REPUBLIC OF KENYA

MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING AND URBAN DEVELOPMENT

(STATE DEPARTMENT OF PUBLIC WORKS)

PROPOSED ERECTION AND COMPLETION OF A WARD BLOCK AT MERU COUNTY LEVEL 5 HOSPITAL (PHASE 1)

W.P ITEM NO.D108/EN/MRU 1601-JOB NO.0397F

SPECIFICATIONS AND BILLS OF QUANTITIES

FOR

SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF

SOLAR WATER HEATING SYSTEM WORKS

PROJECT MANAGER
WORKS SECRETARY
STATE DEPARTMENT OF PUBLIC WORKS
P.O. Box 30743-00100
Nairobi

ARCHITECT
Chief Architect,
State Department of Public Works
P.O. Box 30743-00100
Nairobi

ELECTRICAL ENGINEER
Chief Engineer(Electrical),
State Department of Public Works,
P.O. Box 41191-00100
Nairobi

QUANTITY SURVEYOR
Chief Quantity Surveyor,
State Department of Public Works
P.O. Box 30743-00100
Nairobi

MECHANICAL ENGINEER
Chief Engineer(Mechanical-BS)
State Department of Public Works
P.O. Box 41191-00100
Nairobi

STRUCTURAL ENGINEER
Chief Engineer(Structural),
State Department of Public Works
P.O. Box 30743-00100
Nairobi

CLIENT
Chief Officer, Health
County Government of Meru
P.O. Box 120-60200
Meru

JULY, 2018
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTENTS PAGE</td>
<td>(i)</td>
</tr>
<tr>
<td>DEFINITIONS</td>
<td>(ii)</td>
</tr>
<tr>
<td>SPECIAL NOTES</td>
<td>(iii)</td>
</tr>
<tr>
<td>FORM OF TENDER</td>
<td>(iv)</td>
</tr>
<tr>
<td>FORM OF TENDER SECURITY</td>
<td></td>
</tr>
<tr>
<td>APPENDIX 1</td>
<td>(v)</td>
</tr>
<tr>
<td>APPENDIX II</td>
<td>(vi)</td>
</tr>
<tr>
<td>SECTION A: INSTRUCTIONS TO TENDERERS ..........</td>
<td>A-1 to A-17</td>
</tr>
<tr>
<td>SECTION B: CONDITIONS OF CONTRACT (SUB CONTRACT WORKS)</td>
<td>B-1 to B-13</td>
</tr>
<tr>
<td>SUB-CONTRACT AGREEMENT FORM- KABCEC .............</td>
<td>1 - 22</td>
</tr>
<tr>
<td>SECTION C: SUB CONTRACTS PRELIMINARIES AND GENERAL CONDITIONS</td>
<td>C-1 to C-21</td>
</tr>
<tr>
<td>SECTION D: GENERAL MECHANICAL SPECIFICATION ....</td>
<td>D-1 to D-5</td>
</tr>
<tr>
<td>SECTION E: PARTICULAR SPECIFICATIONS FOR INTERNAL PLUMBING, DRAINAGE AND FIRE FIGHTING WORKS</td>
<td>E-1 to E-32</td>
</tr>
<tr>
<td>SECTION F: BILLS OF QUANTITIES AND SCHEDULE OF UNITS RATES</td>
<td>F-1 to F-14</td>
</tr>
<tr>
<td>SECTION G: TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED</td>
<td>G-1 to G-2</td>
</tr>
<tr>
<td>SECTION H: SCHEDULE OF CONTRACT DRAWING .........</td>
<td>H-1</td>
</tr>
<tr>
<td>SECTION M: STANDARD FORMS</td>
<td>I-1 to J-12</td>
</tr>
</tbody>
</table>

(i)
DEFINITIONS

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

The Employer
The County Government of Meru
Represented by:
Chief Officer, Health
County Government of Meru
P.O. Box 120-60200
Meru

Project Manager
Works Secretary
State Department of Public Works
P.O. Box 30743-00100,
Nairobi

Architect
Chief Architect
State Department of Public Works
P.O. Box 30743-00100
NAIROBI

Mechanical Engineer
Chief Engineer Mechanical (BS)
State Department of Public Works
P.O. Box 41191-00100
NAIROBI

Electrical Engineer
Chief Engineer Electrical (BS)
State Department of Public Works
P.O. Box 41191-00100
NAIROBI

Quantity Surveyor
Chief Quantity Surveyor
State Department of Public Works
P.O. Box 30743-00100
NAIROBI

Structural Engineer
Chief Engineer (Structural)
State Department of Public Works
P.O. Box 30743-00100
NAIROBI

Employer’s representative
This shall mean the Project Manager and shall be
Project Manager
State Department of Public Works
P.O. Box 30743-00100
NAIROBI

Main contractor
The firm appointed to carry out the builders works.

Sub contractor
The firm appointed to carry out the supply, delivery, installation, testing and commissioning of solar water heating system works

(ii)
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 Mechanical (BS), State Department of Public Works, Ministry of Transport, Infrastructure, Housing and Urban Development.

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 Mechanical (BS), State Department of Public Works, Ministry of Transport, Infrastructure, Housing and Urban Development, 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.

6. Any tenderer whose firm uses the titles “Engineer” and “Engineers” must produce evidence of registration of at least one of the directors by the Engineers Registration Board of Kenya to avoid disqualification.
FORM OF TENDER

To: Chief Officer, Health
   County Government of Meru
   P.O. Box 120-60200
   Meru

Dear Sir/Madam,

Supply, Delivery, Installation, Testing and Commission of solar water heating works for the Proposed Erection and Completion of a Ward Block at Meru County Level 5 Hospital (Phase 1), Meru County

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]\n
   Kenya Shillings…………………………………………………………………...

   …………………………………………………………………………………………

   ……………………………………………………………………\[Amount in words]\n
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 that date.

4. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us.

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

   Dated this ................ day of ...............20....

   Signature ......................in the capacity of .............................................

duly authorized to sign tenders for and on behalf of:

   ...................................................\[Name of Tenderer]\n
   of..............................................\[Address of Tenderer]\n
   PIN No. ..............................................................

   VAT CERTIFICATE No. ...........................................

Witness: Name ..................................................

   Address ..................................................

   Signature ..................................................

   Date ......................................................
FORM OF TENDER SECURITY
Appendix I

To: Chief Officer, Health
County Government of Meru
P.O. Box 120-60200
Meru

WHEREAS ........................................... (hereinafter called “the Tenderer”) has submitted
his tender dated ...................... For Supply, Delivery, Installation, Testing and
Commission of Solar Water Heating Works for the Proposed Erection and Completion of
a Ward Block at Meru County Level 5 Hospital (Phase I), Meru County
KNOW ALL PEOPLE by these presents that WE ..........................................................
Having our registered office at
..........................................................
(hereinafter called “the Bank”), are bound unto
..........................................................
(hereinafter called “the Employer”) in the sum of Kshs...................................................
for which payment well and truly to be made to the said Employer, the Bank binds itself, its
successors and assigns by these presents sealed with the Common Seal of the said Bank this
.............................................Day of ..........................................................20 ...........

THE CONDITIONS of this obligation are:

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

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

This guarantee will remain in force up to and including one hundred and fifty (150)
days after the day of tender opening, and any demand in respect thereof should
reach the Bank not later than the said date.

.......................................................... ..........................................................
  (date) ..........................................................
  (signature of the Bank)

..........................................................
  (witness) ..........................................................
  (seal)
FORM OF TENDER SECURITY

Appendix II

To: Chief Officer, Health
County Government of Meru
P.O. Box 120-60200
Meru

WHEREAS ..............................................................(hereinafter called “the Tenderer”) has submitted his tender dated. ....................... Supply, Delivery, Installation, Testing and Commission of Solar Water Heating Works for the Proposed Erection and Completion of a Ward Block at Meru County Level 5 Hospital (Phase 1), Meru County

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 this ..........................................................Day of ..................................20....................................

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 150 days from the date of tender opening, and any demand in respect thereof should reach the Guarantor not later than the said date.

_______________________________ [date] [signature of the Guarantor]

______________________________ [witness] [seal]

(vi)
SECTION A:

INSTRUCTIONS TO TENDERERS.
# INSTRUCTIONS TO TENDERERS

## CONTENTS

<table>
<thead>
<tr>
<th>CLAUSE NUMBERS</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Definitions</td>
<td>A-1</td>
</tr>
<tr>
<td>2</td>
<td>Eligibility and Qualification Requirements</td>
<td>A-1-A-2</td>
</tr>
<tr>
<td>3</td>
<td>Cost of Tendering</td>
<td>A-3</td>
</tr>
<tr>
<td>4</td>
<td>Site Visit</td>
<td>A-3</td>
</tr>
<tr>
<td>5</td>
<td>Tender Documents</td>
<td>A-3-A-4</td>
</tr>
<tr>
<td>6</td>
<td>Clarification of Tender Documents</td>
<td>A-4</td>
</tr>
<tr>
<td>7</td>
<td>Amendments of Tender Documents</td>
<td>A-4</td>
</tr>
<tr>
<td>8</td>
<td>Language of Tender</td>
<td>A-5</td>
</tr>
<tr>
<td>9</td>
<td>Documents Comprising the Tender</td>
<td>A-5</td>
</tr>
<tr>
<td>10</td>
<td>Tender Prices</td>
<td>A-5-A-6</td>
</tr>
<tr>
<td>11</td>
<td>Currencies of Tender and Payment</td>
<td>A-6</td>
</tr>
<tr>
<td>12</td>
<td>Tender Validity</td>
<td>A-6</td>
</tr>
<tr>
<td>13</td>
<td>Tender Surety</td>
<td>A-7</td>
</tr>
<tr>
<td>14</td>
<td>No Alternative Offers</td>
<td>A-7</td>
</tr>
<tr>
<td>15</td>
<td>Pre-tender meeting</td>
<td>A-8</td>
</tr>
<tr>
<td>16</td>
<td>Format and Signing of Tenders</td>
<td>A-8</td>
</tr>
<tr>
<td>17</td>
<td>Sealing and Marking of Tenders</td>
<td>A-9</td>
</tr>
<tr>
<td>18</td>
<td>Deadline and Submission of Tenders</td>
<td>A-9</td>
</tr>
<tr>
<td>19</td>
<td>Modification and Withdrawal of Tenders</td>
<td>A-9-A-10</td>
</tr>
<tr>
<td>20</td>
<td>Tender Opening</td>
<td>A-10</td>
</tr>
<tr>
<td>21</td>
<td>Process to be Confidential</td>
<td>A-11</td>
</tr>
<tr>
<td>22</td>
<td>Clarification of Tenders</td>
<td>A-11</td>
</tr>
</tbody>
</table>

(i)
<table>
<thead>
<tr>
<th>Clause Numbers</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. Determination of Responsiveness</td>
<td>A-11</td>
</tr>
<tr>
<td>24. Correction of Errors</td>
<td>A-12</td>
</tr>
<tr>
<td>25. Conversion to Single Currency</td>
<td>A-12</td>
</tr>
</tbody>
</table>

**AWARD OF CONTRACT**

<table>
<thead>
<tr>
<th>Clause Numbers</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>27. Award</td>
<td>A-13</td>
</tr>
<tr>
<td>28. Notification of Award</td>
<td>A-13</td>
</tr>
<tr>
<td>29. Performance Guarantee</td>
<td>A-14</td>
</tr>
<tr>
<td>30. Advance Payment</td>
<td>A-14</td>
</tr>
<tr>
<td>31. Appendix to Instructions to Tenderers</td>
<td>A-15</td>
</tr>
</tbody>
</table>
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 28 days prior to the 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.

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.

13.3 Any tender not accompanied by an acceptable Tender Surety will be rejected by the Employer as non-responsive.

13.4 The Tender Sureties of unsuccessful tenderers will be returned as promptly as possible 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.

13.5 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 of persons signing the tender.
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.

19.2 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.

19.3 No tender may be modified subsequent to the deadline for submission of tenders.

19.4 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.

19.5 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 prior 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 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.
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.

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 Dayworks where priced competitively) to Kenya Shillings at the selling rates stated in clause 25.1.

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 33.1 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 Tender is open to all tenderers in the category specified.”

2. OMIT

Clauses 4.3, 5.1 (a), (d), (f), (h), (i), (j), 10.4, 11.2, 11.3, 11.4, 25, 30

3. ADD TO CLAUSE 13.1

Amount of tender surety will be Kshs. 100,000.00 or as indicated in the tender advertisement notice.

4. ADD TO CLAUSE 13.2

(i) The bid security shall be from a reputable Bank/Insurance Company.
(ii) Tender security to be valid for 150 days from the date of Tender opening.

5. ADD TO 29.1 CLAUSE

Amount of performance security will be seven and a half per cent (5%)?

6. AMEND CLAUSE 28.4 AND 29.1

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

7. ADD TO CLAUSE 29.2

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

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 correction factor shall be computed by expressing the difference between the amount and the corrected tender sum as a percentage of the corrected sub-contact works. (i.e. corrected tender sum less PC 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. ADD EVALUATION CRITERIA - Page (A-16) to (vi)
TENDER EVALUATION CRITERIA
After tender opening, the tenders will be evaluated in 3 stages, namely:

1. Determination of Responsiveness
2. Detailed Technical Examination
3. Combination of Technical and Tender Sums Comparison

STAGE 1- DETERMINATION OF RESPONSIVENESS

A) PRELIMINARY EXAMINATION
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) Category of Registration with the National Construction Authority (NCA) in the relevant trade.

ii) Class of Licenses with the relevant statutory bodies e.g. Energy Regulatory Commission, Local Authorities, Water Management Boards etc.

iii) Proof of payment for tender document

iv) Provision of Bid Security

v) Dully filled Form of Tender

vi) Any other conditions included in the advertisement notice/Invitation letter.

Note:
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 tender 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”.

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

The tenderers who do not satisfy any of the above requirements shall be considered Non-Responsive and their tenders will not be evaluated further.
B) COMPLETENESS OF TENDER DOCUMENT

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 adequacy of resources to effectively carry out the subject contract. The tenderers shall be required to fill the Standards Forms provided for the purposes of providing the required information. The tenderers may also attach the required information if they so desire.

The award of points for the **STANDARD FORMS** considered in this section shall be as shown below:

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>MAXIMUM POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Statement of Compliance</td>
<td>3</td>
</tr>
<tr>
<td>(ii) Tender Questionnaire</td>
<td>5</td>
</tr>
<tr>
<td>(iii) Confidential Business Questionnaire</td>
<td>5</td>
</tr>
<tr>
<td>(iv) Key personnel</td>
<td>15</td>
</tr>
<tr>
<td>(v) Contract Completed in the last Five (5) years</td>
<td>15</td>
</tr>
<tr>
<td>(vi) Schedules of on-going projects</td>
<td>10</td>
</tr>
<tr>
<td>(vii) Schedules of contractors equipment</td>
<td>10</td>
</tr>
<tr>
<td>(viii) Audited Financial Report for the last 3 years</td>
<td>10</td>
</tr>
<tr>
<td>(ix) Evidence of Financial Resources</td>
<td>10</td>
</tr>
<tr>
<td>(x) Name, Address and Telephone of Banks (Contractor to provide)</td>
<td>5</td>
</tr>
<tr>
<td>(xi) Litigation History</td>
<td>2</td>
</tr>
<tr>
<td>(xii) Sanctity of the tender document as in accordance with clause 5 of instruction to tenderer</td>
<td>10</td>
</tr>
</tbody>
</table>

**TOTAL** 100

The detailed scoring plan shall be as shown in table 1 overleaf:
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Point Scored</th>
<th>Max. Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td><strong>Statement of Compliance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Signed and stamped ...................................................... 3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Signed but not stamped or vice versa............................................ 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not signed nor stamped ................................................. 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii</td>
<td><strong>Tender Questionnaire Form</strong></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Completely filled .......................................................... 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partially filled ......................................................... 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not filled ................................................................. 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii</td>
<td><strong>Confidential Business Questionnaire Form.</strong></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Completely filled .......................................................... 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partially filled ......................................................... 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not filled ................................................................. 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv</td>
<td><strong>Key Personnel (Attach evidence)</strong></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Director of the firm</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Holder of degree or diploma in relevant Engineering field--4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>o Holder of certificate in relevant Engineering field-----3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Holder of trade test certificate in relevant Engineering field-------------------------------------2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o No relevant certificate---------------------------0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>At least 1No. degree/diploma of key personnel in relevant Engineering field</strong></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>o With over 10 years relevant experience ---------------4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o With over 5 years relevant experience ---------------3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o With under 5 years relevant experience ---------------1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>At least 1No certificate holder of key personnel in relevant Engineering field</strong></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>o With over 10 years relevant experience ---------------3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o With over 5 years relevant experience ---------------2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o With under 5 years relevant experience ---------------1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>At least 2No artisan (trade test certificate in relevant Engineering field)</strong></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>o Artisan with over 10 years relevant experience-------- 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Artisan with under 10 years relevant experience ----- 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Non skilled worker with over 10 years relevant experience—1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v</td>
<td>Contract completed in the last five (5) years (Max of 5 No. Projects)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Project of similar nature, complexity and magnitude ----3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Project of similar nature but of lower value than the one in consideration----------------------------- 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o No completed project of similar nature -------------- 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>vi</th>
<th>On-going projects (Max of 5 No. Projects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Project of similar nature, complexity and magnitude ----2</td>
<td></td>
</tr>
<tr>
<td>o Project of similar nature but of lower value than the one in consideration----------------------------- 1</td>
<td></td>
</tr>
<tr>
<td>o No ongoing project of similar nature------------------------ 0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>vii</th>
<th>Schedule of contractors equipment and transport (proof or evidence of ownership)</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Means of transport (Vehicle)----------------------------- 4</td>
<td></td>
</tr>
<tr>
<td>o No means of transport --------------------------------- 0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

For each specific equipment required in the installation of the Work being tendered for. (Maximum No. of equipment to be considered – 3 No.)---- 2

<table>
<thead>
<tr>
<th>viii</th>
<th>Financial report</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Audited financial report (last three (3) years)</td>
<td></td>
</tr>
<tr>
<td>o Turn over greater or equal to 5 times the cost of the project --------------------------------- 10</td>
<td></td>
</tr>
<tr>
<td>o Turn over greater or equal to 3 times the cost of the project --------------------------------- 6</td>
<td></td>
</tr>
<tr>
<td>o Turn over greater or equal to cost of the project -------- 4</td>
<td></td>
</tr>
<tr>
<td>o Turn over below the cost of the project --------------- 2</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ix</th>
<th>Evidence of Financial Resources (cash in hand, lines of credit, over draft facility etc )</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Has financial resources equal or above the cost of the project----------------------------- 10</td>
<td></td>
</tr>
<tr>
<td>o Has financial resources below the cost of the project-------- 5</td>
<td></td>
</tr>
<tr>
<td>o Has not indicated sources of financial resources --------0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>x</th>
<th>Name, Address and Telephone of Banks (Contractor to provide)</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Provided --------------------------------- 5</td>
<td></td>
</tr>
<tr>
<td>o Not provided---------------------------------- 0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>xi</th>
<th>Litigation History</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Filled ---------------------------------- 2</td>
<td></td>
</tr>
<tr>
<td>o Not filled---------------------------------- 0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>xii</th>
<th>Sanctity of the tender document</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Having the document intact (not tempered with in any way)----------------------------- 10</td>
<td></td>
</tr>
<tr>
<td>o Having mutilated or modified the tender document------0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

| TOTAL | 100 |

Any bidder who scores 60 points and above shall be considered for further evaluation
STAGE 2 - TECHNICAL EVALUATION

A) COMPLIANCE WITH TECHNICAL SPECIFICATIONS
In this section, the bid will be analyzed to determine compliance with General and Particular technical specifications for the works as indicated in the tender document.

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

Where the Equipment proposed by the tenderer differs with the models specified in the tender document, it is mandatory that the brochures/catalogues of the same be submitted with the tender document highlighting the catalogues Numbers 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:

a) Standards of manufacture
b) Performance ratings/characteristics
c) Material of manufacture
d) Electrical power ratings and
e) Any other necessary requirements (Specify)

Following the above analyses, where the proposed equipment are found not to satisfy the specifications, the tender will be deemed Non – Responsive and will not be evaluated further.

B) TECHNICAL EXAMINATION
In this section, the information provided in the Technical Schedule or Brochures attached will be analyzed for bidders who have qualified from STAGE 2A above and points awarded as shown below to a maximum of 70 points
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Score</th>
<th>Max. score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Technical schedule/Brochures</strong></td>
<td></td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>▪ Relevant Manufacturer Brochures for items in the technical schedule with equipments to be supplied highlighted and meets specification (Where alternative are to supplied)</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>▪ Completely filled Technical Schedule indicating Brand, Model/ Country of origin as per specification in the tender</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>▪ Relevant Manufacturer Brochures for items in the technical schedule with equipments to be supplied not highlighted but within range of those specified and meets specifications</td>
<td></td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>▪ Completely filled Technical Schedule indicating items as specified in the tender but less than 100% and above 75% of items in the technical provided</td>
<td></td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>▪ Relevant Manufacturer Brochures for items in the technical schedule with equipments to be supplied but between 50% and 75% of items highlighted and within range of those specified and meets specifications</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>▪ Completely filled Technical Schedule indicating items as specified in the tender but between 50% and 75% of items in the technical schedule provided</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>▪ Relevant Manufacturer Brochures for between 25% and 50% of items in the technical schedule with equipments to be supplied highlighted and meets specifications</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>▪ for between 25% and 50% of Technical Schedule filled indicating Brand, Model/Country of origin for the items considered as specified in the tender</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>▪ Less than 25% provided or no technical data provided, either in form of brochures or filling of Technical Schedule</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td></td>
<td>70</td>
</tr>
</tbody>
</table>

The Technical score will be carried forward to STAGE 4
STAGE 3 - FINANCIAL EVALUATION

The evaluation shall be in two sections
1. Preliminary examinations and
2. Tender sum Comparisons

A) PRELIMINARY EXAMINATIONS

The preliminary examination in the Financial Evaluation shall be in accordance with clause 26 of Instruction to Tenderers.

The parameter to be considered under this section includes the following:
   a) Arithmetic errors and comparison of rates

   (1) Arithmetic Errors
   The bid shall be checked for arithmetic errors based on the rates and the total sums indicated in the bills of quantities.
   a) Confirmation shall be sought in writing from the tenderers whose tender sums will be determined to have a significant arithmetic error to their disadvantage, to confirm whether they stand by their tender sums. The error shall be treated as per clause 24 of Instructions to Tenderers.
   Non compliance with the above shall lead to automatic disqualification from further evaluation.
   Discount if any shall be treated as an error in pursuant to clause 26.3 of Instructions to Tenderers

   (2) Comparison of rates
   The evaluation committee will compare rates from different bidders and note consistency of rates and front loading. The evaluation committee will judge and make an appropriate decision giving evidence.

B) TENDER SUMS COMPARISONS

In this section, tender sums will be compared to the average of all sums for bidders who have qualified from STAGE 3A and score awarded to a maximum score of 30 as shown below.

1 Preliminary Average
   i. The tender sums of various binders, who qualify at STAGE 3A and the engineer's estimates, shall be reduced by omitting PC sums, provisional sums and contingency from the respectful amounts. The average of the adjusted tender sums so obtained shall be calculated.
   ii. Any tenderer whose tender percentage deviation is 20% higher or lower than the average obtained above, will be deemed to be unreasonably high or low and shall not be included in determining the mean in table 3, However their bids will still be evaluated further. The Engineer's estimate will also be subjected to the same treatment.

2. Working mean

The detailed scoring plan shall be as shown in table 3 overleaf:
TABLE 3

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Score</th>
<th>Max. score</th>
</tr>
</thead>
</table>
| I    | Tender Sums: (The tender sums of binders, who qualify at STAGE 3A and the engineer’s estimates, shall be reduced by omitting PC sums, provisional sums and contingency from the respectful amounts. The average of the adjusted tender sums so obtained shall be calculated. The deviation of the reduced amounts in respect of each bidder from the average shall then be worked out as a percentage of the average (Rounded off to one (1) decimal point) and scores allocated as follows :-)
  o Deviation of between 0% and 1% ------------------------------------------ 30
  o Deviation of between 1.1% and 2%-------------------------------------- 28.5
  o Deviation of between 2.1% and 3%---------------------------------------- 27
  o Deviation of between 3.1% and 4%---------------------------------------- 25.5
  o Deviation of between 4.1% and 5%---------------------------------------- 24
  o Deviation of between 5.1% and 6%---------------------------------------- 22.5
  o Deviation of between 6.1% and 7%---------------------------------------- 21
  o Deviation of between 7.1% and 8%---------------------------------------- 19.5
  o Deviation of between 8.1% and 9%---------------------------------------- 18
  o Deviation of between 9.1% and 10%--------------------------------------- 16.5
  o Deviation of between 10.1% and 11%-------------------------------------- 15
  o Deviation of between 11.1% and 12%------------------------------------- 13.5
  o Deviation of between 12.1% and 13%------------------------------------- 12
  o Deviation of between 13.1% and 14%------------------------------------- 10.5
  o Deviation of between 14.1% and 15%-------------------------------------- 9
  o Deviation of between 15.1% and 16%-------------------------------------- 7.5
  o Deviation of between 16.1% and 17%-------------------------------------- 6
  o Deviation of between 17.1% and 18%-------------------------------------- 4.5
  o Deviation of between 18.1% and 19%-------------------------------------- 3
  o Deviation of between 19.1% and 20%------------------------------------- 1.5
  o Deviation of  20.1% and above--------------------------------------------- 0 |       | 30         |

The Tender sum score will be carried forward to STAGE 4

STAGE 4 - FINAL SCORE

The total score will be combined sums of Technical, Tender Sums Comparison and Financial marks as below:

Technical (Ts) + Tender Sums Comparison (TSC) = Ts + TSC

RECOMMENDATION
The lowest responsive bidder who score 75% and above may be recommended for award.
SECTION B:

CONDITIONS OF CONTRACT (SUB CONTRACT WORKS)
# CONDITIONS OF CONTRACT (SUB CONTRACT WORKS)

## CONTENTS

<table>
<thead>
<tr>
<th>CLAUSE No.</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DEFINITIONS</td>
<td>B-2</td>
</tr>
<tr>
<td>2. CONTRACT DOCUMENTS</td>
<td>B-3</td>
</tr>
<tr>
<td>3. EMPLOYER’S REPRESENTATIVE’S DECISIONS</td>
<td>B-4</td>
</tr>
<tr>
<td>4. WORKS, LANGUAGE AND LAW OF CONTRACT</td>
<td>B-4</td>
</tr>
<tr>
<td>5. SAFETY, TEMPORARY WORKS AND DISCOVERIES</td>
<td>B-4</td>
</tr>
<tr>
<td>6. WORK PROGRAMME AND SUB-CONTRACTING</td>
<td>B-4</td>
</tr>
<tr>
<td>7. THE SITE</td>
<td>B-4</td>
</tr>
<tr>
<td>8. INSTRUCTIONS</td>
<td>B-5</td>
</tr>
<tr>
<td>9. EXTENSION OF COMPLETION DATE</td>
<td>B-5</td>
</tr>
<tr>
<td>10. MANAGEMENT MEETINGS</td>
<td>B-6</td>
</tr>
<tr>
<td>11. DEFECTS</td>
<td>B-6</td>
</tr>
<tr>
<td>12. BILLS OF QUANTITIES/SCHEDULE OF RATES</td>
<td>B-7</td>
</tr>
<tr>
<td>13. VARIATIONS</td>
<td>B-7</td>
</tr>
<tr>
<td>14. PAYMENT CERTIFICATES AND FINAL ACCOUNT</td>
<td>B-8</td>
</tr>
<tr>
<td>15. INSURANCES</td>
<td>B-9</td>
</tr>
<tr>
<td>16. LIQUIDATED DAMAGES</td>
<td>B-9</td>
</tr>
<tr>
<td>17. COMPLETION AND TAKING OVER</td>
<td>B-9</td>
</tr>
<tr>
<td>18. TERMINATION</td>
<td>B-9</td>
</tr>
<tr>
<td>19. PAYMENT UPON TERMINATION</td>
<td>B-10</td>
</tr>
<tr>
<td>20. CORRUPT GIFTS AND PAYMENTS OF COMMISSION</td>
<td>B-10</td>
</tr>
<tr>
<td>21. SETTLEMENT OF DISPUTES</td>
<td>B-11</td>
</tr>
</tbody>
</table>

APPENDIX TO CONDITIONS OF CONTRACT | B-12
CONDITIONS OF CONTRACT (SUB CONTRACT WORKS)

1. Definitions

1.1 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 [where applicable].

“Schedule of Rates” means the priced Schedule of Rates forming part of the tender [where applicable].

“The Completion Date” means the date of completion of the Works as certified by the Employer’s Representative.

“The Contract” means the agreement entered into by the Employer and the Contractor as recorded in the Agreement Form and signed by the parties.

“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 Contractor to the Employer.

“The Contract Price” is the price stated in the Letter of Acceptance.

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

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

“The Defects Liability Certificate” is the certificate issued by Employer’s Representative upon correction of defects by the Contractor.

“The Defects Liability Period” is the period named in the Appendix to Conditions of Contract and calculated from the Completion Date.

“Drawings” include calculations and other information provided or approved by the Employer’s Representative for the execution of the Contract.

“Employer” includes Central or Local Government administration, Universities, Public Institutions and Corporations and 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.

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

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

“Specification” means the Specification of the Works included in the Contract.

“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.

“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. Contract Documents

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. Conditions of Contract,
5. Specifications,
6. Drawings,
7. Bills of Quantities or Schedule of Rates (whichever is applicable)
3. **Employer's Representative’s Decisions**

3.1 Except where otherwise specifically stated, the Employer’s Representative will decide contractual matters between the Employer and the Contractor in the role representing the Employer.

4. **Works, Language and Law of Contract**

4.1 The Contractor shall construct and install the Works in accordance with the Contract documents. The Works may commence on the Start Date and shall be carried out in accordance with the Programme submitted by the Contractor, as updated with the approval of the Employer’s Representative, and complete them by the Intended Completion Date.

4.2 The ruling language of the Contract shall be English language and the law governing the Contract shall be the law of the Republic of Kenya.

5. **Safety, Temporary works and Discoveries**

5.1 The Contractor shall be responsible for design of temporary works and shall obtain approval of third parties to the design of the temporary works where required.

5.2 The Contractor shall be responsible for the safety of all activities on the Site.

5.3 Any thing of historical or other interest or significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Employer’s Representative of such discoveries and carry out the Employer’s Representative’s instructions for dealing with them.

6. **Work Programme and Sub-contracting**

6.1 Within seven days after Site possession date, the Contractor shall submit to the Employer’s Representative for approval a programme showing the general methods, arrangements, order and timing for all the activities in the Works.

6.2 The Contractor may sub-contract the Works (but only to a maximum of 25 percent of the Contract Price) with the approval of the Employer’s Representative. However, he shall not assign the Contract without the approval of the Employer in writing. Sub-contracting shall not alter the Contractor’s obligations.
7. **The site**

7.1 The Employer shall give possession of all parts of the Site to the Contractor.

7.2 The Contractor shall allow the Employer’s Representative and any other person authorised by the Employer’s Representative, 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.

8. **Instructions**

8.1 The Contractor shall carry out all instructions of the Employer’s Representative which are in accordance with the Contract.

9. **Extension of Completion Date**

9.1 The Employer’s Representative shall extend the Completion Date if an occurrence arises which makes it impossible for completion to be achieved by the Intended Completion Date. The Employer’s Representative shall decide whether and by how much to extend the Completion Date.

9.2 For the purposes of this Clause, the following occurrences shall be valid for consideration;

    Delay by:-

(a) force majeure, or

(b) reason of any exceptionally adverse weather conditions, or

(c) reason of civil commotion, strike or lockout affecting any of the trades employed upon the Works or any of the trades engaged in the preparation, manufacture or transportation of any of the goods or materials required for the Works, or

(d) reason of the Employer’s Representative’s instructions issued under these Conditions, or

(e) reason of the contractor not having received in due time necessary instructions, drawings, details or levels from the Employer’s Representative for which he specifically applied in writing on a date which having regard to the date for Completion stated in the appendix to these Conditions or to any extension of time then fixed under this Clause was neither unreasonably distant from nor unreasonably close to the date on which it was necessary for him to receive the same, or
(f) delay on the part of artists, tradesmen or others engaged by the Employer in executing work not forming part of this Contract, or

(g) reason of delay by statutory or other services providers or similar bodies engaged directly by the Employer, or

(h) reason of opening up for inspection of any Work covered up or of the testing or any of the Work, materials or goods in accordance with these conditions unless the inspection or test showed that the Work, materials or goods were not in accordance with this Contract, or

(i) reason of delay in appointing a replacement Employer’s Representative, or

(j) reason of delay caused by the late supply of goods or materials or in executing Work for which the Employer or his agents are contractually obliged to supply or to execute as the case may be, or

(k) Delay in receiving possession of or access to the Site.

10. Management Meetings

10.1 A Contract management meeting shall be held regularly and attended by the Employer’s Representative and the Contractor. Its business shall be to review the plans for the remaining Work. The Employer’s Representative shall record the business of management meetings and provide copies of the record to those attending the meeting and the Employer. The responsibility of the parties for actions to be taken shall be decided by the Employer’s Representative either at the management meeting or after the management meeting and stated in writing to all who attend the meeting.

10.2 Communication between parties shall be effective only when in writing.

11. Defects

11.1 The Employer’s Representative 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 Employer’s Representative may instruct the Contractor to search for a defect and to uncover and test any Work that the Employer’s Representative considers may have a defect. 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.
11.2 The Employer’s Representative shall give notice to the Contractor of any defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the Appendix to Conditions of Contract.

11.3 Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified by the Employer’s Representative’s notice. If the Contractor has not corrected a defect within the time specified in the Employer’s Representative’s notice, the Employer’s Representative 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.

12. Bills of Quantities/Schedule of Rates

12.1 The Bills of Quantities/Schedule of Rates 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 rates in the Bills of Quantities/Schedule of Rates for each item. Items against which no rate is entered by the Tenderer will not be paid for when executed and shall be deemed covered by the rates for other items in the Bills of Quantities/Schedule of Rates.

12.2 Where Bills of Quantities do not form part of the Contract, the Contract Price shall be a lump sum (which shall be deemed to have been based on the rates in the Schedule of Rates forming part of the tender) and shall be subject to re-measurement after each stage.

13. Variations

13.1 The Contractor shall provide the Employer’s Representative with a quotation for carrying out the variations when requested to do so. The Employer’s Representative shall assess the quotation and shall obtain the necessary authority from the Employer before the variation is ordered.

13.2 If the Work in the variation corresponds with an item description in the Bill of Quantities/Schedule of Rates, the rate in the Bill of Quantities/Schedule of Rates shall be used to calculate the value of the variation. If the nature of the Work in the variation does not correspond with items in the Bill of Quantities/Schedule of Rates, the quotation by the Contractor shall be in the form of new rates for the relevant items of Work.

13.3 If the Contractor’s quotation is unreasonable, the Employer’s Representative may order the variation and make a change to the Contract Price, which shall be based on the Employer’s Representative’s own forecast of the effects of the variation on the Contractor’s costs.
14. Payment Certificates and Final Account

14.1 The Contractor shall be paid after each of the following stages of Work listed herebelow (subject to re-measurement by the Employer’s Representative of the Work done in each stage before payment is made). In case of lump-sum Contracts, the valuation for each stage shall be based on the quantities so obtained in the re-measurement and the rates in the Schedule of Rates.

(i) **Advance payment** **NIL** (percent of Contract Price, [after Contract execution] to be inserted by the Employer).

(ii) **First stage** *(define stage)* **AS PER PROGRESS**

(iii) **Second stage** *(define stage)* **AS PER PROGRESS**

(iv) **Third stage** *(define stage)* **AS PER PROGRESS**

(v) **After defects liability period.**

14.2 Upon deciding that Works included in a particular stage are complete, the Contractor shall submit to the Employer’s Representative his application for payment. The Employer’s Representative shall check, adjust if necessary and certify the amount to be paid to the Contractor within 21 days of receipt of the Contractor’s application. The Employer shall pay the Contractor the amounts so certified within 30 days of the date of issue of each Interim Certificate.

14.3 The Contractor shall supply the Employer’s Representative with a detailed final account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Employer’s Representative shall issue a Defect 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. If it is not, the Employer’s Representative shall issue within 21 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 Employer’s Representative shall decide on the amount payable to the Contractor and issue a Final Payment Certificate. The Employer shall pay the Contractor the amount so certified within 60 days of the issue of the Final Payment Certificate.

14.4 If the period laid down for payment to the Contractor upon each of the Employer’s Representative’s Certificate by the Employer has been exceeded, the Contractor shall be entitled to claim simple interest calculated pro-rata on the basis of the number of days delayed at the
Central Bank of Kenya's average base lending rate prevailing on the first day the payment becomes overdue. The Contractor will be required to notify the Employer within 15 days of receipt of delayed payments of his intentions to claim interest.

15. **Insurance**

15.1 The Contractor shall be responsible for and shall take out appropriate cover against, among other risks, personal injury; loss of or damage to the Works, materials and plant; and loss of or damage to property.

16. **Liquidated Damages**

16.1 The Contractor shall pay liquidated damages to the Employer at the rate 0.001 per cent of the Contract price per day for each day that the actual Completion Date is later than the Intended Completion Date except in the case of any of the occurrences listed under Clause 9.2. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

17. **Completion and Taking Over**

17.1 Upon deciding that the Work is complete the Contractor shall request the Employer's Representative to issue a Certificate of Completion of the Works, upon deciding that the Work is completed.

The Employer shall take over the Site and the Works within seven days of the Employer's Representative issuing a Certificate of Completion.

18. **Termination**

18.1 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 continuously without reasonable cause or authority from the Employer's Representative;

(b) the Contractor is declared bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

(c) a payment certified by the Employer's Representative is not paid by the Employer to the Contractor within 30 days after the expiry of the payment periods stated in Sub-Clauses 14.2 and 14.3 here above.
18.2 If the Contract is terminated, the Contractor shall stop Work immediately, and leave the Site as soon as reasonably possible. The Employer’s Representative 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.

19. Payment Upon Termination

19.1 The Employer may employ and pay other persons to carry out and complete the Works and to rectify any defects and may enter upon the Works and use all materials on Site, plant, equipment and temporary works.

19.2 The Contractor shall, during the execution or after the completion of the Works under this Clause, remove from the Site as and when required within such reasonable time as the Employer’s Representative may in writing specify, any temporary buildings, plant, machinery, appliances, goods or materials belonging to him, and in default thereof, the Employer may (without being responsible for any loss or damage) remove and sell any such property of the Contractor, holding the proceeds less all costs incurred to the credit of the Contractor.

19.3 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 therefor the Employer’s Representative 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 Contractor; and if the said amount added to the said money be less than the said total amount, the difference shall be a debt payable by the Employer to the Contractor.
20. **Corrupt Gifts and Payments of Commission**

20.1 The Contractor shall not:

(a) Offer or give or agree to give to any person in the service of the Employer any gifts 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 with the Employer or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract with the Employer.

(b) 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 Laws of Kenya.

21. **Settlement of Disputes**

21.1 Any dispute arising out of the Contract which cannot be amicably settled between the parties shall be referred by either party 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 of the Chartered Institute of Arbitrators, Kenya branch, on the request of the applying party.
APPENDIX TO CONDITIONS OF CONTRACT

THE EMPLOYER IS

The County Government of Meru
Represented by:
The Governor,
County Government of Meru,
P.O. Box 120-60200,
Meru

Name of Employer’s Representative:
Works Secretary,
State Department of Publics works in the Ministry of Transport, Infrastructure, Housing &
Urban Development
Address: P.O. Box 30743 - 00100, NAIROBI
Info:info@publicworks.go.ke
The name (and identification number) of the Contract is Proposed Erection and Completion
of a Ward Block at Meru County Level 5 Hospital (Phase 1), Meru County.

W.P ITEM NO.D108/EN/MRU 1601-JOB NO.0397F

The Works consist of Supply, Delivery, Installation, Testing and Commission of solar
water heating Installations Works

The Start date shall be as agreed with the project manager

The Intended contract period for the whole of the Works shall be 120 weeks from the date of
commencement

The following documents also form part of the Contract: (Only as listed in Clause 2)

The Site Possession Date shall be as stated in the letter of acceptance.

The Sites is located in Meru County

The Defects Liability Period is 180 days

Amount of Tender Security is Kshs. 100,000

The name and Address of the Employer’s representative for the purposes of submission of
tenders is Works Secretary, Ministry of Transport, Infrastructure, Housing & Urban
Development, P.O. Box 30743-30100, Nairobi.
The tender opening date and time is **as stated in the invitation to tender.**

The amount of performance security is **5 percent** bank guarantee of the Contract Price.

<table>
<thead>
<tr>
<th><strong>Period of final measurement</strong></th>
<th><strong>3 months from practical completion</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liquidated and Ascertained damages:</strong></td>
<td><strong>At the rate of Kshs. 50,000.00 per week or part thereof</strong></td>
</tr>
<tr>
<td><strong>Prime cost sums for which the Contractor desires to tender</strong></td>
<td><strong>Nil</strong></td>
</tr>
<tr>
<td><strong>Period of honouring certificate:</strong></td>
<td><strong>45 days</strong></td>
</tr>
<tr>
<td><strong>Percentage of certified value retained:</strong></td>
<td><strong>10%</strong></td>
</tr>
<tr>
<td><strong>Limit of retention fund</strong></td>
<td><strong>5%</strong></td>
</tr>
</tbody>
</table>
SECTION C

SUB-CONTRACT PRELIMINARIES

AND

GENERAL CONDITIONS
<table>
<thead>
<tr>
<th>CLAUSE</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.01</td>
<td>Examination of Tender Documents</td>
<td>C-1</td>
</tr>
<tr>
<td>1.02</td>
<td>Discrepancies</td>
<td>C-1</td>
</tr>
<tr>
<td>1.03</td>
<td>Conditions of Contract Agreement</td>
<td>C-1</td>
</tr>
<tr>
<td>1.04</td>
<td>Payments</td>
<td>C-2</td>
</tr>
<tr>
<td>1.05</td>
<td>Definition of Terms</td>
<td>C-2</td>
</tr>
<tr>
<td>1.06</td>
<td>Site Location</td>
<td>C-3</td>
</tr>
<tr>
<td>1.07</td>
<td>Duration of contract</td>
<td>C-4</td>
</tr>
<tr>
<td>1.08</td>
<td>Scope of contract Works</td>
<td>C-4</td>
</tr>
<tr>
<td>1.09</td>
<td>Extent of the Contractor’s Duties</td>
<td>C-4</td>
</tr>
<tr>
<td>1.10</td>
<td>Execution of the Works</td>
<td>C-4</td>
</tr>
<tr>
<td>1.11</td>
<td>Validity of Tender</td>
<td>C-5</td>
</tr>
<tr>
<td>1.12</td>
<td>Firm – Price Contract</td>
<td>C-5</td>
</tr>
<tr>
<td>1.13</td>
<td>Variation</td>
<td>C-5</td>
</tr>
<tr>
<td>1.14</td>
<td>Prime Cost and Provisional Sums</td>
<td>C-6</td>
</tr>
<tr>
<td>1.15</td>
<td>Bond</td>
<td>C-6</td>
</tr>
<tr>
<td>1.16</td>
<td>Government Legislation and Regulations</td>
<td>C-6</td>
</tr>
<tr>
<td>1.17</td>
<td>Import Duty and Value Added Tax</td>
<td>C-6</td>
</tr>
<tr>
<td>1.18</td>
<td>Insurance Company Fees</td>
<td>C-7</td>
</tr>
<tr>
<td>1.19</td>
<td>Provision of Services by the Main Contractor</td>
<td>C-7</td>
</tr>
<tr>
<td>1.20</td>
<td>Suppliers</td>
<td>C-8</td>
</tr>
<tr>
<td>1.21</td>
<td>Samples and Materials Generally</td>
<td>C-8</td>
</tr>
<tr>
<td>1.22</td>
<td>Administrative Procedure and Contractual Responsibility</td>
<td>C-8</td>
</tr>
<tr>
<td>1.23</td>
<td>Bills of Quantities</td>
<td>C-8</td>
</tr>
<tr>
<td>1.24</td>
<td>Contractor’s Office in Kenya</td>
<td>C-9</td>
</tr>
</tbody>
</table>
1.25 Builders Work C-9
1.26 Structural Provision for the Works C-9
1.27 Position of Services, Plant, Equipment, Fittings and Apparatus C-10
1.28 Checking of Work C-10
1.29 Setting to Work and Regulating System C-10
1.30 Identification of Plant and Components C-11
1.31 Contract Drawings C-11
1.32 Working Drawings C-11
1.33 Record Drawings (As Installed) and Instructions C-13
1.34 Maintenance Manual C-14
1.35 Hand – Over C-15
1.36 Painting C-15
1.37 Spares C-16
1.38 Testing and Inspection – Manufactured Plant C-16
1.39 Testing and Inspection – Installation C-16
1.40 Labour Camps C-17
1.41 Storage of Materials C-17
1.42 Initial Maintenance C-17
1.43 Maintenance and Servicing after Completion of the Initial Maintenance C-17
1.44 Trade Names C-18
1.45 Water and Electricity for the Works C-18
1.46 Protection C-18
1.47 Defects After Completion C-18
1.48 Damages for Delay C-18
1.49 Clear Away on Completion C-18

(ii)
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50</td>
<td>Final Account</td>
<td>C-19</td>
</tr>
<tr>
<td>1.51</td>
<td>Fair Wages</td>
<td>C-19</td>
</tr>
<tr>
<td>1.52</td>
<td>Supervision</td>
<td>C-19</td>
</tr>
<tr>
<td>1.53</td>
<td>Test Certificates</td>
<td>C-20</td>
</tr>
<tr>
<td>1.54</td>
<td>Labour</td>
<td>C-20</td>
</tr>
<tr>
<td>1.55</td>
<td>Discount to the Main Contractor</td>
<td>C-20</td>
</tr>
<tr>
<td>1.56</td>
<td>Guarantee</td>
<td>C-20</td>
</tr>
<tr>
<td>1.57</td>
<td>Direct Contracts</td>
<td>C-20</td>
</tr>
<tr>
<td>1.58</td>
<td>Attendance Upon the Tradesmen</td>
<td>C-20</td>
</tr>
<tr>
<td>1.59</td>
<td>Trade Union</td>
<td>C-20</td>
</tr>
<tr>
<td>1.60</td>
<td>Local and other Authorities notices and fees</td>
<td>C-21</td>
</tr>
<tr>
<td>1.61</td>
<td>Assignment or Subletting</td>
<td>C-21</td>
</tr>
<tr>
<td>1.62</td>
<td>Partial Completion</td>
<td>C-21</td>
</tr>
<tr>
<td>1.63</td>
<td>Temporary Works</td>
<td>C-22</td>
</tr>
<tr>
<td>1.64</td>
<td>Patent Rights</td>
<td>C-21</td>
</tr>
<tr>
<td>1.65</td>
<td>Mobilization And Demobilization</td>
<td>C-22</td>
</tr>
<tr>
<td>1.66</td>
<td>Extended Preliminaries</td>
<td>C-22</td>
</tr>
<tr>
<td>1.67</td>
<td>Supervision by Engineer and Site Meetings</td>
<td>C-23</td>
</tr>
<tr>
<td>1.68</td>
<td>Amendment to Scope of Contract Works</td>
<td>C-23</td>
</tr>
<tr>
<td>1.69</td>
<td>Contractors Obligation and Employers Obligation</td>
<td>C-23</td>
</tr>
<tr>
<td>1.70</td>
<td>Appendix to Sub-Contract preliminaries and General conditions</td>
<td>C-24</td>
</tr>
</tbody>
</table>
SECTION C

SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

Examination of Tender Documents

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

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

Work detailed in the Specification and in the Contract Drawings.

The Republic of Kenya Document “General Conditions of Contract for Electrical and Mechanical Works”.

Other documents to which reference is made.

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

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

Discrepancies

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

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

Conditions of Contract Agreement

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

The Conditions of the Contract between the Main Contractor and any Sub-contractor as hereinafter defined shall be the latest edition of the Agreement and Schedule of Conditions of Kenya Association of Building and Civil Engineering Contractors as particularly modified and amended hereinafter.
For the purpose of this contract the Agreement and Schedule of Conditions and any such modifications and amendments shall read and construed together. In any event of discrepancy the modifications and amendments shall prevail.

1.04 **Payment**

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

1.05 **Definition of Terms**

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

i) **Employer:** The term “Employer” shall mean The Government of The Republic of Kenya Represented by: The chancellor, Moi University

ii) **Architect:** The term “Architect” shall mean The Chief Architect, Ministry of Transport, Infrastructure, Housing & Urban Development

iii) **Quantity Surveyor:** The term “Quantity Surveyor” shall mean The Chief Quantity Surveyor, Ministry of Transport, Infrastructure, Housing & Urban Development

iv) **Civil/Structural Engineers:** The term “Civil/Structural Engineers” shall mean The Chief Engineer (Structural), Ministry of Transport, Infrastructure, Housing & Urban Development

v) **Engineer:** The term “Engineer” shall mean Chief Engineer Mechanical (BS), Ministry of Transport, Infrastructure, Housing & Urban Development

vi) **Main Contractor:** The term “Main Contractor” shall mean the firm or company appointed to carry out the Building Works and shall include his or their heir, executors, assigns, administrators, successors, and duly appointed representatives.

**Sub-contractor:** The term “Sub-contractor” shall mean the persons or person, firm or Company whose tender for this work has been accepted, and who has entered into a contract agreement with the Contractor for the execution of the Sub-contract Works, and shall include his or their heirs, executors, administrators, assigns, successors and duly appointed representatives.
viii) **Sub-contract Works:** The term “Sub-contract Works” shall mean all or any portion of the work, materials and articles, whether the same are being manufactured or prepared, which are to be used in the execution of this Sub-contract and whether the same may be on site or not.

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

**Working Drawings:** The term “Working Drawings” shall mean those drawings required to be prepared by the Sub-contractor as hereinafter described.

xi) **Record Drawings:** The term “Record Drawings” shall mean those drawings required to be prepared by the Sub-contractor showing “as installed” and other records for the Sub-contract Works.

xii) **Abbreviations:**

CM shall mean **Cubic Metre**
SM shall mean **Square Metre**
LM shall mean **Linear Metre**
LS shall mean **Lump Sum**
mm shall mean **Millimetres**
No. shall mean **Number**
Kg. shall mean **Kilogramme**
KEBS or KS shall mean **Kenya Bureau of Standards**
BS shall mean. **Current standard British Standard Specification published by the British Standard Institution, 2 Park Street, London W1, England**

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

1.06 **Site Location**

The site of the Contract Works is situated at **Meru County**. The tenderer is recommended to visit the site and shall be deemed to have satisfied himself with regard to access, possible conditions, the risk of injury or damage to property on/or adjacent to the site, and the conditions under which the sub-contract Works shall have to be carried out and no claims for extras will be considered on account of lack of knowledge in this respect.
1.07 **Duration of Sub-Contract**
The Contractor shall be required to phase his work in accordance with the Main contractor's programme (or its revision).

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

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

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

Materials supplied by others for installation and/or connection by the Contractor shall be carefully examined in the presence of the supplier Before installation and connection. Any defects noted shall immediately be Reported to the Engineer.

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

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

1.10 **Execution of the Works**
The works shall be carried out strictly in accordance with:

a) All relevant Kenya Bureau of Standards Specifications.

b) All relevant British Standard Specifications and Codes Of Practice (hereinafter referred to B.S. and C.P. respectively).

c) General specifications of materials and works Section D of this document

e) The Bye-laws of the Local Authority.

f) The Architect’s and/or Engineer’s Instructions.

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

1.11 **Validity of Tender**

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

1.12 **Firm – Price Contract**

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

1.13 **Variation**

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

Any variation from the contract price in respect of any extra work, alteration or omission requested or sanctioned by the Engineer shall be agreed and confirmed in writing at the same time such variations are decided and shall not affect the validity of the Contract. Schedule of Unit Rates shall be used to assess the value of such variations. No allowance shall be made for loss of profit on omitted works.

Where the Architect requires additional work to be performed, the Sub-contractor, if he considers it necessary, will give notice within seven (7) days to the Main Contractor of the length of time he (the Sub-contractor) requires over and above that allotted for completion of the Contract.
If the Sub-contractor fails to give such notice he will be deemed responsible for the claims arising from the delay occasioned by reason of such extension of time.

1.14 **Prime Cost and Provisional Sums**

A specialist Sub-contractor may be nominated by the 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 Government for an amount equal to 7½ % of the Contract amount as Clause 28 of the Conditions of Contract.

1.16 **Government Legislation and Regulations**

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

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

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

1.17 **Import Duty and Value Added Tax**

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

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

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

1.19 **Provision of Services by the Main Contractor**

In accordance with Clause 1.08 of this Specification the Contractor shall make the following facilities available to the Sub-contractor:

a) Attendance on the Sub-Contractor and the carrying out of all work affecting the structure of the building which may be necessary, including all chasing, cutting away and making good brickwork, etc., except that all plugging for fixing, fittings, machinery, fan ducting, etc., and all drilling and tapping of steel work shall be the responsibility of the Sub-contractor. Any purpose made fixing brackets shall not constitute Builder's Work and shall be provided and installed by the Sub-contractor unless stated hereinafter otherwise.

b) The provision of temporary water, lighting and power: the Contractor pay for all these services utilized.

c) Fixing of anchorage and pipe supports in the shuttering, shall be supplied by the Contractor who shall also supply the Project Manager with fully dimensioned drawings detailing the exact locations.

d) i) Provision of scaffolding, cranes, etc. It shall be the Contractor’s responsibility to liaise with the Project Manager to ensure that there is maximum co-operation with other nominated Sub-contractors in the use of scaffolding, cranes, etc.

ii) Any specialist scaffolding, cranes, etc. by the Contractor for his own exclusive use shall be paid for by the Sub-contractor.
1.20 **Suppliers**

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

1.21 **Samples and Materials Generally**

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

1.22 **Administrative Procedure and Contractual Responsibility**

Wherever within the Specification it is mentioned or implied that the Contractor shall deal direct with the Employer or Engineer, it shall mean “through the Project Manager who is responsible to the Employer for the whole of the works including the Sub-contract Works.

1.23 **Bills of Quantities**

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

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

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

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

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

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

1.25 **Builder's Work**

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

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

Any purpose made fixing brackets shall be provided and installed by the Contractor.

1.26 **Structural Provision for the Works**

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

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

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

No requests for alterations to preliminary major structural provisions will be approved except where they are considered unavoidable by the Engineer. In no case will they be approved if building work is so far advanced as to cause additional costs or delays in the works.
1.27 **Position of Services, Plant, Equipment, Fittings and Apparatus**

The Contract Drawings give a general indication of the intended layout. The position of the equipment and apparatus, and also the exact routes of the ducts, main and distribution pipework shall be confirmed before installation is commenced. The exact 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 through the ducts shall be arranged to allow maximum access along the ducts and the services shall be readily accessible for maintenance. Any work, which has to be re-done due to negligence in this respect shall be the Sub-contractor's responsibility.

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

1.28 **Checking of Work**

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

1.29 **Setting to Work and Regulating System**

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

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

It will be deemed that the Contractor has included in the Contract Sum for the costs of all fuel, power, water and the like, for testing and commissioning as required as part of the Contract Works. He shall submit for approval to the Engineer a suitable programme for testing and commissioning. The Engineer and Employer shall be given ample warning in writing, as to the date on which testing and commissioning will take place.
The Contractor shall commission the Contract Works and provide attendance during the commissioning of all services, plant and apparatus connected under the Contract Agreement or other Sub-contract Agreements, related to the project.

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

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

1.30 **Identification of Plant Components**

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

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

1.31 **Contract Drawings**

The Contract Drawings when read in conjunction with the text of the Specification, have been completed in such detail as was considered necessary to enable competitive tenders to be obtained for the execution and completion of the Contract works.

The Contract Drawings are not intended to be Working Drawings and shall not be used unless exceptionally they are released for this purpose.

1.32 **Working Drawings**

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

If the Contractor requires any further instructions, details, Contract Drawings or information drawings to enable him to prepare his Working Drawings or proposals, the Contractor shall accept at his own cost, the risk that any work, commenced or which he intends to commence at site may be rejected.
The Engineer, in giving his approval to the Working Drawings, will presume that any necessary action has been, or shall be taken by the Contractor to ensure that the installations shown on the Working Drawings have been cleared with the Project Manager and any other Sub-contractors whose installations and works might be affected.

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

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

Any drawings required by the Engineer to enable structural provisions to be made including Builder’s Working Drawings or Schedules and those for the detailing of holes, fixings, foundations, cables and paperwork ducting below or above ground or in or outside or below buildings.

General Arrangement Drawings of all plant, control boards, fittings and apparatus or any part thereof and of installation layout arrangement of such plant and apparatus.

Schematic Layout Drawings of services and of control equipment.

Layout Drawings of all embedded and non-embedded paperwork, ducts and electrical conduits.

Complete circuit drawings of the equipment, together with associated circuit description.

Such other drawings as are called for in the text of the Specification or Schedules or as the Engineer may reasonably require.

Three copies of all Working Drawings shall be submitted to the Engineer for approval. One copy of the Working Drawings submitted to the Engineer for approval shall be returned to the Contractor indicating approval or amendment therein.

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

Approved Working Drawings shall not be departed from except as may be approved or directed by the Engineer.
Approval by the Engineer of Working Drawings shall neither relieve the Contractor of any of his obligations under the Sub-contract nor relieve him from correcting any errors found subsequently in the Approved Working Drawings or other Working Drawings and in the Sub-contract Works on site or elsewhere associated therewith.

The Contractor shall ensure that the Working Drawings are submitted to the Engineer for approval at a time not unreasonably close to the date when such approval is required. Late submission of his Working Drawings will not relieve the Contractor of his obligation to complete the Contract Works within the agreed Contract Period and in a manner that would receive the approval of the Engineer.

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

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

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

They shall include but not restricted to the following drawings or information: Working Drawings amended as necessary but titled “Record Drawings” and certified as a true record of the “As Installed” Sub-contract Works. Subject to the approval of the Engineer such Working Drawings as may be inappropriate may be omitted.

Fully dimensioned drawings of all plant and apparatus.

General arrangement drawings of equipment, other areas containing plant forming part of the Contract Works and the like, indicating the accurate size and location of the plant and apparatus suitability cross-referenced to the drawings mentioned in (b) above and hereinafter.

Routes, types, sizes and arrangement of all pipework and ductwork including dates of installation of underground pipework.

Relay adjustment charts and manuals.

Routes, types, sizes and arrangement of all electric cables, conduits, ducts and wiring including the dates of installation of buried works.
System schematic and trunking diagrams showing all salient information relating to control and instrumentation.
Grading Charts.
Valve schedules and locations suitability cross-referenced.

C-13
Wiring and piping diagrams of plant and apparatus. Schematic diagrams of individual plant, apparatus and switch and control boards. These diagrams to include those peculiar to individual plant or apparatus and also those applicable to system operation as a whole.

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

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

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

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

The Marked-up Drawings during the execution of the Contract Works or

The Record Drawings, etc., within one month of the Section or Practical Completion

The Engineer shall have these drawings produced by others. The cost of obtaining the necessary information and preparing such drawings, etc., will be recovered from the Contractor.

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

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

There shall be a separate volume dealing with Air Conditioning and Mechanical Ventilation installation where such installations are included in the Contract Works.
The manual shall contain full operating and maintenance instructions for each item of equipment, plant and apparatus set out in a form dealing systematically with each system. It shall include as may be applicable to the Contract Works the following and any other items listed in the text of the Specifications:

System Description.

Plant
Valve Operation
Switch Operation
Procedure of Fault Finding
Emergency Procedures
Lubrication Requirements
Maintenance and Servicing Periods and Procedures
Colour Coding Legend for all Services
Schematic and Writing Diagrams of Plant and Apparatus
Record Drawings, true to scale, folded to International A4 size
Lists of Primary and Secondary Spares.

The manual is to be specially prepared for the Contract Works and manufacturer’s standard descriptive literature and plant operating instruction cards will not be accepted for inclusion unless exceptionally approved by the Engineer. The Contractor shall, however, affix such cards, if suitable, adjacent to plant and apparatus. One spare set of all such cards shall be furnished to the Engineer.

1.35 **Hand-over**

The Contract Works shall be considered complete and the Maintenance and Defects Liability Period shall commence only when the Contract Works and supporting services have been tested, commissioned and operated to the satisfaction of the Engineer and officially approved and accepted by the Employer.

The procedure to be followed will be as follows:

On the completion of the Contract Works to the satisfaction of the Engineer and the Employer, the Contractor shall request the Engineer, at site to arrange for handing over.

The Engineer shall arrange a Hand-over Meeting or a series thereof, at site.
The Contractor shall arrange with the Engineer and Employer for a complete
demonstration of each and every service to be carried out and for instruction to
be given to the relevant operation staff and other representatives of the
Employer.

In the presence of the Employer and the Engineer, Hand-over will take place,
subject to Agreement of the Hand-over Certificates and associated check lists.

1.36 **Painting**
It will be deemed that the Contractor allowed for all protective and finish
painting in the Contract Sum for the Contract Works, including 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 Sub-contractor will be required to keep the same clean and disinfected, to make good any damage thereto and leave in good condition.

1.41 **Storage of Materials**
The Contractor shall provide storerooms and workshop where required. He shall also provide space for storage to nominated sub-contractors who shall be responsible for these lock-up shades or stores provided.

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

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

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

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

1.43 **Maintenance and Servicing After Completion of the Initial Maintenance**
The Contractor shall, if required, enter into a maintenance and service agreement with the employer for the installation for a period of up to five years from the day following the last day of the liability for Defects Period which offers the same facilities as specified in Clause 1.41 (Initial Maintenance).
The terms of any such agreement shall not be less beneficial to the employer than the terms of Agreements for either similar installation.

The Contractor shall submit with his tender for the works, where called upon a firm quotation for the maintenance and service of the installation as specified herein, which shall be based upon the present day costs and may be varied only to take into account increases in material and labour unit rate costs between the time of tendering and the signing of the formal maintenance and service agreement and which shall remain valid and open for acceptance by the Employer to and including the last day of the fifth complete calendar month following the end of the liability for Defects Period.

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

1.45 **Water and Electricity for the Works**
These will be made available by the Contractor who shall be liable for the cost of any water or electric current used and for any installation provided especially for his own use.

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

1.47 **Defects After Completion**
The defects liability period will be 6 months from the date of practical completion of the Works in the Contract and certified by the Engineer.

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

1.49 **Clear Away on Completion**
The Contractor shall, upon completion of the works, at his own expense, remove and clear away all plant, equipment, rubbish and unused materials, and shall leave the whole of the works in a clean and tidy state, to the satisfaction of the Engineer. On completion, the whole of the works shall be delivered up clean, complete and perfect in every respect to the satisfaction of the Engineer.
1.50 **Final Account**

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

Statement A - detailing the tender amounts less the Prime Cost and Provisional Sums, included therein.

Statement B - detailing all the variation orders issued on the contract.

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

1.51 **Fair Wages**

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

The Contractor shall pay rates of the wages and observe hours and conditions of labour not less favourable than those established for the trade or industry in the district where work is carried out.

In the absence of any rates of wages, hours or conditions of labour so established the Contractor shall pay rates and observe hours and conditions of labour are not less favourable than the general level of wages, hours and conditions observed by other employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.

1.52 **Supervision**

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

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

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

One copy of this Specification and one copy of each of the Contract Drawings (latest issue) must be retained on site at all times, and available for reference by the Engineer or sub-contractor.
1.53 **Test Certificates**
The 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 Main Contractor**
No discount to any Sub-Contractor will be included in the tender for this installation.

1.56 **Guarantee**
The whole of the work will be guaranteed for a period of six months from the date of the Engineer’s certification of completion and under such guarantee the Sub-contractor shall remedy at his expense all defects in materials and apparatus due to faulty design, construction or workmanship which may develop in that period.

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

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

1.59 **Trade Unions**
The contractor shall recognize the freedom of his work people to be members of trade unions.
1.60. **Local and other Authorities notices and fees**

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

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

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

1.61. **Assignment or subletting**

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

1.62. **Partial Completion**

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

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

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

The contractor shall be paid for the part of works taken possession by the Government.
1.63 Temporary Works

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

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

1.64 Patent Rights

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

1.65 Mobilization and Demobilization

The contractor shall mobilize labour plant and equipment to site according to his programme and schedule of work. He shall ensure optimum presence and utilization of labour, plant and equipment. He should not pay and maintain unnecessary labour force or maintain and service idle plant and equipment. Where necessary he shall demobilize and mobilize the labour, plant and equipment, as he deems fit to ensure optimum progress of the works and this shall be considered to be a continuous process as works progress. He shall make provision for this item in his tender. No claim will be entertained where the contractor has not made any provision for mobilization and demobilization of labour, plant and equipment in the preliminary bills of quantities or elsewhere in this tender.

1.66 Extended Preliminaries

Where it shall be necessary to extend the contract period by the Project manager the contractor shall still ensure availability on site, optimum labour, materials, plant and equipment. The contractor shall make provision for extended preliminaries, should the contract period be extended and this shall be in a form of a percentage of the total Contractor works. Where called upon in the Appendix to these Preliminaries the Contractor shall insert his percentage per month for extended preliminaries that shall form basis for compensation.
Lack of inserting the percentage shall mean that the sub-contractor has provided for this requirement elsewhere in the Bills of Quantities.

1.67 Supervision by Engineer and Site Meetings

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

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

1.68 Amendment to Scope of Contract Works

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

No claims shall be entertained on account of variation to scope of works either to increase the works (pre-financing) or reduction of works (loss of profit—see clause 1.70).

1.69 Contractor Obligation and Employers Obligation

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

C-23
1.70   APPENDIX TO SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1   ADD TO CLAUSE 1.40

There are no labour camps.

2   ADD TO CLAUSE 1.17

Prices quoted shall include 16% VAT. In accordance with Government policy, 3% Withholding Tax shall be deducted from all payments made to the sub-contractor, and the same shall subsequently be forwarded to the Kenya Revenue Authority (KRA).

3.   ADD TO CLAUSE 1.66

The amount or percentage that may be inserted in the bills of quantities for this item should not exceed the anticipated Liquidated damages amount for the same period.
SECTION D

GENERAL MECHANICAL SPECIFICATIONS
# SECTION D

## GENERAL MECHANICAL SPECIFICATION

<table>
<thead>
<tr>
<th>CLAUSE</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.01</td>
<td>GENERAL</td>
<td>D-1</td>
</tr>
<tr>
<td>2.02</td>
<td>QUALITY OF MATERIALS</td>
<td>D-1</td>
</tr>
<tr>
<td>2.03</td>
<td>REGULATIONS AND STANDARDS</td>
<td>D-1</td>
</tr>
<tr>
<td>2.04</td>
<td>ELECTRICAL REQUIREMENTS</td>
<td>D-2</td>
</tr>
<tr>
<td>2.05</td>
<td>TRANSPORT AND STORAGE</td>
<td>D-2</td>
</tr>
<tr>
<td>2.06</td>
<td>SITE SUPERVISION</td>
<td>D-3</td>
</tr>
<tr>
<td>2.07</td>
<td>INSTALLATION</td>
<td>D-3</td>
</tr>
<tr>
<td>2.08</td>
<td>TESTING</td>
<td>D-3</td>
</tr>
<tr>
<td>2.09</td>
<td>COLOUR CODING</td>
<td>D-4</td>
</tr>
<tr>
<td>2.10</td>
<td>WELDING</td>
<td>D-5</td>
</tr>
</tbody>
</table>
SECTION D

GENERAL MECHANICAL SPECIFICATION

2.01 General

This section specifies the general requirement for plant, equipment and materials forming part of the Sub-contract Works and shall apply except where specifically stated elsewhere in the Specification or on the Contract Drawings.

2.02 Quality of Materials

All plant, equipment and materials supplied as part of the Sub-contract Works shall be new and of first class commercial quality, shall be free from defects and imperfections and where indicated shall be of grades and classifications designated herein.

All products or materials not manufactured by the Sub-contractor shall be products of reputable manufacturers and so far as the provisions of the Specification is concerned shall be as if they had been manufactured by the Sub-contractor.

Materials and apparatus required for the complete installation as called for by the Specification and Contract Drawings shall be supplied by the Sub-contractor unless mention is made otherwise.

Materials and apparatus supplied by others for installation and connection by the Sub-contractor shall be carefully examined on receipt. Should any defects be noted, the Sub-contractor shall immediately notify the Engineer.

Defective equipment or that damaged in the course of installation or tests shall be replaced as required to the approval of the Engineer.

2.03 Regulations and Standards

The Sub-contract Works shall comply with the current editions of the following:

a) The Kenya Government Regulations.

b) The United Kingdom Institution of Electrical Engineers (IEE) Regulations for the Electrical Equipment of Buildings.

a) The United Kingdom Chartered Institute of Building Services Engineers (CIBSE) Guides.
d) British Standard and Codes of Practice as published by the British Standards Institution (BSI)

e) The Local Council By-laws.

f) The Electricity Supply Authority By-laws.

g) Local Authority By-laws.


i) The Kenya Bureau of Standards

2.04 **Electrical Requirements**

Plant and equipment supplied under this Sub-contract shall be complete with all necessary motor starters, control boards, and other control apparatus. Where control panels incorporating several starters are supplied they shall be complete with a main isolator.

The supply power up to and including local isolators shall be provided and installed by the Electrical Sub-contractor. All other wiring and connections to equipment shall form part of this Sub-contract and be the responsibility of the Sub-contractor.

The Sub-contractor shall supply three copies of all schematic, cabling and wiring diagrams for the Engineer’s approval.

The starting current of all electric motors and equipment shall not exceed the maximum permissible starting currents described in the Kenya Power and Lighting Company (KPLC) By-laws.

All electrical plant and equipment supplied by the Sub-contractor shall be rated for the supply voltage and frequency obtained in Kenya, that is 415 Volts, 50Hz, 3-Phase or 240Volts, 50Hz, 1-phase.

Any equipment that is not rated for the above voltages and frequencies shall be rejected by the Engineer.

2.05 **Transport and Storage**

All plant and equipment shall, during transportation be suitably packed, crated and protected to minimise the possibility of damage and to prevent corrosion or other deterioration.

On arrival at site all plant and equipment shall be examined and any damage to parts and protective priming coats made good before storage or installation.
Adequate measures shall be taken by the Sub-contractor to ensure that plant and equipment do not suffer any deterioration during storage.

Prior to installation all piping and equipment shall be thoroughly cleaned.

If, in the opinion of the Engineer any equipment has deteriorated or been damaged to such an extent that it is not suitable for installation, the Sub-contractor shall replace this equipment at his own cost.

2.06 **Site Supervision**

The Sub-contractor shall ensure that there is an English-speaking supervisor on the site at all times during normal working hours.

2.07 **Installation**

Installation of all special plant and equipment shall be carried out by the Sub-contractor under adequate supervision from skilled staff provided by the plant and equipment manufacturer or his appointed agent in accordance with the best standards of modern practice and to the relevant regulations and standards described under Clause 2.03 of this Section.

2.08 **Testing**

2.08.1 **General**

The Sub-contractor’s attention is drawn to Part ‘C’ Clause 1.38 of the “Preliminaries and General Conditions”.

2.08.2 **Material Tests**

All material for plant and equipment to be installed under this Sub-contract shall be tested, unless otherwise directed, in accordance with the relevant B.S Specification concerned.

For materials where no B.S. Specification exists, tests are to be made in accordance with the best modern commercial methods to the approval of the Engineer, having regard to the particular type of the materials concerned.

The Sub-contractor shall prepare specimens and performance tests and analyses to demonstrate conformance of the various materials with the applicable standards.

If stock material, which has not been specially manufactured for the plant and equipment specified is used, then the Sub-contractor shall submit satisfactory evidence to the Engineer that such materials conform to the requirements stated herein in which case tests of material may be partially or completely waived.
Certified mill test reports of plates, piping and other materials shall be deemed acceptable.

2.08.3 Manufactured Plant and Equipment – Work Tests

The rights of the Engineer relating to the inspection, examination and testing of plant and equipment during manufacture shall be applicable to the Insurance Companies or Inspection Authorities so nominated by the Engineer.

The Sub-contractor shall give two week’s notice to the Engineer of the manufacturer’s intention to carry out such tests and inspections.

The Engineer or his representative shall be entitled to witness such tests and inspections. The cost of such tests and inspections shall be borne by the Sub-contractor.

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

Plant and equipment which is shipped before the relevant test certificate has been approved by the Engineer shall be shipped at the Sub-contractor’s own risk and should the test and inspection certificates not be approved, new tests may be ordered by the Engineer at the Sub-contractor’s expense.

2.08.4 Pressure Testing

All pipework installations shall be pressure tested in accordance with the requirements of the various sections of this Specification. The installations may be tested in sections to suit the progress of the works but all tests must be carried out before the work is buried or concealed behind building finishes. All tests must be witnessed by the Engineer or his representative and the Sub-contractor shall give 48 hours notice to the Engineer of his intention to carry out such tests.

Any pipework that is buried or concealed before witnessed pressure tests have been carried out shall be exposed at the expense of the Sub-contractor and the specified tests shall then be applied.

The Sub-contractor shall prepare test certificates for signature by the Engineer and shall keep a progressive and up-to-date record of the section of the work that has been tested.

2.09 Colour Coding

Unless stated otherwise in the Particular Specification all pipework shall be colour coded in accordance with the latest edition of B.S 1710 and to the approval of the Engineer or Architect.
2.10 **Welding**

2.10.1 **Preparation**

Joints to be made by welding shall be accurately cut to size with edges sheared, flame cut or machined to suit the required type of joint. The prepared surface shall be free from all visible defects such as lamination, surface imperfection due to shearing or flame cutting operation, etc., and shall be free from rust scale, grease and other foreign matter.

2.10.2 **Method**

All welding shall be carried out by the electric arc processing using covered electrodes in accordance with B.S. 639.

Gas welding may be employed in certain circumstances provided that prior approval is obtained from the Engineer.

2.10.3 **Welding Code and Construction**

All welded joints shall be carried out in accordance with the following Specifications:

a) **Pipe Welding**

All pipe welds shall be carried out in accordance with the requirements of B.S. 806.

b) **General Welding**

All welding of mild steel components other than pipework shall comply with the general requirements of B.S. 1856.

2.10.4 **Welders Qualifications**

Any welder employed on this Sub-contractor shall have passed the trade tests as laid down by the Government of Kenya.

The Engineer may require to see the appropriate certificate obtained by any welder and should it be proved that the welder does not have the necessary qualifications the Engineer may instruct the Sub-contractor to replace him by a qualified welder.
<table>
<thead>
<tr>
<th>CLAUSE NO.</th>
<th>DESCRIPTION</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.0</td>
<td>Quality of Materials and Workmanship</td>
<td></td>
</tr>
<tr>
<td>1.1.1</td>
<td>General</td>
<td>E-17</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Solar Panels</td>
<td>E-18</td>
</tr>
<tr>
<td>1.1.3</td>
<td>Insulation</td>
<td>E-19</td>
</tr>
<tr>
<td>1.1.4</td>
<td>Alternate solar Heating System</td>
<td>E-21</td>
</tr>
<tr>
<td>1.1.5</td>
<td>Test and Efficiency Certificate</td>
<td>E-21</td>
</tr>
<tr>
<td>1.1.6</td>
<td>Pipework Above Ground</td>
<td>E-22</td>
</tr>
<tr>
<td>1.1.7</td>
<td>Water storage Tanks</td>
<td>E-26</td>
</tr>
<tr>
<td>1.1.8</td>
<td>Protection of Metal surfaces</td>
<td>E-27</td>
</tr>
<tr>
<td>1.1.9</td>
<td>Instrumentation</td>
<td>E-28</td>
</tr>
<tr>
<td>1.2.0</td>
<td>Commissioning and Maintenance</td>
<td></td>
</tr>
<tr>
<td>1.2.1</td>
<td>Commissioning and Testing</td>
<td>E-28</td>
</tr>
<tr>
<td>1.2.2</td>
<td>Spare Parts</td>
<td>E-29</td>
</tr>
<tr>
<td>1.2.3</td>
<td>Defects Liability Period</td>
<td>E-30</td>
</tr>
<tr>
<td>1.2.4</td>
<td>Maintenance Manual</td>
<td>E-30</td>
</tr>
<tr>
<td>1.2.5</td>
<td>Maintenance after Defects Liability Period</td>
<td>E-30</td>
</tr>
<tr>
<td>2.0</td>
<td>Technical Questionnaire</td>
<td>E-31 to E-32</td>
</tr>
</tbody>
</table>

SOLAR WATER HEATING SPECIFICATIONS

1.1.0 QUALITY OF MATERIALS AND WORKMANSHIP

1.1.1 General

All materials, equipment and accessories are to be new and in accordance with the requirements of the current rules and regulations where such exist, or in their absence with the relevant British/European standard.

Uniformity of type and manufacture of equipment or accessories is to be preserved as far as practicable throughout the whole work.

If in this specification, the practice is adopted of specifying a particular item as “similar” to that of a particular firm’s product, it is to be clearly understood that this is to indicate the type and quality of the equipment required. No attempt is being made to give preference to the equipment supplied by a firm whose name or products is being quoted.

Where particular manufacturers are specified herein, no alternatives makes will be considered, and the Engineer shall be allowed to reject any other makes.

The tenderer will be entirely responsible for all the materials, apparatus, equipment, etc in connection to his work, and shall take special care to protect all parts of finished work from damage until handed over to the Employer.

The work shall be carried out by competent workmen under skilled supervision. The Engineer shall have authority to have any of the work taken down or changed, which is executed in any unsatisfactory manner.

The works shall be carried out strictly in accordance with:
a) British Standard B.S. 5918, Domestic hot water supply and solar water heating System
b) “British code of Practice” C.P. 310: Water Supply
c) British Standard code of Practice” C.P. 342: Centralized Hot water supply
d) All other relevant British standard Specifications and Codes of Practice (herein after referred to as B.S and C.P respectively.)
e) By-Laws of the Local Authority
f) The “Specification” and the “Particular Specification”
g) The tender/working drawings
h) The engineer’s Instructions.

The drawings and specifications are to be read as a whole and are to explain each other. Work shown on the drawings and not described in the specifications or vice versa shall be duly executed under the contract.
1.1.2 Solar Panel – Construction

Solar panels shall be flat plate solar collectors. The structure of the collector and its components must withstand local extreme environmental conditions including winds, storm etc.

1.1.2.1 Solar Panel – External Construction

a) Glazing material shall be transparent and non-reflective to solar radiation. Total surface heating area of the solar panel shall be as specified elsewhere. The top of the panel shall be a single transparent glazed glass sheet. The glazed glass shall be as low-iron tempered glass or equivalent. The thickness of the glazed glass shall be 3 mm.

The glazing and the holding construction shall have thermal characteristics to withstand extreme local temperatures and also thermal shock due to storms etc. Gasket for the glazing shall be EPDM gasket or similar.

During accidental breakage of the glazing, the glazed glass sheet shall be replaceable at site.

b) Solar panel collector casement shall be rigid, structurally sound and corrosion resistant. Sides and bottom of panel shall be 24 gauge galvanized mild steel sheet or 2mm aluminium sheet.

Galvanized mild steel sheet shall be etched primed and applied with two coats of approved oil-base paint.

4 mm to 6 mm breathing hole shall be provided on the galvanized mild steel casing for the removal of moisture content formed due to condensation within the panel.

c) The panel/glass construction shall be weatherproof. Pipework joints and collector interconnection shall be water proof. Approved silicone gasket or similar to be used at the panel connections.

1.1.2.2 Solar Panel - Internal Construction

a) Absorber - Shall be located directly beneath the glass sheet and fully cover the internal area of the panel.

Absorber shall be made of copper sheet or aluminium with a selective surface chemically treated similar to the black chrome finish or similar. The selective surface shall achieve 95% absorptivity of solar radiation and 15 to 20% emissivity of infra-red radiation. The absorber and the selective surface shall not be affected during life span of the absorber.
b) **Heat Exchanger**

Copper tubes and fittings shall be utilized for internal panel pipework and in accordance with B.S. 2871 or similar. All joints and connections between the riser and header tubings shall be leak proof and stand to hydraulic pressure tests.

The collector to be pressure tested to withstand a pressure of 8 kg/cm², whichever is greater. In general, collectors shall be pressure tested at 15 times the rated operating gauge pressure of 8kg/cm², whichever is greater.

A certificate of pressure testing to be issued when required and requested by the Engineers.

c) **Insulation**

The underside of the absorber, inclusive headers and the outer casing internal sides shall be insulated with 50 mm fibre glass insulation, minimum density 64 kg/m³. The insulation shall be non-combustible and shall withstand maximum continuous operating temperature of 200°C (and minimum operating temperature of –50°C).

### 1.1.2.3 Hot Water Solar Cylinder

a) The hot water solar cylinder shall have a nominal capacity as specified on the contract drawing and particular specification to the designed highest water level. The hot water cylinder shall have a separate feed tank attached to it.

b) The cylinders and the feed tanks shall comply with B.S. 417, 699, 2777, 4214, 1565, 1566 and 3198. Refer also Water Storage tanks as specified elsewhere. The Cylinder and tanks shall be supplied complete with screwed BSPF parallel thread flanged connections for flow, return, vent, overflow and drain pipes.

c) Cylinder shall be provided with a magnesium electrode as corrosion protection, weight: minimum 1.5 kg. and have an inspection cover to facilitate renewal of the electrode.

d) The cylinder shall be galvanized, after manufacture in accordance with the requirements of BS. 729 Part 1 and pressure tested in accordance with the above B.S. A certificate of pressure testing to be issued when required and requested by the Engineers/Project Manager’s Representative. Refer also to “Protection of Metal surface” as specified elsewhere in the specification.

e) Insulation

The cylinder shall be insulated on all the sides with 100 mm fibreglass, or 100 mm thick foam injected polyurethane. At the inspection cover the insulation shall be easily removable.

(f) **Cladding**

The insulation shall be fully laded with 24 gauge galvanized M.S. Sheet.
1.1.2.4 Flow and Return Pipework

Pipework shall be galvanized mild steel medium duty and in accordance with BS. 1387, and insulated as specified.

1.1.3 INSTALLATION

1.1.3.1 Solar panel

a) **Location**
   The solar panel shall where physically possible be installed facing South. Where it is not practical for the solar panel to face due South, the maximum allowance variation shall be 45°.

b) **Angle of Inclination**
   The solar panels for maximum efficiency should be fitted at an angle equal to the latitude of the installation area. Minimum angle of inclination should be 5°.

c) Solar panel shall be mounted on angle frame and rise to flow outlet according to manufacturer's specifications.

1.1.3.2 Solar Cylinder

a) **For Standard Thermosyphon**
   The solar cylinder shall maintain a minimum horizontal distance of 300mm above the highest point of the solar panel installation

b) **For low Thermosyphon**
   The solar cylinder shall maintain a flow line up grade of 1.20 minimums where the low profile thermosyphon system is utilized.

1.1.3.3 Flow and Return Pipework

(a) **Joints**
   All joints between ferrous and copper piping shall be made with dielectric pipe unions for the prevention of electrolytic corrosion.

(b) **Penetration through Roof decking.**
   Where pipes penetrate the roof decking, they shall be provided with a sleeve that fits around the pipe making a weatherproof joint between roof and pipe.

(c) **Insulation**
   All pipework between solar panel and storing tank to be insulated with 25 mm fibreglass where exposed to weather, covered with 24 gauges galvanized M.S. sheet cladding and weatherproofed.

   All insulation for supply and return pipework in roof space shall be covered with cotton canvas.
   All insulation shall be in accordance with BS. 1334 unless otherwise specified.
1.3.3.4 Drain, overflow and Vent Pipework
   (a) The drain and overflow pipework from the solar cylinder shall terminate approximately 75 mm away from the nearest drain outlet.
   (b) Vent pipe from the solar cylinder shall terminate approximately 150 mm over the top water level in the solar cylinder feed tank.
   (c) Provided drain valve for the solar panel. Drain valve shall be firmly clamped in order to avoid leaks at the joints during operation.

1.3.3.5 Valves
   (a) Copper alloy gate valves complying with BS.1952 shall be installed on flow and return pipework prior to it being connected to the solar cylinder.
   (b) The solar cylinder and panel shall be supplied with stop valves for draining and to comply with BS 1010.

1.3.3.6 Inter connection of solar panels
   Shall be done utilizing Neoprene tubing or Stainless Steel connector or equivalent, fitted with clamps and able to withstand the working pressure.

1.3.3.7 Precaution
   Solar panel glass shall be adequately protected against cracking and the protection removed only when the solar system is commissioned.

1.1.4 Alternate Solar Heating System
   Should the contractor intend utilizing an alternate equivalent solar heating system to the one specified under this contract, he shall when submitting his tender provide the Engineer with all necessary information such as material used, construction detail, installation procedure etc. for his approval.

1.1.5 Test and Efficiency Certificates
   The Contractor shall provide test and efficiency certificates for the solar panels proposed for the installation in accordance with methods outlined in ASHRAE 23-77. Certificates for the following tests shall be provided:
   1. No flow 30 day exposure
   2. Peak exposure test
   3. Solar collector Thermal Shock/Water spray test
   4. Solar Collector Thermal Shock/Cold Fill test
   5. Solar Collector leak and pressure test

   The Contractor shall also provide documentary evidence regarding the absorber sheet, the selective coatings and its optical performances (absorptivity and emissivity factors).
1.1.6 Pipework above Ground

Before any joint is made, the pipes shall be hung in their supports and adjusted to ensure that the joining faces are parallel and any falls which shall be required are achieved without springing the pipe.

Where falls are not shown on the contract drawings or stated elsewhere in the specification, pipework shall be installed parallel to the lines of the building.

All water systems shall be provided with sufficient drain points and automatic air vents to enable them to function correctly. Valves and other user equipment shall be installed with adequate access for operation and maintenance.

Where valves and other operational equipment are unavoidably installed beyond normal reach or in such a position as to be difficult to reach from a short step ladder, extension spindles with floor or wall pedestals shall be provided.

Screwed piping shall be installed with a sufficient number of unions to facilitate easy removal of valves and fittings, and to enable alterations of the pipework to be carried out without the need to cut the pipe.

Full allowance shall be made for the expansion and contraction of pipework, precautions being made to ensure that any forces produced by pipe movements are not transmitted to valves, equipment or plant.

All tubing exposed on faces of walls shall, unless otherwise specified, be fixed at least 25mm clear of adjacent surfaces with approved holder bats built into the walls, cut and pinned to walls in cement mortar. Where fixed to woodwork, suitable clips shall be used.

All tubings specified as chased into walls shall have the wall face neatly cut and chased, the tubing wedges and fixed and plastered over.

All tubing specified as fixed to ceilings, roofs of roof structures shall be fixed with approved mild steel hangers cut and pinned to ceilings, roofs or roof structures.

Where three or more tubes are fixed to the ceilings, roofs or roof structures close to each other, they shall be fixed in positions, which leave the lower surfaces at the same horizontal level, unless otherwise specified. Tubes fixed to steel work shall be fixed with clips and tap screws.

Tubes shall be fixed to true lines parallel to adjacent lines of the building unless otherwise specified. Where insulated, tubing shall be fixed with the insulation at least 25mm clear of the adjacent surfaces.

Pipe runs shall be secured by pipe clips connected to pipe hangers, wall brackets or trapeze type supports. ‘U’ bolts shall not be used as a substitute for the pipe clips without prior approval of the Engineer. An approximate guide to the maximum permissible supports spacing in meters for the steel and copper pipe is given in the following table for horizontal runs.
<table>
<thead>
<tr>
<th>Size</th>
<th>Maximum support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Bores</td>
<td>Spacing</td>
</tr>
<tr>
<td>15mm</td>
<td>2.0m</td>
</tr>
<tr>
<td>20mm</td>
<td>2.5m</td>
</tr>
<tr>
<td>25mm</td>
<td>2.5m</td>
</tr>
<tr>
<td>32mm</td>
<td>3.0m</td>
</tr>
<tr>
<td>40mm</td>
<td>3.0m</td>
</tr>
<tr>
<td>50mm</td>
<td>3.0m</td>
</tr>
<tr>
<td>65mm</td>
<td>3.5m</td>
</tr>
<tr>
<td>80mm</td>
<td>3.5m</td>
</tr>
<tr>
<td>100mm</td>
<td>4.0m</td>
</tr>
</tbody>
</table>

Each support shall take its due proportion of the weight of the pipe and shall allow free movement for expansion and contraction. The support spacing for vertical runs shall not exceed one and a half times the distances given for the horizontal runs.

Sleeves shall be provided where pipes pass through walls and solid floors to allow movement of the pipes without damage to the structure. The overall length of the sleeve shall be such that it projects at least 2mm beyond the finished thickness of the wall or partition.

Sleeves passing through the structure shall be of mild steel. Elsewhere they shall be of PVC. The sleeves shall have 5-15mm clearance all round the pipe, or for insulated pipework, all round the insulation. The sleeves shall be packed with slag wool or similar.

Unless anything else is stated in the specification, the tenderer must include in his tender for all protective and finish painting of the works including colour coding of special requirements, if any, are specified in the text of the particular specification. The painting shall be carried out by skilled painters.

1.1.6.1 Galvanised Mild steel Tubing
Galvanized mild steel tubing shall be in accordance with B.S 1387 with screwed and socketed joints.

Fittings for the same shall be galvanized malleable iron to B.S 143 & 1256 threads to BS 21.

Joints shall be made with fine hemp and an approved jointing compound or with Teflon sealing tape. Compound containing red lead must be used, unless otherwise specified.

All changes of direction shall be obtained by use of proper fittings. Formed bends shall not be accepted.

Long screw connectors and flat-faced unions shall not be used, unless otherwise specified.

Where chased into walls or cast in concrete, galvanized mild steel tubing carrying hot water shall be wrapped with hair felt secured by copper wire.

The fixing of galvanized mild steel tubing shall be done using:

a) Malleable iron “school board” pattern brackets for building in or screwing to structure or
b) Malleable pipe rings, with either back plate, plugs or girder clips or
c) Purpose made straps to Engineer’s Approval.
1.1.6.2 Copper Tubing

Copper tubing shall be light gauge conforming to B.S. 2871 and the fittings shall be capillary or compression fittings to B.S. 864 of approved manufacture.

Joints on tubing up to and including 50 mm diameter, shall be compression or capillary joints or direct joints using zinc-free self-fluxing silver brazing alloys. Joints on tubing above 50 mm diameter shall be welded or blazed joints.

Copper tubing shall be jointed to steel cisterns by the use of copper-alloy connector having a shoulder to bear on the outside of the cistern and secured by a back nut inside. Washers shall be used both inside the cistern.

Where chased into walls or cast in concrete, copper tubing shall be wrapped with corrugated cardboard or hair felt secured by copper wire.

The fixing of copper tubing shall be done by using :-

a) Copper-alloy holderbats for building in, or screwing to structure.  
Or
b) Strap clips of copper, copper-alloy or other suitable material.  
Or

c) Gunmetal holderbats similar to “YORKSHIRE”

Iron or steel supports shall not be used for copper tubing.

All bends and sets shall be formed without diminishing the internal diameter in any part or causing fracture or weakness of the tube walls.

1.1.6.3 Valves, Cocks, Taps etc.

**Gate Valves**

All gate valves up to and including 65mm nominal bore and above, other than those required for fitting to buried water mains shall be of bronze construction in accordance with the requirements of B.S. 5154. The pressure classification of all gate valves shall depend upon the pressure conditions pertaining to the site of the works.

The pressure classification of all gate valves shall depend upon the pressure conditions pertaining to the Site of Works.

**Globe Valves**

All globe valves up to and including 65 mm nominal bore shall be of bronze construction in accordance with B.S. 2060.

All globe valve 80 mm nominal bore and above shall be of cast iron construction in accordance with the requirements of B.S. 3961.

The pressure classification of all globe valves shall depend upon the pressure conditions pertaining to the Site of Works.
Check or Non-Return Valves
All check or non-return valves up to and including 65 mm nominal bore shall be of the swing check type of bronze construction in accordance with B.S. 1953.

All check or non-return valves 80 mm nominal bore and above shall be of the swing check type of cast iron construction in accordance with the requirements of B.S. 4090.

The pressure classification of all check or non-return valves shall depend on the pressure conditions pertaining to the Site of work.

Ball Float Valves
All ball valves for use in connection with hot and cold water services shall be of the Portsmouth type in accordance with the requirements of B.S. 1212, constructed from bronze or other corrosion resistant materials. These valves fall into three pressure classification as follows:

(i) Low pressure – 3.588 bar maximum
(ii) Medium pressure – 7.725 bar maximum.
(iii) High pressure – 12.620 bar maximum.

The pressure classification required for each ball valve will be designated in the description of its associated equipment.

Safety Valves
Safety valves for thermal storage water heaters shall comply with B.S. 759

Draw-Off Taps and Stop Valves (up to 50 mm nominal bore)

Draw-off taps and stop valves up to 50 m nominal bore, unless otherwise stated or specified, for attachment or connection to sanitary fittings shall be manufactured in accordance with the requirements of B.S. 1010.

Mixing valves for shower fittings and other appliances shall be manufactured in accordance with the requirements of B.S. 1415 from bronze or other corrosion resistant materials.

1.1.6.4 Thermal Insulation
Insulation shall be installed by tenderer specializing in this type of work.

All primary hot (flow and return pipes) and secondary hot water and circulation pipes shall be insulated. Thermal insulating material for hot water supply insulation shall conform to B.S. 1334 unless otherwise specified. Materials shall have fire retardant qualities.

Insulation shall be fiberglass, minimum density 64 kg/m³. Premolded fittings shall be used, or if unavailable, metered sections or built-up blanket insulation shall be used.

Insulation shall be fastened in concealed locations with aluminium bands or soft annealed wires and shall be fastened in exposed locations with aluminium bands, 30 cm. (12 inches) o.c.
Each pipe item shall be insulated separately. Insulation must be carried through or around hangers.

All insulating materials, however fixed, shall be in close contact with the surface to which it is applied and all joints shall be sealed after ensuring that edges or ends of any section built up close to one another. Edges or ends shall be cut or sharpened on site as necessary.

All surfaces to be insulated shall be cleaned carefully before fixing the insulating material. Whereby subject to outside weather or other potentially damp or wet conditions, the insulation shall be adequately protected against moisture pick-up with weatherproof jacketing. Elsewhere, the insulation shall be finished with open weave glass cloth and finish coats of adhesive or paint to approval.

Fixing of insulating material shall suit the progress of other installation works in the building.

All thermal insulating materials shall be delivered to the site in a dry condition and housed in a store until drawn upon for use. If nothing else is specified, the minimum thickness of insulating material for hot water pipes shall be 25 mm.

Equipment, such as tanks, shall be insulated with 50 mm fibre glass board and finished with open weave glass cloth and finish coats of adhesive or paint to approval.

1.1.7 Water Storage Tanks

1.1.7.1 Cold Water Storage Tanks

Where specified as galvanized mild steel, water storage tanks shall comply with B.S. 417. Galvanizing shall take place after manufacture.

Pressed steel sectional water storage tanks shall comply with B.S. 1564, and shall be similar in manufacture to “BRAITH-WAITE”.

Water storage tanks shall be mosquito proofed by means of well fitting bolted cover bedded on a thick gasket of felt or bitumen.

Overflow pipes from tanks shall discharge into air or floor gullies where nearby positioned, with splay cut ends mosquito proofed by means of wire gauze tightly bound on with stout galvanized wire or soldered on.

1.1.7.2 Thermal Storage Water Heaters

The pressure and low pressure types domestic electric water heaters shall comply with B. S. 843; high pressure types shall be of a Standard not less than the appropriate B.S.

Domestic heaters shall, if nothing else is specified, be supplied with 50 mm thick fibre glass lagging.

Purpose made storage water heaters of the specified size shall comply with B.S.853 and shall be to the specified working and test pressure. The heaters shall be provided with all necessary bosses, coils, etc. and shall be hot dip galvanised after manufacture.

1.1.7.3 Pressure Vessels

Pressure vessels shall be manufactured in accordance with B.S. 1500 A for the specified pressure and be fitted with all necessary openings and connections.

1.1.8 Protection of metal surfaces

Machinery, equipment, etc. shall be tropicalized and with protective treatment fully suitable for application and in the prevailing climatic conditions.

Full details of tropicalization and comprehensive paint treatments, to a dry film thickness of nowhere less than 200 microns, shall be submitted for the approval of the Consultant.

All metalwork shall be protected by either:

(a) Hot dip galvanizing; where painted treatment shall be 50 microns epoxy primer or 5-10 microns wash-primer; 30 microns modified alkyd undercoat and 30 microns enamel finish,

Or

(b) Metallic lead epoxy primer, epoxy micaceous iron oxide, micaceous iron oxide modified alkyd undercoat and enamel finish, layers minimum 30 microns each.

Surfaces of metalwork shall be thoroughly brushed down with wire brushes to remove all scale, rust, etc., and structural steelwork shall be grit blasted before protective treatment.

All paint shall be applied fully in accordance with the manufacturer's instructions.

All water tanks inclusive covers, machinery casings, claddings and whosesoever specified shall be protected by hot dip galvanizing.

Hot dip galvanized coatings shall be executed in accordance with British Standard BS 729.

The values for coating weight shall be as follows to B.S 729:

- 5 mm thick and over: 610 to 630 g/m (87 –90 um)
- Under 5 mm but not less than 2 mm: 460 to 490 g/m (66 – 70 um)
- Under 2 mm but not less than 1 mm: 335 to 350 g/m (48 – 50 um)
- Grey and malleable iron castings: 610 to 630 g/m (87 – 90 um)
- Threaded work and other articles which are centrifuged: 305 to 315 g/m (44 –45 um)
For conversion to coating thickness unit weight of zinc shall be assumed 7 g/cm$^3$. The values stated shall be taken as minimum average values for a set of samples. Individual minimum values shall be introduced as the above mentioned minus 10%.

When galvanized coats are damaged, e.g. threaded pipe connections made on site, the exposed parts shall be repaired with same paints as for additional coating. Colour grey.

1.1.9 Instrumentation

Instrumentation shall be provided as indicated on the drawings and specified in the specifications.

Pressure gauges shall be installed on the pipe at both sides of pumps.

Pressure gauges shall be fitted with shutoff cock, read in the pressure range of system, minim 12 cm. (4 $\frac{1}{2}$ inch) dial, adjustable angle face, white face with black figures and pointer.

Thermometers shall be installed with separable sockets. Bronze sockets shall be used in nonferrous systems and stainless steel in ferrous systems.

Thermometers shall be mercury actuated, 12 cm (4 $\frac{1}{2}$ inch) dial, adjustable angle face with black figures and pointer.

Where recording thermometers are required, they shall have chart 25 cm.(10 inches) in diameter, shall operate with one pen on 24 hour charts, with a range 10$^0$C to 105$^0$C (50$^0$F to 220$^0$F).

1.2 COMMISSIONG AND MAINTENANCE

1.2.1 Commissioning and Testing

The tenderer for solar heating system shall be responsible for testing and commissioning of the solar installation. The testing and commissioning shall be done in the presence of the Engineer. The tenderer shall be held responsible for any damage to the builders work, during the installation, initial system testing etc.

When installation is completed, an acceptance test shall be carried out on the tenderer's own expense.

All hot water pipes, including flow and return, solar absorbers, cylinders, cisterns, tanks, calorifiers, pumps, etc. shall be thoroughly sterilized and flushed out after the completion of all tests and before being fully commissioned for handover.

The sterilization procedure shall be carried out by the tenderer or specialists employed by the tenderer in accordance with the requirements of B.S. Code of Practice 310, Clause 409, to the approval of the Engineer.

Before handing over, the tenderer shall confirm that the installation has been examined, tested, is ready for use, that it will operate and can be maintained efficiently.
The whole of the solar heating installation shall be tested to the satisfaction of the Engineer and the Local Authority.

The tenderer shall provide all necessary testing apparatus and facilities for testing the installations and any defective work shall be replaced immediately and shall be the subject of re-testing until found satisfactory.

Where pipes are to be lagged, chased into walls or otherwise concealed, the work shall be tested prior to lagging, making good chases, etc.

The complete solar heating installations, including flow and return pipes shall, if nothing else is specified, be tested to a cold water pressure of not less than 1.5 times the working pressure, minimum 8 kg/cm\(^2\).

The test pressure shall be applied by means of a manually operated test pump or, by a power-driven test pump. Pressure gauges shall be recalibrated before the test.

The test pressure shall be maintained by the pump for about one hour and a leakage as specified in C.P 310, Section 502 J shall be approved, but any visible individual leak shall be repaired.

Valves, cocks and taps shall be absolutely tight under the test pressure for the corresponding pipes as well as under a small pressure.

Upon completion of the work, including re-testing if necessary, the installations shall be thoroughly flushed out and water pipes refilled with clean water ready for use.

Any defects revealed by the tests shall be made good by the tenderer and the test repeated to the approval of the Engineer.

In all other respects, test shall comply with the requirements of B.S. Code of Practice 304.

Following satisfactory pressure tests on the pipework system, operational tests shall be carried out in accordance with the relevant B.S. Codes of practice on the systems as a whole to establish that special valves, gauges, controls, fittings, equipment and plant are functioning correctly to the satisfaction of the Engineer.

1.2.2 Spare Parts

The tenderer shall submit with the tender a guarantee that he will hold a sufficient number of spare parts for the maintenance of the equipment.

If specific requirements for supply of spare parts are specified in the bill of quantities or schedule of prices, these spare parts shall be supplied to the client/employer, when the installations are handed over.

The tenderer shall submit with his tender a priced list of any optional extras, which he recommends should be purchased for the plants and are not supplied as standard with the unit.
1.2.3 Defects Liability and Contractual Maintenance Period

The tenderer shall maintain the complete installation in the total defects liability period and shall be responsible for the initiation and execution of the clients/employer planned programme of maintenance during this period.

During this maintenance period the tenderer shall carry out all necessary adjustments and repairs, cleaning and lubricating, etc. A report of any work shall be submitted to the Client and incorporated in the maintenance records.

The tenderer shall be held responsible for and shall make good all defects in materials that appear during the maintenance period; he shall supply expendable items, such as gaskets, filters, indicator lamps, etc. The period of liability shall not end until all defects which appear during the maintenance period have been rectified.

The tenderer shall allow in his Contract price for this maintenance and inspection 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 whether they are normal maintenance materials such as oils, greases, sandpaper, etc. and parts which are periodically renewed such as relay contracts or parts which are faulty for any reason whatsoever excepting always Acts of God such as a storm, tempest or flood, lightning and earthquake; civil revolt, acts of war and vandalism.

1.2.4 Maintenance Manual

Upon completion the tenderer shall furnish to the Client four copies of a manual size A4 of loose leaf type containing all the following items:-

a. Description of equipment
b. Full operation and maintenance instructions
c. Valve operation
d. Fault-finding chart
e. Emergency procedure
f. Maintenance and service periods
g. Lubricating instruction
h. Colour code legend
i. Schedule of primary and secondary spares
j. Record drawing – Folded to size A4.

The manual must be specially written and not standard manufacturers manual unless approved by the Engineer. Tags giving instructions are not permitted. All instructions must be written into the manual with reference to the drawings.

All valves, terminals and controls on the plant shall be labeled to correspond with the maintenance and operation manuals.

1.2.5 Maintenance and Service After Expirations of the Contractual Maintenance Period

The tenderer shall if required, enter into a maintenance and service agreement with the employer for the complete installation, for a period of up to five years from the day of expiration of the contractual maintenance period.

The terms of any such agreement shall not be less beneficial to the Client, than the terms of agreement for other similar installations.
SOLAR WATER HEATING SYSTEM TECHNICAL QUESTIONNAIRE

The following information shall be supplied by tenderer regarding the solar flat plate collectors proposed:

1. Manufacturer/Trade Mark ……………………………………………………………

2. Construction Details of the Collector:
   Aperture Dimensions & Area \(m \times m^2\) …………………………………………………
   Gross Dimensions & Area \(m \times m^2\) …………………………………………………
   Dimensions and Area absorbing surface \(m \times m^2\) ……………………………

3. Solar Panel
   Collector Casement material ……………………………………………………………
   Thickness ………………………………………………………………………………
   Corrosion Treatment …………………………………………………………………

4. Glazing
   Material …………………………………………………………………………………
   Thickness ………………………………………………………………………………
   Physical Properties …………………………………………………………………

5. Insulation
   Material …………………………………………………………………………………
   Thickness (mm) ………………………………………………………………………
   Thermal properties …………………………………………………………………

6. Absorber
   Material Absorber plate ……………………………………………………………
   Material for tubes for heat exchange …………………………………………………
   Selective Coating ………………………………………………………………………
   Absorption Factor ………………………………………………………………………
   Emissivity Factor ………………………………………………………………………

7. Solar Cylinder
   Material …………………………………………………………………………………
   Thickness ………………………………………………………………………………
   Insulation Material ………………………………………………………………………
   Thickness ………………………………………………………………………………
   Cladding Material ………………………………………………………………………

8. Normal Operating Temperature Range \(\circ C\) ………………………………………

9. Minimum and Maximum Transfer Fluid Flow Rate kg/sec ……………………

E-15
10. Collector's Performance Efficiency: .................................................................

11. WARRANTY:
The Sub-contractor shall state the equipment warranty period

12. Any other alternative system. Give remarks on its difference to the one
described. Additional paper to be attached if the text is much

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

.........................................................
SECTION F

BILLS OF QUANTITIES

AND

SCHEDULE OF UNIT RATES
# BILLS OF QUANTITIES AND SCHEDULE OF UNIT RATES

## CONTENTS

<table>
<thead>
<tr>
<th>CLAUSE No.</th>
<th>PAGE NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>GENERAL NOTES TO TENDERERS</td>
</tr>
<tr>
<td>2.</td>
<td>STATEMENT OF COMPLIANCE</td>
</tr>
<tr>
<td>3.</td>
<td>BILLS OF QUANTITIES</td>
</tr>
<tr>
<td>4.</td>
<td>SUMMARY PAGE</td>
</tr>
<tr>
<td>5.</td>
<td>SCHEDULE OF UNIT RATES</td>
</tr>
</tbody>
</table>
GENERAL NOTES TO TENDERERS

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.

2. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (including 16% VAT).

In accordance with Government policy, the 3% Withholding Tax shall be deducted from all payments made to the Tenderer, and the same shall be forwarded to the Kenya Revenue Authority (KRA).

3. All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part thereof.

4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere. Otherwise alternative brands of equal and approved quality will be accepted.

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

5. The grand total of prices in the price summary page must be carried forward to the Form of Tender for the tender to be deemed valid.
1. **Statement of Compliance**

   a) I confirm compliance of all clauses of the General Conditions, General Specifications and Particular Specifications in this tender.

   b) I confirm I have not made and will not make any payment to any person, which can be perceived as an inducement to win this tender.

Signed: .................................................. *for and on behalf of the Tenderer*

Date: ............................

Official Rubber Stamp: .................................................................
BILLS No. 1

A) PRICING OF PRELIMINARIES ITEMS.

Prices will be inserted against item of preliminaries in the 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:-

Preliminaries – Bill 1

Sub-contractors preliminaries are as per those described in section C – sub-contractor preliminaries and conditions of contractor. 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.

Installation Items – Other Bills

The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the 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-contract shall insert his totals and enter his grand total tender sum in the space provided below the summary. This grand total tender sum shall be entered in the Form of Tender provided elsewhere in this document

F -3
<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>UNIT</th>
<th>RATE (KSHS)</th>
<th>AMOUNT (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discrepancies clause 1.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Conditions of sub-contract Agreement clause 1.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Payments clause 1.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Site location clause 1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Scope of Contract Works clause 1.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Extent of the Contractor’s Duties clause 1.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Firm price contract clause 1.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Variation clause 1.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Prime cost and provisional sum clause 1.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(insert profit and attendance which is a percentage of expended PC or provisional sum.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Bond clause 1.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Government Legislation and Regulations clause 1.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Import Duty and Value Added Tax clause 1.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Note this clause applies for materials supplied only. VAT will also be paid by the sub-contractor as allowed in the summary page)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Insurance company Fees clause 1.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Provision of services by the Main contractor clause 1.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Samples and Materials Generally clause 1.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUB-TOTAL CARRIED TO PAGE F-5**
<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>UNIT</th>
<th>RATE (KSHS)</th>
<th>AMOUNT (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Supplies clause 1.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Bills of Quantities clause 1.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Contractor’s Office in Kenya clause 1.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Builder’s Work clause 1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Setting to work and Regulating system clause 1.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Identification of plant components clause 1.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Working Drawings clause 1.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Record Drawings (As Installed) and Instructions clause 1.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Maintenance Manual clause 1.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Hand over clause 1.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Painting clause 1.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Testing and Inspection – manufactured plant clause 1.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Testing and Inspection – Installation clause 1.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Storage of Materials clause 1.41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Initial Maintenance clause 1.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUB-TOTAL CARRIED TO PAGE F-6**

**F-5**
<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>UNIT</th>
<th>RATE (KSHS)</th>
<th>AMOUNT (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Attendance Upon Tradesmen, etc. (Insert percentage only) clause 1.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Local and other Authorities notices and fees clause 1.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Temporary Works clause 1.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Patent Rights clause 1.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Mobilization and Demobilization Clause 1.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Extended Preliminaries Clause 1.66(see appendix on page C- 24)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Supervision by Engineer and Site Meetings Clause 1.67</td>
<td>1</td>
<td>ITEM</td>
<td>150,000</td>
<td>150,000</td>
</tr>
<tr>
<td>38</td>
<td>Allow for profit and Attendance for the above</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Amendment to Scope of Sub-contract Works Clause 1.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Contractor Obligation and Employers Obligation clause 1.69(see appendix page C- 24)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Any other preliminaries;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal above

Subtotal brought forward from page F-4

Subtotal brought forward from page F-5

TOTAL FOR SCHEDULE NO. 1- PRELIMINARIES CARRIED FORWARD TO PRICE MAIN SUMMARY PAGE
### BILL OF QUANTITIES FOR SOLAR WATER HEATING SYSTEM WORKS FOR PROPOSED ERECTION AND COMPLETION OF A WARD BLOCK AT MERU COUNTY LEVEL 5 HOSPITAL (PHASE 1)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rate (Kshs)</th>
<th>Amount (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Solar panels shall be as 'Thermafin' solar panels manufactured by Solatec Ltd or equal and approved with heat exchanger of copper tubes, 50mm fibre glass insulation, copper sheet absorber plate with selective (black chrome) 2m² dielectric nett absorbing area and all other necessary interconnectors and all the necessary inter connectors, dielectric union, washout valves, etc with 2.20 SM nett absorbing area.</td>
<td>60</td>
<td>Item</td>
<td>45,000</td>
<td>2,700,000.00</td>
</tr>
<tr>
<td>B</td>
<td>Thermostat set to activate when the water in the tanks exceed 85°C</td>
<td>3</td>
<td>No.</td>
<td>9,000</td>
<td>27,000.00</td>
</tr>
<tr>
<td>C</td>
<td>Temperature/pressure safety valve set to release when the water in the tanks exceed 85°C as manufactured by Spirax Sarco Model No. SV11 Pop Type or equal and approved.</td>
<td>3</td>
<td>No.</td>
<td>10,000</td>
<td>30,000.00</td>
</tr>
<tr>
<td>D</td>
<td>Allow for support 3mm hollow tubes mild steel angle iron fixed on roof for the above solar panels (in groups of 3 panels per frame) to engineers approval.</td>
<td>20</td>
<td>No.</td>
<td>45,000</td>
<td>900,000.00</td>
</tr>
<tr>
<td>E</td>
<td>Pressure gauge as manufactured by Honeywell to be fitted as instructed by the Engineer</td>
<td>3</td>
<td>No.</td>
<td>10,000</td>
<td>30,000.00</td>
</tr>
<tr>
<td>F</td>
<td>The auxiliary electric water heater elements shall be controlled by a time switch that they come 'ON' during peak hours only. The time switch must be capable of switching the heater 'ON' and 'OFF' at least two times per day. The time switch though electrically operated shall be capable of keeping time for a minimum 48 hours of electric power failure. Allow also for wiring from local isolators, to time switch/contactor and immersion heaters.</td>
<td>3</td>
<td>No.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total c/t to next page
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rate (Kshs)</th>
<th>Amount (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total b/d from previous page</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3,717,000.00</td>
</tr>
<tr>
<td><strong>Circulation Pumps</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Circulation pumpset, one duty, the other standby mounted on a frame with a mild steel base plate. Each pump shall have a duty 5.6m³/hr against 15m head as Grundfos hot water circulation pumps or approved equivalent. In addition, the pump shall be supplied complete with electric contactors fitted with overloads and automatic change-over from duty to standby pump within 5 seconds should the duty pump fail to deliver for any reason. The pumpset shall include all non-returns valves, timer, isolating valves and pipe connections.</td>
<td>2</td>
<td>Set</td>
<td>200,000</td>
<td>400,000.00</td>
</tr>
<tr>
<td><strong>Calorifier</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>The storage cylinder shall be high pressure fabricated from 5.0mm thick mild steel plate and hot dipped galvanised after manufacture, suitable for horizontal mounting. The insulation shall be polyurethane foam 50mm thick injected in the void between outer wall of the storage tank and the outer casings. The outer casing shall be mild steel sheet 24 gauge finished in two coats gloss paint with a red oxide undercoat. The cylinder capacity and connections shall be as follows:-</td>
<td>2</td>
<td>No</td>
<td>500,000</td>
<td>1,000,000.00</td>
</tr>
<tr>
<td></td>
<td>capacity: 3000 litres connections;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-65m diameter water supply feed</td>
<td></td>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-65mm diameter hot water outlet</td>
<td></td>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-65mm dia. Hot water return from solar panels</td>
<td></td>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-40mm diameter drain</td>
<td></td>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-40mm diameter automatic air release valve</td>
<td></td>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td><strong>Electrical heating booster elements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>6kW 240V 50Hz heating element complete with thermostat mounted in the reheat hot water cylinders complete with electrical wiring from local DB switches or isolators.</td>
<td>8</td>
<td>No</td>
<td>30,000</td>
<td>240,000.00</td>
</tr>
<tr>
<td><strong>Control Panel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>The control and indication gear necessary for the hot water solar heating installation shall be housed in a purpose made control panel. Each item of control and indication gear shall be clearly identified on the front cover. Allow for suitable delta connected contactors for heating elements power supply, overload controls and internal wiring.</td>
<td>1</td>
<td>No</td>
<td>50,000</td>
<td>50,000.00</td>
</tr>
<tr>
<td><strong>Total c/t to next page</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Bill of quantities for solar water heating system for Proposed Erection and Completion of a ward block at Meru Level 5 Hospital (Phase 1)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rate (Kshs)</th>
<th>Amount (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Dial Thermometer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Dial Thermometer with 100mm diameter dial chart and graduated from 0°C to 100°C to be fitted to Engineer’s approval.</td>
<td>3</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Temperature differential controls (Panels)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>The circulation pumps shall be controlled by temperature differential control unit as manufactured by 'fieldway ltd', with adjustable time delay circuit suitable for control of pump. The unit shall have a robust electric temperature sensing device for measuring temperature differences between two points. The sensing circuit of the unit should be stable over 5°C to 50°C temperature range. Allow for wiring from the service isolator to differential control to sensors in solar cylinder and pump.</td>
<td>3</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>GMS Pipework and Fittings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>50mm diameter medium pressure ball valve as &quot;PORTSMOUTH&quot; type or approved equivalent with brass stem and plastic float, screwed to threaded socket of tank including union.</td>
<td>3</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>50mm diameter foot valve with strainer as &quot;PEGLER&quot; type or approved equivalent.</td>
<td>3</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>32mm diameter screwed- in bonnet, full way non-rising stem, solid wedge disk, bronze gate valve to BS 5154 PN 20 for series 'B' ratings with wheel head and transition fitting for jointing to GMS pipework.</td>
<td>60</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>40mm diameter screwed- in bonnet, full way non-rising stem, solid wedge disk, bronze gate valve to BS 5154 PN 20 for series 'B' ratings with wheel head and transition fitting for jointing to GMS pipework.</td>
<td>10</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>50mm diameter screwed- in bonnet, full way non-rising stem, solid wedge disk, bronze gate valve to BS 5154 PN 20 for series 'B' ratings with wheel head and transition fitting for jointing to GMS pipework.</td>
<td>4</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total b/d from previous page**

**Total c/f to next page**
Bill of quantities for solar water heating system for Proposed Erection and Completion of a ward block at Meru Level 5 Hospital (Phase 1)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rate (Kshs)</th>
<th>Amount (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Non- Return Valves 32mm diameter screwed -in cap, lift type disc bronze non-return valve to BS 5154 PN 32 for series 'B' ratings.</td>
<td>30</td>
<td>No.</td>
<td>5,000</td>
<td>150,000.00</td>
</tr>
<tr>
<td>B</td>
<td>Non- Return Valves 50mm diameter screwed -in cap, lift type disc bronze non-return valve to BS 5154 PN 32 for series 'B' ratings.</td>
<td>2</td>
<td>No.</td>
<td>7,500</td>
<td>15,000.00</td>
</tr>
<tr>
<td>C</td>
<td>CPVC Pipework 65mm diameter pipework</td>
<td>220</td>
<td>Lm</td>
<td>5,000</td>
<td>110,000.00</td>
</tr>
<tr>
<td>D</td>
<td>CPVC Pipework 50mm diameter pipework</td>
<td>120</td>
<td>Lm</td>
<td>7,500</td>
<td>48,000.00</td>
</tr>
<tr>
<td>E</td>
<td>CPVC Pipework 40mm diameter pipework</td>
<td>250</td>
<td>Lm</td>
<td>6,000</td>
<td>87,500.00</td>
</tr>
<tr>
<td>F</td>
<td>CPVC Pipework 32mm diameter pipework</td>
<td>260</td>
<td>Lm</td>
<td>3,500</td>
<td>57,200.00</td>
</tr>
<tr>
<td>G</td>
<td>Bends 65mm diameter bend</td>
<td>10</td>
<td>No.</td>
<td>2,500</td>
<td>2,500.00</td>
</tr>
<tr>
<td>H</td>
<td>Bends 50mm diameter bend</td>
<td>5</td>
<td>No.</td>
<td>1,000</td>
<td>1,000.00</td>
</tr>
<tr>
<td>I</td>
<td>Bends 40mm diameter bend</td>
<td>15</td>
<td>No.</td>
<td>2,625.00</td>
<td>2,625.00</td>
</tr>
<tr>
<td>J</td>
<td>Bends 32mm diameter bend</td>
<td>4</td>
<td>No.</td>
<td>700</td>
<td>700.00</td>
</tr>
<tr>
<td>K</td>
<td>Tees 65mm diameter tee</td>
<td>10</td>
<td>No.</td>
<td>1,500</td>
<td>1,500.00</td>
</tr>
<tr>
<td>L</td>
<td>Tees 50mm diameter tee</td>
<td>12</td>
<td>No.</td>
<td>1,440.00</td>
<td>1,440.00</td>
</tr>
<tr>
<td>M</td>
<td>Tees 40mm diameter tee</td>
<td>8</td>
<td>No.</td>
<td>800</td>
<td>800.00</td>
</tr>
<tr>
<td>N</td>
<td>Tees 32mm diameter tee</td>
<td>10</td>
<td>No.</td>
<td>800</td>
<td>800.00</td>
</tr>
<tr>
<td>O</td>
<td>Unions 65mm diameter pipe unions</td>
<td>6</td>
<td>No.</td>
<td>200</td>
<td>1,200.00</td>
</tr>
<tr>
<td>P</td>
<td>Unions 50mm diameter pipe unions</td>
<td>2</td>
<td>No.</td>
<td>350</td>
<td>350.00</td>
</tr>
<tr>
<td>Q</td>
<td>Unions 40mm diameter pipe unions</td>
<td>48</td>
<td>No.</td>
<td>4,800</td>
<td>4,800.00</td>
</tr>
<tr>
<td>R</td>
<td>Unions 32mm diameter pipe unions</td>
<td>100</td>
<td>No.</td>
<td>8,000</td>
<td>8,000.00</td>
</tr>
<tr>
<td>S</td>
<td>Insulation Allow for insulation for pipework, bends, tees and other fittings with 25mm thick industrial grade flexible &quot;Armaflex&quot; insulation (85°C) as manufactured by Armstrong Cork International or equal and approved. The insulation to be for pipes less than 50mm diameter.</td>
<td>300</td>
<td>Lm</td>
<td>120,000.00</td>
<td>120,000.00</td>
</tr>
<tr>
<td>T</td>
<td>Insulation Allow for insulation for pipework, bends, tees and other fittings with 25mm thick industrial grade flexible &quot;Armaflex&quot; insulation (85°C) as manufactured by Armstrong Cork International or equal and approved. The insulation to be for pipes more than 50mm diameter.</td>
<td>300</td>
<td>Lm</td>
<td>150,000.00</td>
<td>150,000.00</td>
</tr>
<tr>
<td>U</td>
<td>Cladding Allow for cladding for pipework, bends, tees and other fittings with 16 SWG aluminium. The cladding to be for pipes more than 50mm diameter.</td>
<td>300</td>
<td>Lm</td>
<td>150,000.00</td>
<td>150,000.00</td>
</tr>
</tbody>
</table>

Total b/d from previous page

Total c/t to next page
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rate (Kshs)</th>
<th>Amount (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Allow for cladding for pipework, bends, tees and other fittings with 16 SWG aluminium. The cladding to be for pipes less than 50mm diameter.</td>
<td>150</td>
<td>Lm</td>
<td>70,000.00</td>
<td>6,917,415.00</td>
</tr>
<tr>
<td>B</td>
<td>Allow for charging of the solar panels with a circulating fluid (antifreeze fluid).</td>
<td>1 Item</td>
<td>Item</td>
<td>30,000.00</td>
<td>30,000.00</td>
</tr>
<tr>
<td>C</td>
<td>Allow for connections to rising mains for all solar heating systems and to the hot water delivery line.</td>
<td>1 Item</td>
<td>Item</td>
<td>50,000.00</td>
<td>50,000.00</td>
</tr>
<tr>
<td>D</td>
<td>Allow for testing and commissioning for all solar heating systems and to the hot water delivery line.</td>
<td>1 Item</td>
<td>Item</td>
<td>50,000.00</td>
<td>50,000.00</td>
</tr>
<tr>
<td>E</td>
<td>Allow for flushing out and sterilizing of the whole system with chlorine to the satisfaction of the Project Engineer.</td>
<td>1 Item</td>
<td>Item</td>
<td>45,000.00</td>
<td>45,000.00</td>
</tr>
<tr>
<td>F</td>
<td>Ream white photocopying paper A/4 80g/m2</td>
<td>20 Ream</td>
<td>Ream</td>
<td>2,000.00</td>
<td>40,000.00</td>
</tr>
<tr>
<td>G</td>
<td>HP Laserjet Print Cartridge serial 5A No. CE505A</td>
<td>10 No</td>
<td>No</td>
<td>20,000.00</td>
<td>200,000.00</td>
</tr>
<tr>
<td>H</td>
<td>Allow for a provisional sum of Ksh. 200,000 as training Levy for the state department of Public works</td>
<td>1 Item</td>
<td>Item</td>
<td>200,000.00</td>
<td>200,000.00</td>
</tr>
<tr>
<td>I</td>
<td>Prepare and submit three sets of working drawings and isometric layout drawings to easily readable scale, A1 or A0 paper size format as follows; i) general arrangement drawings of all equipment, plant etc. ii) routes - types and sizes and arrangement of all pipework iii) wiring (electrical &amp; control) details iv) any other details as per specifications. Drawings are to be submitted in soft copy (AutoCAD 2007 format) and hard copy to the client, the Architect and the Engineer. The soft copies to be stored in CD and 4GB flash disk.</td>
<td>1 Item</td>
<td>Item</td>
<td>45,000.00</td>
<td>45,000.00</td>
</tr>
</tbody>
</table>
### Bill of quantities for solar water heating system for Proposed Erection and Completion of a ward block at Meru Level 5 Hospital (Phase 1)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rate (Kshs)</th>
<th>Amount (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total b/f from previous page</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Record (As-installed) Drawings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Prepare and submit <strong>three sets</strong> of record (as-installed) plans and isometric layout drawings to easily readable scale, A1 or A0 paper size format as follows;</td>
<td>1</td>
<td>Item</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i) general arrangement drawings of all equipment, plant etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii) routes - types and sizes and arrangement of all pipework</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii) wiring (electrical &amp; control) details</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iv) any other details as per specifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drawings are to be submitted in soft copy (AutoCAD 2007 format) and hard copy to the client, the Architect and the Engineer. The soft copies to be stored in CD and 4GB flash disk. Allow for preparation and submitting draft and three final copies of operation, instruction and maintenance manuals to Engineer's approval.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total for solar water heating works carried to summary page**
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preliminaries</td>
<td>………………..</td>
</tr>
<tr>
<td>2</td>
<td>Total for main solar water heating works carried forward from page F-12</td>
<td>………………..</td>
</tr>
<tr>
<td>3</td>
<td>Allow for contingency to be used at the discretion of the engineer</td>
<td>………………..</td>
</tr>
</tbody>
</table>

**Total for Solar Water Heating Works carried to the tender page**

Amount in words: ..............................................................................................
..........................................................................................................................

Tenderer's name and Stamp
..........................................................................................................................

Sub-Contract period: .................................................... Weeks

Signature ................................................................. Date

PIN NO: ........................................ VAT CERTIFICATE NO:
(Provide copy)

Witness Address:
..........................................................................................................................

Date: .................................................................
<table>
<thead>
<tr>
<th>CLAUSE No.</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>G-1</td>
</tr>
<tr>
<td>2.</td>
<td>G-2</td>
</tr>
<tr>
<td>3.</td>
<td>G-3 to G-4</td>
</tr>
</tbody>
</table>
TECHNICAL SCHEDULE

1. **General Notes to the Tenderer**

1.1 The tenderer shall submit technical schedules for all materials and equipment upon which he has based his tender sum.

1.2 The tenderer shall also submit separate comprehensive descriptive and performance details for all plant apparatus and fittings described in the technical schedules. Manufacturer’s literature shall be accepted. Failure to comply with this may have his tender disqualified.

1.3 Completion of the technical schedule shall not relieve the Contractor from complying with the requirements of the specifications except as may be approved by the Engineer.
**TECHNICAL SCHEDULE**

The tenderer must complete in full the technical schedule. Apart from the information required in the technical schedule, the tenderer **MUST SUBMIT** comprehensive manufacturer’s technical brochures and performance details for all items listed in this schedule (fill forms attached).

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>MANUFACTURER</th>
<th>COUNTRY OF ORIGIN</th>
<th>REMARKS (Catalogue No. etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2mX1m SOLAR PANEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>THERMOSTAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>SUPPORTING FRAME</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>PRESSURE GAUGE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>BALL VALVE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>FOOT VALVE AND STRAINER</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The tenderer shall also submit separate comprehensive descriptive and performance details for all plant apparatus and fittings, as described in the technical schedule.
## SECTION H:

### DRAWING SCHEDULE

## CONTENTS

<table>
<thead>
<tr>
<th>CLAUSE No.</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DRAWING SCHEDULE</td>
<td>H-1</td>
</tr>
</tbody>
</table>
DRAWING SCHEDULE:

As shall be provided during project implementation.
SECTION I:

STANDARD FORMS

NOTE:
ALL FORMS IN THIS SECTION MUST BE FILLED AS THEY SHALL BE PART OF THE EVALUATION CRITERIA
## CONTENTS

<table>
<thead>
<tr>
<th>FORM</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PERFORMANCE BANK GUARANTEE</td>
<td>I-1</td>
</tr>
<tr>
<td>2. TENDER QUESTIONNAIRE</td>
<td>I-2</td>
</tr>
<tr>
<td>3. CONFIDENTIAL BUSINESS QUESTIONNAIRE</td>
<td>I-3 to I-4</td>
</tr>
<tr>
<td>4. KEY PERSONNEL</td>
<td>I-5</td>
</tr>
<tr>
<td>5. CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS</td>
<td>I-6</td>
</tr>
<tr>
<td>6. SCHEDULE OF ON-GOING PROJECTS</td>
<td>I-7</td>
</tr>
<tr>
<td>7. FINANCIAL REPORTS FOR THE LAST FIVE YEARS</td>
<td>I-8</td>
</tr>
<tr>
<td>8. EVIDENCE OF FINANCIAL RESOURCES</td>
<td>I-9</td>
</tr>
<tr>
<td>9. NAME OF THE BANKERS</td>
<td>I-10</td>
</tr>
<tr>
<td>10. DETAILS OF LITIGATIONS OR ARBITRATION PROCEEDINGS</td>
<td>I-11</td>
</tr>
<tr>
<td>11. SCHEDULE OF MAJOR ITEMS OF CONTRACTOR'S EQUIPMENT PROPOSED FOR CARRYING OUT THE WORKS</td>
<td>I-12</td>
</tr>
</tbody>
</table>
PERFORMANCE BANK GUARANTEE

To:
Chief Officer, Health
County Government of Meru
P.O. Box 120-60200
Meru

WHEREAS ……………………………………….(hereinafter called “the Contractor”) has undertaken, in pursuance of Contract No. ………………………… dated ……………… to execute ………………………………………………… (hereinafter called “the Works”);

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of:
Kshs. …………………………………. (amount of Guarantee in figures)
Kenya Shillings
……………………………………………………………………………………
………………………………………………………………. (amount of Guarantee in words),
and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of Kenya Shillings …………………..
……………………………………………………………….. (amount of Guarantee in words) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change, addition or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any change, addition, or modification.

This guarantee shall be valid until the date of issue of the Certificate of Completion.

SIGNATURE AND SEAL OF THE GUARANTOR …………………………….

Name of Bank ………………………………………………………………………

Address …………………………………

Date ……………………………………………………………………………

I-1
1. Full names of Tenderer:

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

3. Telephone number(s) of Tenderer:

4. Telex/Fax Address of Tenderer:

5. Name of Tenderer’s representative to be contacted on matters of the tender during the tender period:

6. Details of Tenderer’s nominated agent (if any) to receive tender notices. This is essential if the Tenderer does not have his registered address in Kenya (name, address, telephone, telex):

________________________________________
Signature of Tenderer
CONFIDENTIAL BUSINESS QUESTIONNAIRE

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

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

**Part 1 – General**

Business Name  ………………………………………………………………………

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

Plot No……………………………………… Street/Road  ………………………

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

Nature of Business…………………………………………………………………

Current Trade Licence No………………… Expiring date…………………

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

Name of your bankers………………………………………………………………

Branch………………………………………………………………………………

**Part 2 (a) – Sole Proprietor**

Your name in full…………………………………… Age…………………………

Nationality………………………………… Country of Origin…………………

Citizenship details …………………………………………………………………

**Part 2 (b) – Partnership**

Give details of partners as follows:

<table>
<thead>
<tr>
<th>Name in full</th>
<th>Nationality</th>
<th>Citizenship Details</th>
<th>Shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**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:

<table>
<thead>
<tr>
<th>Name in full</th>
<th>Nationality</th>
<th>Citizenship Details*</th>
<th>Shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>POSITION</th>
<th>NAME</th>
<th>YEARS OF EXPERIENCE (GENERAL)</th>
<th>YEARS OF EXPERIENCE IN PROPOSED POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I certify that the above information is correct.

……………………..  ……... ………………….  ……...…………
Title    Signature    Date

I-5
CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

Work performed on works of a similar nature and volume over the last five years.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>NAME OF CLIENT</th>
<th>TYPE OF WORK AND YEAR OF COMPLETION</th>
<th>VALUE OF CONTRACT (Kshs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>NAME OF CLIENT</th>
<th>CONTRACT SUM</th>
<th>% COMPLETE</th>
<th>COMPLETION DATE</th>
</tr>
</thead>
</table>

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

…………………………………………………………
Title                                          Signature                                      Date

I-7
FINANCIAL REPORTS FOR THE LAST FIVE YEARS
(Balance sheets, Profits and Loss Statements, Auditor’s reports, etc.
List below and attach copies)

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
EVIDENCE OF FINANCIAL RESOURCES TO MEET QUALIFICATION REQUIREMENTS
(Cash in Hand, Lines of credit, e.t.c. List below and attach copies of supportive documents.)

1. ____________________________.
2. ____________________________.
3. ____________________________.
4. ____________________________.
5. ____________________________.
6. ____________________________.
7. ____________________________.
8. ____________________________.
9. ____________________________.
10. ____________________________.
NAME, ADDRESS AND TELEPHONE, TELEX AND FACSIMILE OF BANKS  
(This should be for banks that may provide reference if contacted by the employer)

<table>
<thead>
<tr>
<th>NAME</th>
<th>ADDRESS</th>
<th>TELEPHONE</th>
<th>TELEX</th>
<th>FACSIMILE</th>
</tr>
</thead>
</table>

I-10
DETAILS OF LITIGATIONS OR ARBITRATION PROCEEDINGS IN WHICH THE TENDERER IS INVOLVED AS ONE OF THE PARTIES

1. ________________________________.
2. ________________________________
3. ________________________________
4. ________________________________
5. ________________________________
6. ________________________________
7. ________________________________
8. ________________________________
9. ________________________________
10. ________________________________
### SCHEDULE OF MAJOR ITEMS OF CONTRACTOR'S EQUIPMENT PROPOSED FOR CARRYING OUT THE WORKS

<table>
<thead>
<tr>
<th>ITEM OF EQUIPMENT</th>
<th>DESCRIPTION, MAKE AND AGE (Years)</th>
<th>CONDITION (New, good, poor) and number available</th>
<th>OWNED, LEASED (From whom?), or to be purchased (From whom?)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I-12