panel shall be composed of silicon cell of size 100mm x 100mm capable of producing 3A at 0.5volts in bright sunshine (1.5watts). These cells are then interconnected in series to make a module panel. It is required that each panel shall have a minimum of 72 cells while a panel of 144 cells shall be of added advantage (more power).

The cells are protected by encapsulating them between a transparent front cover and a backing sheet to form a PV module.

The front cover shall be of low-iron toughened glass and the backing sheet shall be glass or an opaque material. The cells shall be hermetically sealed using silicon (for transparent module or ethylene vinyl acetate (EVA) – (This sandwich is called a laminate)

A flexible PV can be produced by encapsulating the cells in plastic material, the cell being made of amorphous silicon.

The module or laminate sheet can be either be framed to form framed modules or remain or remain unframed (laminates) or constructed as to be Roof tile or cladding of a building. The PV shall either be opaque type semi – transparent – with cells sandwiched between two sheets of glaze and spaced to allow light through between the cells.

Or

Be translucent (of amorphous cell which are pervious to or allows light to diffuse through)

Cells shall either be blue or black in color for better efficient light top power conversion. Note coloured cells reflect more light.

For the purpose of this specification the sizes of the panels shall be as below:-

Standard size.....	100W – 200W
Medium.....	45W – 100W
Small.....	3W- 40W

Panels shall be tested under **Standard Test Conditions (STC)** at 1000W/ M² at air mass of 1.5KG/M3 and cell temperature of 25°C. The result shall be presented in a current/voltage curve or graph.

The nominal peak power for each module as measured in the test in watts peak (WP) shall not be below 16 – 18 Volt range.

Each module shall have at its output terminals Blocking diodes connected in series with a string to protect the module from reverse current flow from either the adjacent module or battery bank.

The panels shall be protected from lightning and surges. The surge protecting devices shall be Circuit Breakers installed at the final output of PV array. It shall protect the array from reverse surges from battery bank or inverters.

Bypass diodes may be placed around a module that is likely to have localized shading. It provides a current path around such a shaded module.

The terminal box on the module should have a provision for opening and for replacing the cable, if required.

A strip containing the following details should be laminated inside the module so as to be clearly visible from the front side.

- i. Name of the Manufacturer or distinctive logo.
- ii. Model or Type Number
- iii. Serial Number
- iv. Year of Make

PV Models of reputed make shall be offered.

Frame of PV module shall be painted with Dark Brown colour.

2.5.7 Electronic Protection

The system should have protection against battery overcharge and deep discharge conditions. The numerical values of the cut off limits must be specified, while submitting the samples for the testing purposes.

Isolation should be provided to protect against short circuit conditions.

A blocking diode should be provided as part of the electronics, to prevent reverse flow of current through the PV module(s), in case such a diode is not provided with the PV module.

Full protection against open circuit, accidental short circuit and reverse polarity should be provided.

Each Array shall have an isolator separating the array from each additional array or string of series connected modules.

The drawing indicates the position of the isolators among the arrays of modules. At the isolator point the open circuit voltage VOC and short circuit current ISC for each array can be measured. Both positive and negative poles of each shall be simultaneously isolated.

The isolator shall be of quick make and break time to avoid appreciable arcing at the terminals of the isolator. The contactors of the isolator shall be of copper alloy heat resistant type. All live and neutral terminals shall be shrouded and terminals firmly supported by appropriate insulation material (porcelain Bakelite etc). The isolator shall be rated to isolate currents not exceeding its maximum operating isolate currents current. (30A rated DC current to isolate 30A maximum current).

The isolator shall conform to **KS IEC 60947 – 3:1999** specifications and requirements.

Electronics should operate at 12 V and should have temperature compensation for proper charging of the battery throughout the year.

2.5.8 Cables

The DC cable length from the panel to the battery or inverter or distribution point shall be short as possible. It would be noted that the short circuit current from a PV module is limited by the internal resistance of the module and is only slightly higher than the normal operating current so fuses are of little use in protecting apparatus, cables, distribution, lighting points or power points supplied from the modules directly. Thus when short circuit occurs in such a system it can continue undetected for along time as long as the panel is exposed to light and can cause fire. Precaution must be taken to ensure safety for the installed solar system.

Minimum lengths of DC cable shall ensure low cost and low voltage drop.

The installation shall be ground fault proof and short circuit proof.

Cables from the modules shall be drawn into conduits and terminated at Distribution Board terminal Blocks. Cables from the batteries shall also be linked to this cable at the terminal blocks.

From the distribution board short lengths of cable shall supply a Consumer Unit. All lighting point and power point final sub-circuits shall be from this consumer unit. All final sub-circuits shall have an isolate switches at the start of the final sub-circuit.

All cables conduits, junction boxes need to be suitable for environment and load carried. Where the cables are to run outdoor they shall be of resistant to chemical and ultraviolet (UV) light, when run in wet places or clump atmosphere they shall be marine type of cables. The cables shall be protected against sunlight and mechanical damage.

i. Cable (types and sizes)

The size and type of the cable shall be such as to operate and withstand operating temperature range, to withstand the rated current and have acceptable voltage loop.

The following are the type of cables specified

ii. Class 11 Cable

Single core cable with non metallic sheath shall be drawn as a punch with negative and positive drawn in the same conduit.

Single core cables with basic insulation shall be drawn singularly in conduit.

Cables with basic insulation only and earth screened shall be drawn singularly together with cables of the same poles in the same conduit. Cables of opposite pole shall not be drawn in those conduits but segregated and drawn in separate conduits.

The cable size shall be such as to comply with requirements of **IEC 60304 and KS 04 187 -1987** specification for conductors for nominal cross –section 0.5 mmsq to 2000mmsq. Which also specifies resistance value of conductors as well as flexible cord.

The number of junctions and interconnections in the final sub-circuit shall be as low as possible. AC cables shall be run or drawn in separate conduits or ways. AC cables shall have different colouring of the insulation from DC.

All cable conductors shall be of copper and unless otherwise specified.

The current carrying capacity of a cable is largely determined by operating temperature range shall be 25°C to 65°C.

Cables used for string wiring must be selected taking into account higher ambient temperatures than other cables at temperatures behind the modules may exceed 80°C.

The voltage drop from the array to inverter or Distribution board shall not exceed 2.5% of the nominal voltage at the Distribution board or PCU (power conditioning unit).

2.5.9 Solar Radiation

Though Geographical location determines the performance of the solar Energy, the installer shall ensure his panels are properly installed tilted appropriately and oriented such as to minimize receipt of solar radiation.

The orientation of panel shall be approximately due south and at a tilt from the horizontal equal to the latitude of the site minus approximately 20° e.g say 25° due south.

The tilt and orientation shall ensure at least 90% of the maximum energy is received by the panels.

2.5.10 Shading

Shading is not ethical and shall be avoided as much as possible. Shading results in significant loss of energy from the panels.

2.5.11 Mismatch

All cells in the module must have similar characteristic. Similarly all modules must have similar characteristic as poor quality modules leads to significant loss of energy since the inferior module determines the current.

2.5.12 Temperatures

Any radiation not converted into Electricity is converted to heat. The waste heat can cause temperatures around the modules to rise. At 90°C EVA encapsulate will be damaged. The panel shall be installed raised at least 6 inches above roof, façade etc to allow for natural ventilation of the panel both on the front side and the back side.

The efficiency of the PV cells drops significantly as the temperature of the cell rises

- 0.45% for every degree rise in temperature for mono crystalline silicon
- It is less for amorphous silicon cell – 0.25% care shall be taken to ensure the panels are well ventilated and where this cannot be achieved naturally then mechanical ventilation shall be provided.

2.5.13 Cleanliness

The panels shall be installed tilted to reduce dust accumulation and allow for self cleaning. The panel should be tilted at a minimum 15° to 20°. Dust may cause power reduction of about 10%. Tilts also allow for rain cleaning of the panels. However the panels shall be cleaned every month during the 6 months liability period.

2.5.14 Power Output from the Panels

It is expected that 1m² of amorphous thin film provide 30-70kwh in a year and 1 m² of mono crystalline film shall provide 60 – 150 Kwh in a year.

2.5.15 Earthing

All components including their boxes, that are metallic shall be bonded to an earth continuity conductor. All metal enclosure of protective switchgear shall be bonded to the earth continuity conductor.

The supporting structure for the PV array shall also be bonded to earth continuity conductor when the PV system is framed with metallic frame, shall be earthed unless the PV is double insulated in accordance with BS 7671.

The output of the array under any circumstance shall not be connected to earth continuity conductor. The neutral conductor shall not be connected to earth continuity conductor in a Battery Bank supply system.

The earth continuity conductor shall be drawn in separate conduit from line and neutral conductors.

The earth lead shall be of not less than 1.5mm² minimum size of PVC insulated single strand copper conductor. The lead shall be clamped to the copper earth electrode rod to be driven to the ground. The Earth Inspection Chamber shall be special purpose concrete construction minimum size 300mm x 300mm as shown in the drawing.

2.5.16 Mechanical Components

Metallic frame structure (with corrosion resistance paint) to be fixed on the pole to hold the SPV module(s). The frame structure should have provision to adjust its angle of inclination to the horizontal between 0 and 45, so that it can be installed at the specified tilt angle.

It should be possible to mount the light source on a metallic arm attached to the pole. The metallic arm for holding the light assembly should be extended at least 1.5 meters from the pole and set at a suitable angle to maximize uniform illumination of desired level over the specified area.

A vented metallic / plastic box with acid proof corrosion resistance paint for housing the storage battery outdoors should be provided.

2.5.17 Street Lighting Poles

The street lighting installation for the project shall be carried out by use of out door type, weatherproof luminaries, to be mounted on tubular steel poles or galvanized iron poles or FRP coated (coating thickness to be 2.0 mm minimum) as steel poles. The street light poles shall be fabricated from heavy duty cold rolled steel tubes confirming BS 1840 as appropriate tubular, swaged welded poles.

The street light pole shall be swaged poles made from steel of ultimate tensile strength of 410 MPa (42 Kgf/mm²). The pole height above ground shall be 9.2 Mtrs with a luminaire mounting height of 8M. Hot dip galvanized inside and outside confirming to BS 729 Part I, BS 5135, The galvanizing shall be 65 microns and shall be recorded and results finished while bidding.

The street light poles shall be provided with suitable size base plate/sleeve, and necessary fixture mounting bracket at top.

For the solar based street lighting the pole to be complete with an adjustable mounting bracket for the solar panels at the top and an acid proof corrosion resistance battery box at 5M above ground.

The terminal box shall be provided with Epoxy terminals and fuses to be mounted on the pole with damp.

Pole shall have large diameter entries for outgoing wires and one earth stud.

The pole fabrication shall conform to the drawings and where such drawing is not available; the Contractor shall make such drawing and get it approved before fabrication. The pole foundation shall house as shown on the drawings.

For fixing earth wire one bolt shall be welded to the pole and provided with suitable nut washer and spring washer.

The pole shall be manufactured as per BS code and test certificates shall be submitted to Engineer-in-Charge for approval.

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.

2.5.18 Pole Bracket

The pole bracket shall be suitable for erection of street light fittings with LED/ Sodium Vapour/Mercury Vapour Lamp, on the pole top, the solar panels and battery box. Pole bracket shall be made from 60 mm diameter 'B' class galvanized iron pipes.

A stopper shall be provided with 3 nos., holes at 120 degrees for proper fixing of the bracket on the pole top as shown on the drawing.

2.5.19 Pole Foundation

The pole foundation shall be of concrete class 20/20 and size shown in the drawing with necessary excavation in all types of soil, murum or rock.

A circular shaped plinth of size shown on the drawing above ground level shall be provided. The plinth shall be plastered smoothly and painted with 2 coats of Cement paint from all sides and the pole terminal box shall be embedded in the plinth in such a way that the outer cover is flushed with the plinth plaster. The plinth shall be of concrete class 20/20 and it shall be cast along with foundation.

2.6 Other Features

The system should be provided with 2 LED indicators: a green light to indicate charging in progress and a red light to indicate deep discharge condition of the battery. The green LED should glow only when the battery is actually being charged.

The ON/OFF switch used in the SSLS must be suitable for use in DC circuit and be reliable with long life. A cable (2core×1.5 Sq. mm.) of suitable length should be provided for inter connection between module and SSLS.

The following details should be marked indelibly on the body of SSLS.

- i. Name of the Manufacturer or distinctive logo.
- ii. Model or Type Number
- iii. Serial Number
- iv. Year of Make

Components and parts used in LED Solar Street Light Systems should confirm to the latest KEBS specification, whichever such specifications are available and applicable.

2.7 Documentation

An operation, instruction, maintenance manual in English should be provided with the Solar Street Light System. The following minimum details must be provided in the manual:

- (i) About Photovoltaic
- (ii) About Solar Street Light System - its components and expected performance
- (iii) About PV Module. In case of imported modules it is mandatory to provide a copy of the international product qualification certificate to the test centre
- (iv) About White LED Lights. The make, model number, country of origin and technical characteristics of LEDs should be stated in the product data sheet and furnished to the test centers
- (v) About Battery and electronics used
- (vi) Clear instructions about Mounting of PV Module(s)
- (vii) About Electronics
- (viii) About Charging and Significance of Indicators.
- (ix) DO's and DON'Ts

- (x) Clear instructions on Regular Maintenance and Trouble Shooting of LED Solar Street Light System
- (xi) Name and address of the person or service center to be contacted in case of failure or complaint.

2.8 The Comprehensive Maintenance Contract (CMC)

Five Years Comprehensive Maintenance Contract (CMC)

The Comprehensive Maintenance Contract shall include servicing & replacement guarantee for parts and components (such as battery, electronics, LED luminaries, etc) of Solar Street Lighting Systems for 5 years from the date of installation. For PV modules, the replacement guarantee is for 15 years.

The maintenance service provided shall ensure proper functioning of the SPV system as a whole. All preventive/routine maintenance and breakdown/corrective maintenance required for ensuring maximum uptime shall have to be provided by the Supplier. Accordingly, the Comprehensive Maintenance Contract (CMC) shall have two distinct components as described below.

2.9 Preventive/Routine Maintenance

This shall be done by the company at least once in a every three months and shall include activities such as, cleaning and checking the health of the SPV system, cleaning of module surface, topping up of batteries, tightening of all electrical connections, changing of tilt angle of module mounting structure, cleaning & greasing of battery terminals and any other activity that may be required for proper functioning of the SPV system as a whole.

2.10 Breakdown/Corrective Maintenance

Whenever a complaint is lodged by the user, the bidder shall attend to the same within a reasonable period of time (7 days) and in any case the breakdown shall be corrected within a period not exceeding ten days from the date of complaint.

The bidder shall maintain the following facilities at the local Service Centre for ensuring highest level of services to the end user;

1. Adequately trained manpower, specifically trained by the bidder for carrying out the service activities.
2. Adequate provisions for record keeping, which shall inter-alia, include the following:
 - (a) Details of system supplied within the command area of the service station including full name and address of end user, system and sub-system serial numbers and records of routine maintenance carried out (duly signed by the end user). These records shall include voltage, current, specific gravity, indicator charge, full glow, charge controller operation, electronics, etc.
 - (b) History record sheets of maintenance done.

3. Adequate spares for ensuring least down time of an individual system.
-

The date of CMC maintenance period shall begin on the date of expiry of the Defects Liability Period (12 Months)

Bidder shall furnish details of infrastructure that are presently available for establishing of Service Centers.

APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

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

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

SECTION E

SCHEDULE OF CONTRACT DRAWINGS

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SCHEDULE OF CONTRACT DRAWINGS

DRAWING NO.	DRAWING TITLE
As shall be issued by the Engineer	

NOTE:

Tenderers are advised to inspect the drawings at the office of the **Chief Engineer (Electrical) - State Department of Public Works**, at Chief Engineer's (Electrical) office, 5th Floor Hill Plaza Building, Community area, Nairobi along Ngong road, during normal working hours.

SECTION F
PARTICULAR SPECIFICATIONS

PARTICULAR SPECIFICATIONS

1.0 SITE LOCATION

The site of the proposed works is at **CEMASTE, Karen – Nairobi.**

2.0 SCOPE OF WORKS

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

Solar Streetlighting Works

This shall include supply, installation testing and commissioning of: -

- a. Solar Panels
- b. Solar Batteries
- c. Galvanized streetlighting poles
- d. Cabling
- e. LED Luminaires
- f. Charge controllers
- g. Timer switches
- h. Civil works

3.0 CLIMATIC CONDITIONS

Mean Maximum Temperatures24°C

Mean Minimum Temperature9°C

Range of Relative humidity39% - 97%.....

Salt in the atmosphere0.02%.....

Altitude above sea level.....1795 m.....

Latitude /Longitude1.3169° S / 36.6903° E

Solar Radiation, February, Mean Max 630 Langleys

Extremely heavy rains fall at certain periods of the year and the contractor shall be deemed to have taken account of this factor both in his prices and his planning of the execution of the contract works.

Equipment de-rating factors for the temperature and altitude shall be stated.

4.0 MATERIALS FOR THE WORKS

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

3.4 SPECIFICATIONS DATA

ITEM	DESCRIPTION	TENDERER
1	Make/model of panel	
2	Make/model of battery	
3	Capacity of the battery(AH)	
4	Spare parts availability in Kenya	
5	Ambient temperature for operation	
6	Make/model of Street lighting Pole	
7	Make/model of Lamp	
8	Guarantee period	
9	Delivery period(WKS)	
10	Cables	

SECTION G
SCHEDULE OF UNIT RATES

SCHEDULE OF UNIT RATES

1. The tenderer shall insert unit rates against the items in the following schedules and may add such other items as he considers appropriate.
2. The unit rates shall include for supply, transport, insurance, delivery to site, storage as necessary, assembling, cleaning, installing, connecting, profit and maintenance in defects liability and any other obligation under this contract.
3. The unit rates will be used to assess the value of additions or omissions arising from authorised variations to the contract works.
4. Where trade names or manufacturer's catalogue numbers are mentioned in the specification, the reference is intended as a guide to the type of article or quality of material required. Alternative brands of **equal** and **approved** quality will be accepted.

SCHEDULE OF UNIT RATES

NO	DESCRIPTION	QTY	UNIT	UNIT RATE	
				KSHS	CTS
	1) Cables PVC SWA PVC Cables:-				
	a) 2 core 10mm ²	1	M		
	b) 4 core 10mm ²	1	M		
	c) 4 core 16mm ²	1	M		
	d) 4 core 6 mm ²	1	M		
	2) 200mm x 50mm powder coated 2 compartment rectangular metal trunking	1	No.		
	3) Streetlighting control panel with 100A 4-way TPN Distribution Board.	1	No.		
	4) 70W LED IP 65 Flood light	1	No.		
	5) 8M Galvanised solar street lighting pole with twin arm	1	No.		

SECTION H

BILLS OF QUANTITIES

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 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 contract and together with other Bills of Quantities covers for the costs involved in complying with all the requirements for the proper execution of the whole of the works in the contract.

The Bills of Quantities are divided generally into three sections:-

a) Preliminaries – Bill 1

Sub-contractors preliminaries are as per those described in section C – sub-contractor preliminaries and conditions of 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 have been limited to tangible items such as site office, temporary works and others. However the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.

b) Installation Items and Other Bills - Bill 2

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

The unit of measurements and observations are as per those described in clause 1.05 of the section C.

c) Summary

The summary contains tabulation of the separate parts of the Bills of Quantities carried forward with provisional sum, contingencies and any prime cost sums included. The sub-contractor shall insert his totals and enter his grand total tender sum in the space provided below the summary.

This grand total tender sum shall be entered in the Form of Tender provided elsewhere in this document

B) NOTES FOR BILLS OF QUANTITIES

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.
2. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (including **16% V.A.T and 3 % Withholding tax**).

In accordance with Government policy, the 16% V.A.T 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.
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 to. Otherwise alternative brands of **equal and approved** quality will be accepted.

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

5. The grand total of prices in the price summary page must be carried forward to the **Form of Tender**.

1. Statement of Compliance

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

Signed:*for and on behalf of the Tenderer*

Date:

Official Rubber Stamp:

SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR STREETLIGHTING AT CEMASTE, KAREN - NAIROBI

BILLS OF QUANTITIES

SCHEDULE 1 - CONTRACT PRELIMINARY AND GENERAL ITEMS

Item	Description	Qty	Unit	Rate (KES)	Amount (KES)
1.1	Site Requirements and Approvals.				
1.1.1	Allow provisional cost related to environmental mitigation measures including procurement, transport and install all required items as directed by the Engineer.	Prov. Sum	1	50,000	50,000
1.1.2	Allow Provisional cost for relocation/shifting of services and utilities to be encountered during execution of the works (non-structures) as directed by the Engineer.	Prov. Sum	1	100,000	100,000
1.1.3	Procure, transport, install and maintain contract signboard as per the design or as directed by the Engineer.	No.	1		
1.1.4	Allow provisional costs for EIA licensing and liaising with environmental authorities in accordance with the prevailing legislation and regulations.	Prov. Sum	1	50,000	50,000
1.2	Engineer's staff and Supervision support services.				
1.2.1	Allow provisional costs for telephone services for Engineer and staff as will be directed	Prov. Sum	1	150,000	150,000
1.2.2	Supervision by Engineer and site meetings clause 1.67	Prov. Sum	1	50,000	50,000
1.3	Training				
1.3.1	Allow Provisional cost sum for staff training. This shall be expended on the Engineer's instructions and Project Manager's approval.	Prov. Sum	1	200,000	200,000
1.4	Allow for the Contractor's Overheads and Profits on Provisional Sums under Items 1.2.1, 1.2.2, 1.2.4, 1.3.1, 1.3.2, 1.3.3 and 1.4.1 above.	%	7.5%		
TOTAL BILL NO. 1 CARRIED FORWARD TO PRICE SUMMARY PAGE					



SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR STREETLIGHTING AT CEMASTE, KAREN - NAIROBI
BILLS OF QUANTITIES

SCHEDULE 2 - SUPPLY, INSTALLATION AND COMMISSIONING OF SOLAR POWERED STREETLIGHTING - PHASE I

Item	Description	Qty	Unit	Rate	Amount (KES)
2.1	Supply, Installation, Testing and Commissioning of Solar Powered streetlight system comprising of the following:				
2.1.1	8m high (above ground height) Single Arm Street Lighting Pole complete with ventilated lockable housing for 2No. Batteries, power control box, support mechanism, mounting brackets for 2No. PV solar panels and mounting brackets for the light fitting and arrangement of concealed junction box with 2No. 6A SP MCBs. The pole shall be located in the ground in a suitably compacted or concrete foundation suitable of withstanding wind gusts of upto 200 km/hr with all accessories of solar panel, two batteries, lantern and charge controller systems. The column and the luminaire bracket shall be of galvanised mild steel (and shall allow for the foundation depth of 1000mm).	No	10		
2.1.2	100W, 12V Mono-Crystalline Silicon cells PV Modules with solar cell operating temperature from -15°C to 85°C, junction box to IP 65 without glue and panel mounting structure flexible to tilt to allow any angle of view at site. The 100W Mono-Crystalline Silicon cells PV Modules shall have a guarantee of 25 years from the date of manufacture for free replacement.	No	20		
2.1.3	120AH Solar deep Cycle sealed/VRLA /AGM Battery, maintenance free rechargeable lead-lead dioxide technology batteries with provision for pressure release mechanism in the event of overcharge, permitted depth of discharge 50% back up of 36 hours and working life of 8 years guarantee. The battery should come with an IP68 lockable battery enclosure with mounting brackets, protection powder coating of 60 micron thickness. The battery enclosure shall have an insulated lid or a double skin lid to minimise heat transfer to the battery.	No	20		
2.1.4	An LED road and street lantern, designed for durability with intensive distribution. <i>LED converter</i> : Class I electrical, IP66 without glue, IK08. <i>Body</i> : die-cast aluminium, powder coated grey. <i>Bracket</i> : die-cast aluminium, unpainted. <i>Enclosure</i> : flat glass, suitable for side mounting on at least Ø34-42mm spigot. Variable tilting in 5° steps, post top: 0° to +10°, lateral: -20° to 0°. Cable gland for Ø8 to 12mm cable. Delivered, ready to install, in a single carton. The lamp to have a light output of 4000°K and 50,000 hours life at 25°C: Total power ≤ 61 W Lumen Output ≥ 5,300 Lm Efficacy ≥ 90 Lm/W Power factor ≥ 0.9 Frequency range of 45 - 50Hz Operating Voltage range of 130V - 250V AC	No	10		
	Total Carried forward to Next Page				

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR STREETLIGHTING AT CEMASTEIA,
KAREN - NAIROBI**

BILLS OF QUANTITIES

**SCHEDULE 2 - SUPPLY, INSTALLATION AND COMMISSIONING OF SOLAR POWERED STREETLIGHTING -
PHASE I**

Item	Description	Qty	Unit	Rate	Amount (KES)
	Balance B/f				
	Supply, Install, test and commission the following:				
2.1.5	20A Solar Charge controller type MPPT (Micro processor based) with circuit efficiency of 92%. The no load current should be less than 10 mA and complete with IP65 enclosure.	No	10		
2.1.6	Dusk to Dawn programmable timer switch control system complete with 10A contactor switch and weather resistant/ moisture ingress protection to IP66 without glue.	No	10		
2.1.7	2.5mm ² twin with earth copper cable from MCB to luminaire complete with all accessories installations.	m	140		
2.1.8	25mm ² PVC Twin core with earth copper cable from the battery to the charge controller and to the solar panel and connection accessories.	m	140		
2.1.9	50A Battery Fuse and Carrier, wall mounted as appropriate for the system.	No	30		
2.1.10	Excavate holes to take the metallic columns above, average 1,000mm deep and 400mm diameter, install columns, backfill with concrete mix and compact to natural ground level (the depth will be in accordance with 2.1.1 - foundation suitable of withstanding wind gusts of upto 200 km/hr with all accessories of solar pannel, two batteries, lantern and charge controller systems).	No	10		
2.1.11	600x500x480mm precast water tight manhole with a removable concrete cover and appropriate foundation (Provisional on Instructions by the Engineer and modification of Item 2.1.1) with Allen Key opening mechanism.	No	10		
2.1.12	Provisional sum for additional 6mm ² twin with earth copper cable from MCB to luminaires complete with all accessories installations	m	600	700	420,000
2.1.13	Provisional sum for trenching for item 2.1.12 above	m	600	800	480,000
2.2	Testing and Commissioning				
2.2.1	Allow for required Testing and Commissioning of the System in accordance with manufacture requirement and Project Manager.	Lump Sum	1		
2.2.2	Allow for the Contractor's Overheads and Profits on Provisional Sums under Items 2.1.12 & 2.1.13 above.	%	7.5%		
TOTAL BILL NO. 2 CARRIED FORWARD TO PRICE SUMMARY PAGE					

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR STREETLIGHTING AT CEMASTEIA,
KAREN - NAIROBI**

BILLS OF QUANTITIES**SCHEDULE 3 - SUPPLY OF THE INSTALLATIONS MAINTENANCE TOOLS**

Item	Description	Qty	Unit	Rate (KES)	Amount (KES)
3.1	For the Supply to site of the following tools (To be handed over to the Estates Management Board or equivalent):				
3.1.1	Large size mechanics Metal tool box with lock and two keys.		1		
3.1.2	Set of 8 No. Chrome vanadium ring spanners in sizes to suit the set		1		
3.1.3	Set of 3 screwdrivers, 75mm, 200mm and 300mm plus one 200mm Philips type OR similar approved.		1		
3.1.4	Item 3.1.3 ditto, but open ended spanners		1		
3.1.5	Set of feeler gauges		1		
3.1.6	Grease gun to suit greasing points		1		
3.1.7	Oil can, trigger type		1		
3.1.8	Any other special tools which the tenderer recommends should be purchased as an optional* (<i>Tenderer to provide details used for pricing</i>)		1		
TOTAL BILL NO. 3 CARRIED FORWARD TO PRICE SUMMARY PAGE					

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR STREETLIGHTING AT
CEMASTE, KAREN - NAIROBI**

BILLS OF QUANTITIES

PRICE SUMMARY PAGE

Item	Description	Amount (KES)
1	SCHEDULE 1 - CONTRACT PRELIMINARY AND GENERAL ITEMS	
2	SCHEDULE 2 - SUPPLY, INSTALLATION AND COMMISSIONING OF SOLAR POWERED STREETLIGHTING - PHASE I	
3	SCHEDULE 3 - SUPPLY OF THE INSTALLATIONS MAINTENANCE TOOLS	
A	TOTAL FOR BILLS OF QUANTITIES (A = 1 + 2 + 3)	
B	ALLOW 10% OF TOTAL A FOR CONTIGENCY SUM FOR LEGISLATION CHANGES AND VARIATIONS (B= 10% x A)	
C	TOTAL FOR BILLS OF QUANTITIES AND CONTIGENCY SUM (C = A+B)	
GRAND TOTAL CARRIED TO FORM OF TENDER		

TOTAL AMOUNT IN WORDS

.....

.....

.....

TENDERER'S NAME, ADDRESS & STAMP

.....

.....

SIGNATURE

DATE.....

P.I.N No.,.....

V.A.T CERTIFICATE No.....

WITNESS NAME.....

ADDRESS.....

SIGNATURE OF WITNESS.....

DATE.....

SECTION I
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 bidders shall therefore be required to indicate the type/make and country of origin of all the materials and equipments 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 bidder shall automatically be disqualified.

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

ITEM	DESCRIPTION	TYPE/MAKE	COUNTRY OF ORIGIN
1.	Solar Panels		
2.	Batteries		
3.	Charge Controller		
4	LED Luminaire		
5	Timer Switch		
6.	Street lighting Pole		
7.	Copper cable		

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SECTION J

STANDARD FORMS

CONTENTS OF SECTION J

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2. Confidential Business Questionnaire.....	J/2 -J/3
3. Key Personnel.....	J/4
4. Schedule of Contracts completed in the last five (5) years.....	J/5
5. Schedule of on-going projects.....	J/6
6. Contractor's Equipment.....	J/7
7. Financial Reports for the last five (5) years.....	J/8
8. Evidence of Financial Resources to Meet Qualification Requirements.....	J/9
9. Bidder's Bank Information.....	J/10
10. Details of Litigation or Arbitration Proceedings.....	J/11
11. Appendix: Commissioning guide for Electrical Works	J/12

NOTE:

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

TENDER QUESTIONNAIRE

Please fill in block letters.

Full names of Tenderer:

.....

Full address of Tenderer to which tender correspondence is to be sent (unless an agent has been appointed below):

.....

Telephone number (s) of Tenderer:

.....

Telex/Fax Address of Tenderer:

.....

Name of Tenderer's representative to be contacted on matters of the tender during the tender period:

.....

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 a copy and deliver to: The Director,
Centre for Mathematics Science and Technology
Education in Africa (CEMASTEIA),
P.O Box 24214 - 00502,
NAIROBI.

CONFIDENTIAL BUSINESS QUESTIONNAIRE

You are requested to give the particulars indicated in Part 1 and either Part 2 (a), 2 (b) or 2(c) and (2d) whichever applies to your type of business.

You are advised that it is a serious offence to give false information on this Form.

Part 1 – General

Business Name

Location of business premises: Country/Town.....

Plot No..... Street/Road

Postal Address..... Tel No.....

Nature of Business.....

Current Trade Licence No..... Expiring date.....

Maximum value of business which you can handle at any time:

Kenya Shillings.....

Name of your bankers.....

Branch.....

Part 2 (a) – Sole Proprietor

Your name in full..... Age.....

Nationality..... Country of Origin.....

Citizenship details

Part 2 (b) – Partnership

Give details of partners as follows:

Name in full Nationality Citizenship Details Shares

1.

2.

3.

4.

Part 2(c) – Registered Company

Private or Public

State the nominal and issued capita of the company:

Nominal KShs.

Issued KShs.

Give details of all directors as follows:

	<i>Name in full</i>	<i>Nationality</i>	<i>Citizenship Details*</i>	<i>Shares</i>
1.	
2.	
3.	
4.	

Part 2(d) Interest in the Firm:

Is there any person/persons in the employment of the Government of Kenya WHO has interest in this firm?

Yes/No (Delete as necessary)

I certify that the above information is correct.

.....

Title

Signature

Date

* *Attach proof of citizenship*

KEY PERSONNEL

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

POSITION	NAME	YEARS OF EXPERIENCE (GENERAL)	YEARS OF EXPERIENCE IN PROPOSED POSITION
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

I certify that the above information is correct.

.....

Title

.....

Signature

.....

Date

CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

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

<u>PROJECT NAME</u>	<u>NAME OF CLIENT</u>	TYPE OF WORK AND YEAR OF COMPLETION	VALUE OF CONTRACT (Kshs.)

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

.....
Title

.....
Signature

.....
Date

SCHEDULE OF ON-GOING PROJECTS

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

Details of on going or committed projects, including expected completion date.				
PROJECT NAME	NAME OF CLIENT	CONTRACT SUM	% COMPLETE	COMPLETION DATE

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

.....
Title

.....
Signature

Date

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

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

FINANCIAL REPORTS FOR THE LAST FIVE YEARS

(Balance sheets, Profits and Loss Statements, Auditor's reports, etc.)

List below and attach copies)

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

EVIDENCE OF FINANCIAL RESOURCES TO MEET QUALIFICATION REQUIREMENTS

(Cash in Hand, Lines of credit, e.t.c. List below and attach copies of supportive documents.)

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

BIDDER'S BANK INFORMATION

(This information is mandatory and should be for banks to provide reference if contacted by employer)

NAME OF BANK	BANK BRANCH	ACCOUNT NAME	ADDRESS	TELEPHONE

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

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