REPUBLIC OF KENYA

MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

STATE DEPARTMENT OF PUBLIC WORKS

PROPOSED CONSTRUCTION OF INDIVIDUAL TRAINING KITCHEN AT KENYA UTALII COLLEGE ALONG THIKA ROAD - NAIROBI.

W.P. ITEM NO. D117 / NB / NB / 1802 – JOB NO. 10489 A

SPECIFICATIONS AND BILLS OF QUANTITIES

FOR

SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING

OF

KITCHEN EXTRACT AND FIRE SUPPRESSION SYSTEMS INSTALLATION WORKS

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CLIENT
The Principal/ CEO
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P.O. BOX 31050-00600
NAIROBI

April, 2019

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DEFINITIONS

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

The Employer:	**Government of the Republic of Kenya**
Represented by:	The Principal / CEO Kenya Utalii College P.O. Box 31052-00600 NAIROBI
Project Manager:	Chief Architect Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development P.O. Box 30743-00100 NAIROBI
Architect:	Chief Architect Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development P.O. Box 30743-00100 NAIROBI
Engineer:	Chief Engineer [Mechanical (BS)] Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development P.O. Box 41191 - 00100 NAIROBI
Electrical Engineer:	Chief Engineer (Electrical) Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development P.O. Box 41191 - 00100 NAIROBI
Quantity Surveyor:	Chief Quantity Surveyor Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development P.O. Box 30743-00100 NAIROBI
Structural Engineer:	Chief Engineer (Structural) Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development P.O. Box 30743-00100 NAIROBI
Main Contractor:	The firm appointed to carry out the supply, delivery, installation, testing and commissioning of kitchen extract and fire suppression systems installation works
Site:	**Kenya Utalii College Along Thika Road in Nairobi.**

SPECIAL NOTES

1. These notes shall form part of the Instructions to Tenderers and Conditions of Contract.

2. The tenderer is required to check the number of pages in this document and should he find any missing, or in duplicate, or indistinct he should inform the Chief Engineer [Mechanical (BS)], Ministry of Transport, Infrastructure, Public Works, 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)], Ministry of Transport, Infrastructure, Public Works, 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 Board of Kenya to avoid disqualification.

FORM OF TENDER

To: The Principal / CEO
Kenya Utalii College
P.O. Box 31052 - 00600
NAIROBI

Dear Sir,

SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF KITCHEN EXTRACT AND FIRE SUPPRESSION SYSTEMS INSTALLATION WORKS FOR THE PROPOSED CONSTRUCTION OF INDIVIDUAL TRAINING KITCHEN AT KENYA UTALII COLLEGE ALONG THIKA ROAD IN NAIROBI.

1. In accordance with the Instructions to Tenderers, Conditions of Contract, Specifications and Bills of Quantities for the execution of the above-named Works, we, the undersigned offer to construct, install and complete such Works and remedy any defects therein for the sum of:
   Kshs……. ***[Amount in figures]***

   Kenya Shillings……...
   …… ***[Amount in words]***

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

3. We agree to abide by this tender for **a period of 120 days from the date of tender opening** and shall remain binding upon us and may be accepted at any time before 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. 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 *]***
of……..***[Address of Tenderer]***

PIN No. ……..
VAT CERTIFICATE No. ……
Witness: Name …….
Address …….
Signature ……

FORM OF TENDER SECURITY FROM BANK

WHEREAS …… (hereinafter called "the Tenderer") has submitted his tender dated ……. for the supply, delivery, installation, testing and commissioning of kitchen extract and fire suppression systems installation works for proposed construction of individual training kitchen at Kenya Utalii College along Thika road in Nairobi.

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 will 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 for a period of 150 days from the date of tender opening, and any demand in respect thereof should reach the Bank not later than the said date.

……..	……
(Date)	*(Signature of the Bank)*
……	……..
(Witness)	*(Seal)*

FORM OF TENDER SECURITY FROM INSURANCE

WHEREAS …… (hereinafter called "the Tenderer") has submitted his tender dated ……. for the supply, delivery, installation, testing and commissioning of kitchen extract and fire suppression systems installation works for proposed construction of individual training kitchen at Kenya Utalii College along Thika road in Nairobi.

KNOW ALL PEOPLE by these presents that WE ……..
Having our registered office at …….
(hereinafter called "the Insurance'), 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 Insurance binds itself, its successors and assigns by these presents sealed with the Common Seal of the said Insurance this ……Day of ……20 ……

THE CONDITIONS of this obligation are:

3. If after tender opening the Tenderer withdraws his tender during the period of tender validity specified in the instructions to Tenderers
   Or
4. 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 for a period of 150 days from the date of tender opening, and any demand in respect thereof should reach the Insurance not later than the said date.

…….. ……
(Date) *(Signature of the Insurance)*

…… ……..……..
(Witness) *(Seal)*

SECTION A:

INSTRUCTIONS TO TENDERERS

INSTRUCTIONS TO TENDERERS

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INSTRUCTIONS 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 Part 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 here below 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 paced 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 s/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 initialled 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 is 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. Currency 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 per cent) 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 initialled 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 initialled by the person of persons signing the tender.

SUBMISSION OF TENDERS

17. Sealing and Marking of Tenders

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

17.2 The inner and outer envelopes shall be addressed to the Employer at the address stated in the Appendix to Instructions to Tenderers and bear the name and identification of the Contract stated in the said Appendix with a warning not to open before the date and time for opening of tenders stated in the said Appendix.

17.3 The inner envelopes shall each indicated the name and address of the tenderer to enable the tender to be returned unopened in case it is declared "late", while the outer envelope shall bear no mark indicating the identity of the tenderer.

17.4 If the outer envelope is not sealed and marked as instructed above, the Employer will assume no responsibility for the misplacement or premature opening of the tender. A tender opened prematurely for this cause will be rejected by the Employer and returned to the tenderer.

18 Deadline for Submission of Tenders

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

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

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

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

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

19 Modification and Withdrawal of Tenders

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

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.

24 Correction of Errors

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

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

(b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will prevail, unless in the opinion of the Employer, there is an obvious typographical error, in which case adjustment will be made to the entry containing that error.

(c) The amount stated in the tender will be adjusted in accordance with the above procedure for the correction of errors and, with concurrence of the tenderer, shall be considered as binding upon the tenderer. If the tenderer does not accept the corrected amount, the tender may be rejected and the Tender Security may be forfeited in accordance with clause 13.

25 Conversion to Single Currency

25.1 For compensation of tenders, the tender price shall first be broken down into the respective amounts payable in various currencies by using the selling rate or rates of the Central Bank of Kenya ruling on the date twenty-eight (28) days before the final date for the submission of tenders.

25.2 The Employer will convert the amounts in various currencies in which the tender is payable (excluding provisional sums but including Day works where priced competitively) to Kenya Shillings at the selling rates stated in clause 25.1.

26 Evaluation and Comparison of Tenders

26.1 The Employer will evaluate only tenders determined to be substantially responsive to the requirements of the tender documents in accordance with clause 23.

26.2 In evaluating tenders, the Employer will determine for each tender the evaluated tender price by adjusting the tender price as follows:

(a) Making any correction for errors pursuant to clause 24.

(b) Excluding Provisional Sums and provision, if any, for Contingencies in the Bills of Quantities, but including Day works where priced competitively.

26.3 The Employer reserves the right to accept any variation, deviation or alternative offer. Variations, deviations, alternative offers and other factors which are in excess of the requirements of the tender documents or otherwise result in the accrual of unsolicited benefits to the Employer, shall not be taken into account in tender evaluation.

26.4 Price adjustment provisions in the Conditions of Contract applied over the period of execution of the Contract shall not be taken into account in tender evaluation.

26.5 If the lowest evaluated tender is seriously unbalanced or front loaded in relation to the Employer's estimate of the items of work to be performed under the Contract, the Employer may require the tenderer to produce detailed price analysis 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 analysis, 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 to tender is open to selected bidders".

2. OMIT
Clauses 4.3, 5.1 (a), (d), (f), (i), (j), 10.3, 10.4, 11.2, 11.3, 11.4, 15, 25, 26.6, 30

3. ADD TO CLAUSE 13.1
Amount of tender surety will be Kshs. 900,000.00 or as indicated in the tender advertisement notice

4. ADD TO CLAUSE 13.2

i. Tender security to be valid for 150 days from tender opening date.
ii. The bid security shall be from a reputable Bank/Insurance company

5. ADD TO CLAUSE 17.1
Only original tender document shall be submitted as stated in the tender notice.

6. AMEND CLAUSE 28.4 and 29.1
Replace twenty-eight (28) days with twenty-one (21) days

7. ADD TO CLAUSE 29.1
Amount of performance security will be five per cent (5%)

9. ADD TO CLAUSE 29.2
Performance security shall not be divided in two elements and shall be payable in Kenya Shillings Only.

10. 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 contract works. (i.e. corrected tender sum less PC and provisional sums)

iii) The Error correction factor shall be applied to all contract works (as a rebate or addition as the case may be) for the purposes of valuations for Interim Certificates and valuation of variations.

11. ADD TO CLAUSE 26
The evaluation criteria as detailed on pages (A-17 to A-21) of this clause shall be applied.

TENDER EVALUATION CRITERIA

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

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

STAGE 1: PRELIMINARY 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) Current Category of Registration with National Construction Authority (NCA) in the relevant trade;
ii) Current Class of Licenses with the relevant statutory bodies e.g. Energy Regulatory Commission, County Governments, and Water Management Boards etc.;
iii) Proof of payment for tender document if required;
iv) The Bid has been submitted in the format required by the procuring entity;
v) Provision of a tender Security, that is in the required form, amount and that the tender is valid for the period required;
vi) Dully filled Form of Tender;
vii) Valid Tax Compliance Certificate;
viii) Dully filled Confidential Business Questionnaire;
ix) Dully signed Statement of Compliance; and
x) The required number of copies of the tender has been submitted and all required documents, information and samples have been submitted if stipulated in the tender, advertisement/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/procuring entity may seek further clarification/confirmation if necessary, to confirm authenticity/compliance of any condition of the tender. Further, in case of a discrepancy between the amounts stated in the appendix to instruction to tenderers and the one stated in the advertisement or invitation letter, the bid security shall be taken as the amount in the advertisement/ letter of invitation.

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

STAGE 2 TECHNICAL EVALUATION

A) Assessment for eligibility

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 Standard 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

PARAMETER	MAXIMUM POINTS
(i) Tender Questionnaire	5
(ii) Key personnel	20
(iii) Contract Completed in the last Five (5) years	20
(iv) Schedules of on-going projects	8
(v) Schedules of contractors equipment	20
(vi) Audited Financial Report for the last 3 years	10
(vii) Evidence of Financial Resources	15
(viii) Litigation History	2
TOTAL	**100**

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

TABLE 1: Assessment for Eligibility

Item	Description	Point Scored	Max. Point	
i.	**Tender Questionnaire Form** • Completely filled ---------- 5 • Not filled ---------- 0		**5**	
ii	**Key Personnel (Attach evidence)**			**20**
	Director of the firm • Holder of degree in relevant Engineering field ---------- 6 • Holder of diploma in relevant Engineering field --------- 5 • Holder of certificate in relevant Engineering field ------- 3 • Holder of trade test certificate in relevant Engineering field ----------2 • No relevant certificate ---------- 1		**6**	
	At least 1No. degree/diploma of key personnel in relevant Engineering field • With over 10 years relevant experience ---------- 6 • With over 5 years relevant experience---------- 4 • With under 5 years relevant experience ---------- 2		**6**	
	At least 1No certificate holder of key personnel in relevant Engineering field • With over 10 years relevant experience---------- 4 • With over 5 years relevant experience ---------- 3 • With under 5 years relevant experience ----------1		**4**	
	At least 2No artisan (trade test certificate in relevant Engineering field) • Artisan with over 10 years relevant experience -------- 2 • Artisan with under 10 years relevant experience ------- 1 • Non skilled worker with over 10 years relevant experience ---------- 1		**4**	
iii	**Contract completed in the last five (5) years (Max of 5 No. Projects**)- **<u>Provide Evidence</u>** • Project of similar nature, complexity and magnitude --- 4 • Project of similar nature but of lower value than the one in consideration ---------- 3 • No completed project of similar nature ----------0		**20**	
iv	**On-going projects – <u>Provide Evidence</u>** • Four and above Project of similar nature, complexity and magnitude ---------- 8 • Three and below Project of similar, nature complexity and magnitude –----------6 • No project of similar, nature complexity and magnitude - - ----------4		**8**	

v	**Schedule of contractors equipment and transport (proof or evidence of ownership/Lease)** **a) Relevant Transport** • Means of transport (Vehicle) ---------- 10 • No means of transport ---------- 0		10	**20**
	b) Relevant Equipment • Has relevant equipment for work being tendered--------- 10 • No relevant equipment for work being tendered---------- 0		10	
vi	**Financial report** **a) Audited financial report (last three (3) years)** • Average Annual Turn-over equal to or greater the cost of the project ---------- 10 • Average Annual Turn-over above 50% but below 100% of the cost of the project ---------- 6 • Average Annual Turn-over below 50% of the cost of the project ---------- 3		**10**	
	b) Evidence of Financial Resources (cash in hand, lines of credit, over draft facility etc.) • Has financial resources to finance the projected **monthly cash flow*** for three months ----------15 • Has financial resources equal to the projected **monthly cash flow*** ----------10 • Has financial resources less than the projected **monthly cash flow*** ----------5 • Has not indicated sources of financial resources ---------- 0		**15**	
vi	**Litigation History** • Filled ---------- 2 • Not filled ---------- 0		**2**	
	TOTAL		**100**	

Any bidder who scores 60 points and above shall be considered for further evaluation

Monthly Cash Flow = Tender Sum/Contract Period

B) Compliance with Specialist Works 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.

The tenderer shall also submit relevant technical brochures/catalogues with the tender document, highlighting the catalogue 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 is found not to conform to the stipulated specifications, the tender will be deemed Non–Responsive and will not be evaluated further.

C) Assessment of deviations

Pursuant to section 64 of the act, a tender is deemed responsive if it conforms to all the mandatory requirements and it **does not contain major** deviations. Section 23.2 of the instruction to tenderers, defines major deviations as

a) One that affects in a substantial way the scope, quality, completion timing, administration of works to be undertaken by the tenderer under the contract, inconsistent with the tender document; or
b) Which limits in any substantial way the rights of the employer or the tenderers obligations; or
c) Whose rectification would affect unfairly the competitive position of other tenderers presenting substantially responsive tenders.

Where the deviations are minor in the view of the tender committee, with the concurrence of the procuring entity representative, the evaluation committee shall quantify such deviations pursuant to section 64 (3) of the act which requires that a minor deviation shall:

a) Be quantified to the extent possible; and
b) Be taken into account in the evaluation and comparison of tenders.

Where the deviation in the view of the tender committee with the concurrence of the procuring entity representative is major, the tender shall be deemed **non-responsive and will not be evaluated further**

TABLE 2: Assessment of Deviations

Item	Does the Deviation Substantively Affect the following?	YES	NO
1	Scope of the Works or Services to be delivered		
2	Quality of the Works or Services to be delivered		
3	Completion Timing		
4	Administration of the Works		

5	Consistency with the tender document		
6	Rights of the Employer in a negative manner		
7	Limit the Tenderer's Obligation		
8	Affect unfairly the competitive position of other tenderers		
	COMMENT		

Any bidder who OBTAINS A YES in the above table shall be considered NON-RESPONSIVE and shall not be evaluated further.

STAGE 3 - FINANCIAL EVALUATION

Upon completion of the technical evaluation a detailed financial evaluation shall follow. The financial evaluation shall proceed in the manner described in the Public Procurement and Disposal Act (2005) of the laws of Kenya (Section 66) and the Public Procurement and Disposal Regulations, 2006 specifically section 50 (1), (2), and (3).

The evaluation shall be in **three stages**

a) Preliminary examinations;
b) Comparison of Rates; and
c) Consistency of the Rates.

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;

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

B) Comparison of rates-

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

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

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

C) **Consistency of the Rates**

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

STAGE 4 - RECOMMENDATION FOR AWARD

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

SECTION B:

CONDITIONS OF CONTRACT

CONDITIONS OF CONTRACT (MAIN WORKS)

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CONDITIONS OF CONTRACT

1.0 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.

"Compensation Events" are those defined in clause 24 hereunder

"Completion date" means the date of completion of the works as certified by the Project Manager, in accordance with Clause 31.

"The Contract" Means the agreement entered into between the Employer and the Contactor as recorded in the Agreement Form and signed by the parties including all attachments and appendices thereto and all documents incorporated by reference therein to execute, complete, and maintain the Works,

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

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

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

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

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

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

"The Defects Liability Period" is the period named in the Contract Data and calculated from the Completion Date.

"Drawings" include calculations and other information provided or approved by the Project Manager for the execution of the Contract.

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

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

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

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

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

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

"Project Manager" is the person named in the Appendix to Conditions of Contract (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract and shall be an "Architect" or a "Quantity Surveyor registered under the Architects and Quantity Surveyors Act Cap 525 or an "Engineer" registered under Engineers Registration Act Cap 530.

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

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

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

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

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

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

"A Variation" is an instruction given by the Project Manager which varies the Works.

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

2. Interpretation

2.1. In interpreting the Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning in English Language unless specifically defined. The Project Manager will provide instructions clarifying queries about these Conditions of Contract.

2.2. If sectional completion is specified in the Appendix to Conditions of Contract, reference in the Conditions of Contract to the Works, the Completion Date and the Intended Completion Date apply to any section of the Works (other than references to the Intended Completion Date for the whole of the Works).

2.3. The following documents shall constitute the Contract documents and shall be interpreted in the following order of priority;

(1) Agreement,
(2) Letter of acceptance,
(3) Contractor's Tender,
(4) Appendix to Conditions of Contract,
(5) Conditions of Contract,
(6) Specifications,
(7) Drawings,
(8) Bills of Quantities,
(9) Any other documents listed in the Appendix to Conditions of Contract as forming part of the contract.

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

3. Language and Law

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

4. Project Manager's Decisions

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

5. Delegation

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

6. Communications

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

7. Subcontracting

7.1. The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Employer in writing.

7.2. Subcontracting shall not alter the Contractor's obligations.

8. Other Contractors

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

9. Personnel

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

10. Works

10.1. The Contractor shall construct and install the works in accordance with the Specifications and Drawings. The Works may commence on the Start Date and shall be carried out in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.

11. Safety and Temporary Works

11.1. The Contractor shall be responsible for the design of temporary works. However before erecting the same, he shall submit his designs including specifications and drawings to the Project Manager and to any other relevant third parties for their approval. No erection of temporary works shall be done until such approvals are obtained.

11.2. The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary works and all drawings prepared by the Contractor for the execution of the temporary or permanent works, shall be subject to prior approval by the Project Manager before they can be used. The Contractor shall be responsible for the safety of all activities on the Site.

12. Discoveries

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

13. Work Program

13.1. Within the time stated in the appendix to Conditions of Contract, the Contractor shall submit to the Project Manager for approval a program showing the general methods, arrangements, order, and timing for all the activities in the Works. An update of the program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.

13.2. The Contractor shall submit to the Project Manager for approval an updated program at intervals no longer than the period stated in the Appendix to Conditions of Contract.

13.3. If the Contractor does not submit an updated program within this period, the Project Manager may withhold the amount stated in the said Appendix from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue program has been submitted.

13.4. The Project Manager's approval of the program shall not alter the Contractor's obligations. The Contractor may revise the program and submit it to the Project Manager again at any time. A revised program shall show the effect of Variations and Compensation Events.

14. Possession of Site

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

15. Access to Site

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

16. Instructions

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

17. Extension of Acceleration of Completion Date

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

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

18. Management Meetings

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

19. Early Warning

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

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

20. Defects

20.1. The Project Manager shall inspect the Contractor's work and notify the Contractor of any defects that are found. Such inspection shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a defect and to uncover and test any work that the Project manager considers may have defects.

20.2. Should the defect be found, the cost of uncovering and making good shall be borne by the Contractor. However, if there is no defect found, the cost of uncovering and making good shall be treated as a variation and added to the Contract Price.

20.3. The Project Manager shall give notice to the Contractor of any defects before the end of the Defect Liability Period, which begins at completion, and is defined in the Appendix to Conditions of contract. The Defects Liability Period shall be extended for as long as defects remain to be corrected.

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

21. Bills of Quantities

21.1. The Bills of Quantities shall contain items for the construction, installation, testing and commissioning of the work to be done by the Contractor. The Contractor will be paid for the quantity of the work done at the rate in the Bills of Quantities for each item.

21.2. If the final quantity of the work done differs from the quantity in the Bills of Quantities for the particular item by more than 25 percent and provided the change exceeds 1 percent of the Initial Contractor price, the Project Manager shall adjust the rate to allow for the change.

21.3. If requested by the Project Manager, the Contractor shall provide the Project manager with a detailed cost breakdown of any rate in the Bills of Quantities.

22. Variations

22.1. All variations shall be included in updated programs produced by the Contractor.

22.2. The Contractor shall provide the Project Manager with a quotation for carrying out the variations when requested to do so. The Project Manager shall assess the quotation, which shall be given within seven days of the request or within any longer period as may be stated by the Project Manager and before the Variation is ordered.

22.3. If the work in the variation corresponds with an item description in the Bills of Quantities and if in the opinion of the Project Manager, the quantity of work is not above the limit stated in Clause 21.2 or the timing of its execution does not cause the cost per unit of quantity to change, the rate in the Bills of Quantities shall be used to calculate the value of the variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the variation doe not correspond with items in the Bills of Quantities, the quotation by the contractor shall be in the form of new rates for the relevant items of work.

22.4. If the Contractor's quotation is unreasonable, the Project manager may order the variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the variation on the Contractor's cost

22.5. If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the works, no quotation shall be given and the variation shall be treated as a Compensation Event.

22.6. The Contractor shall not be entitled to additional payment for cost that could have been avoided by giving early warning.

22.7. When the Program is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast.

23. Payment Certificates, Currency of Payments and Advance Payments

23.1. The Contractor shall submit to the Project Manager monthly applications for payment giving sufficient details of the Work done and materials on Site and the amounts which the Contractor considers himself to be entitles to. The Project Manager shall check the monthly application and certify the amount to be paid to the Contractor within 14 days. The value of work executed and payable shall be determined by the Project Manager.

23.2. The value of work executed shall comprise the value of the quantities of the items in the Bills of Quantities completed; materials delivered on site, variations and compensation events. Such materials shall become the property of the Employer once the Employer has paid the Contractor for their value. Thereafter, they shall not be removed from site without the Project Manager's instructions except for use upon the works.

23.3. Payments shall be adjusted for deductions for retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of issue of each certificate. If the Employer makes a late payment, the Contractor shall be paid simple interest on the late payment in the next payment. Interest shall be calculated on the basis of number of days delayed at a rate three percentage points above the Central Bank of Kenya's average rate for base lending prevailing as of the first day the payment becomes overdue.

23.4. If an amount certified is increased in a later certificate of a result of an award by an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.

23.5. Items of the works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

23.6. The Contract Price shall be stated in Kenya Shillings. All payments to the contractor shall be made in Kenya Shillings and foreign currency in the proportion indicated in the tender, or agreed prior to the execution of the Contract Agreement and indicated therein.

23.7. The rate of exchange for the calculation of the amount of foreign currency payment shall be the rate of exchange indicated in the Appendix to Conditions of Contract. If the contractor indicated foreign currencies for payment other than the currencies of the countries of origin of related goods and services. The Employer reserves the right to pay the equivalent at the time pf payment in the currencies of the countries of such goods and services.

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

23.9. In the event that an advance payment is granted, the following shall apply: -

a) On signature of the Contract, the Contractor shall at his request, and without furnishing proof of expenditure, be entitled to an advance of 10% (ten percent) of the original amount of the contract. The advance shall not be subject to retention money.

b) No advance payment may be made before the Contractor has submitted proof of the establishment of deposit or a directly liable guarantee satisfactory to the Employer in the amount of the advance payment. The guarantee shall be in the same currency as the advance.

c) Reimbursement of the lump sum advance shall be made by deductions from the Interim payments and where applicable from the balance owing to the contractor. Reimbursement shall begin when the amount of the sums due under the Contract reaches 20% of the original amount of the contract. It shall have been completed by the time 80% of this amount is reached.

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

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

Where:

R = the amount to be reimbursed

A = the amount of the advance which has been granted

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

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

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

24. Compensation Events

24.1. The following issues shall constitute Compensation Events.

a) The Employer does not give access to a part of the site by the Site Possession Date stated in the Appendix to Conditions of Contract.

b) The Employer modifies the List of Other Contractors, etc., in a way that affects the Work of the Contractor under the Contract.

c) The Project Manager orders a delay or does not issue drawings, specifications or instructions required for execution of the works on time.

d) The Project Manager instructs the contractor to uncover or to carry out additional tests upon the work, which is then found to have no defects.

e) The Project Manager unreasonably does not approve a subcontract to be let.

f) Ground conditions are substantially more3 adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to tenderers (including the site investigation reports), from information available publicly and from a visual inspection of the site.

g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer or additional works required for safety or other reasons.

h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.

i) The effects on the Contractor of any of the Employer's risks.

j) The Project Manager unreasonably delays issuing a Certificate of Completion.

k) Other compensation events described in the Contract or determined by the Project manager shall apply

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

24.3. As soon as information demonstrating the effect of each compensation event upon the Contractor's forecast cost has been provided by the Contract, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly.

24.4. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.

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

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

24.7. The Contractor shall give written notice to the Project Manager of his intention to make a claim within thirty days after the event giving rise to the claim has first arisen. The claim shall be submitted within thirty days thereafter.

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

25. Price Adjustment

25.1. The Project Manager shall adjust the Contract Price if taxes, duties and other levies are changed between the date 30 days before the submission of tenders for the Contract and the date of Completion. The adjustment shall be the change in the amount of tax payable by the Contractor.

25.2. The Contract Price shall be deemed to be based on exchange rates current at the date of tender submission in calculating the cost to the Contractor of materials to be specifically imported (by express provision in the Contract Bills of Quantities or Specifications) for permanent incorporation in the Works.

25.3. Unless otherwise stated in the Contract, if any time during the period of the Contract exchange rates shall be varied and this shall affect the cost to the Contractor of such materials, then the Project Manager shall assess the net difference in the cost of such materials. Any amount from time to time so assessed shall be added to or deducted from the Contract Price, as the case may be.

25.4. Unless otherwise stated in the Contract, the Contract Price shall be deemed to have been calculated in the manner set out below and in sub-clauses 25.4 and 25.5 and shall be subject to adjustment in the events specified thereunder;

i) The price contained in the Contract Bills of Quantities shall be deemed to be based upon the rates of wages and other emoluments and expenses as determined by the Joint Building Council of Kenya (J.B.C.) and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.

ii) Upon J.B.C. determining that any of the said rates of wages or other emoluments and expenses are increased or decreased, then the Contract Price shall be increased or decreased by the amount assessed by the Project Manager based upon the difference, expressed as a percentage, between the rate set out in the schedule of basic rated issued 30 days before the date for submission or tenders and the rate published by the J.B.C. and applied to the quantum of labour incorporated within the amount of work remaining to be executed at the date of publication of such increase or decrease.

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

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

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

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

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

26. Retention

26.1. The Employer shall retain from the payment due to the Contractor the proportion stated in the Appendix to Conditions of Contract until Completion of the whole of the works. On Completion of the whole of the works, half the total amount retained shall be repaid to the Contractor and the remaining half when the Defects Liability Period has passed and the Project manager has certified that all defects notified to the Contractor before the end of this period have been corrected.

27. Liquidate Damages

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

27.2. If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rate specified in Clause 23.30.

28. Securities

28.1. The Performance Security shall be provided to the Employer not later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a reputable bank acceptable to the Employer, and denominated in Kenya shillings. The Performance Security shall be valid until a date 30 days beyond the date of issue of the Certificate of Completion.

29. Dayworks

29.1. If applicable, the Dayworks rates in the Contractor's tender shall be used for small additional amounts of work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.

29.2. All work to be paid for as Dayworks shall be recorded by the Contractor on Forms approved by the Project Manager. Each completed form shall be verified and signed by the Project manager within two days of the work being done.

29.3. The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

30. Liability and Insurance

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

a) The risk of personal injury, death or loss of or damage to property (excluding the works, plant, materials and equipment), which are due to;

   i) use or occupation of the site by the works or for the purpose of the works, which is the unavoidable result of the works, or
   ii) negligence, breach of statutory duty or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.

b) The risk of damage to the works, plant, materials, and equipment to the extent that it is due to a fault of the Employer or in Employer's design, or due to war or radioactive contamination directly affecting the place where the works are being executed.

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

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

30.3. From the Start Date until the Defects Correction Certificate has been issued, the risks of personal injury, death and loss of or damage to property (including, without limitation, the works, plant, materials, and equipment) which are not Employer's risk are contractor's risks.

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

a) loss of or damage to the works, plant and materials;
b) loss of or damage to Equipment;
c) loss of or damage to property (except the works, plant materials, and equipment) in connection with the Contract, and
d) Personal injury or death.

30.4. Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation required to rectify the loss or damage incurred.

30.5. If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

30.6. Alterations to the terms of insurance shall not be made without the approval of the Project Manager. Both parties shall comply with any conditions of insurance policies.

31. Completion and Taking over

31.1. Upon deciding that the works are complete, the Contractor shall issue a written request to the Project Manager to issue a Certificate of Completion of the works. The Employer shall take over the site and the works within seven (7) days of the Project manager's issuing a Certificate of Completion.

32. Final Account

32.1. The Contractor shall issue the Project Manager with a detailed account of the total amount that the Contractor considers payable to him by the Employer under Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 30 days of receiving the Contractor's account if it is correct and complete.

32.2. If it is not, the Project Manager shall issue within 30 days a schedule that states the scope of the corrections or additions that are necessary. If the final account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a Payment Certificate.

32.3. The Employer shall pay the Contractor the amount due in the Final certificate within 60 days.

33. Termination

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

a) The Contractor stops work for 30 days when no stoppage of work is shown on the current program and the stoppage has not been authorized by the Project Manager.

b) The Project Manager instructs the Contractor to delay the progress of the works, and the instruction is not withdrawn within 30 days.

c) The Contractor is declared bankrupt or goes into liquidation other than for a reconstruction or amalgamation.

d) A payment certified by the Project Manager is not paid by the Employer to the Contractor within 30 days (for Interim Certificate) or 60 days (for Final Certificate) of issue.

e) The Project Manager gives notice that failure to correct a particular defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager.

f) The Contractor does not maintain a security, which is required.

33.2. When either party to the contract gives notice of Contract to the Project Manager for a cause other than those listed under Clause 33.1 above, the Project Manager shall decide whether the breach is fundamental or not.

33.3. Notwithstanding the above, the Employer may terminate the Contract for convenience.

33.4. If the Contractor is terminated, the contractor shall stop work immediately, make the site safe and secure, and leave the site as soon as reasonably possible.

33.5. The Project Manager shall immediately thereafter arrange for a meeting for the purpose of taking record of the works executed and materials, goods, equipment and temporary buildings on site.

34. Payment Upon Termination

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

34.2. If the contract is terminated for the Employer's convenience or because of a fundamental breach of contract by the Employer, the Project Manager shall issue a certificate for the value of the work done, materials ordered, the reasonable cost of removal of equipment, repatriation of the Contractor's personnel employed solely on the works, and the Contractor's costs of protecting and securing the works.

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

34.4. The contractor shall, during the execution or after the completion of the works under this clause remove from the site as and when required, within such reasonable time as the Project Manager may in writing specify, any temporary building, plant, machinery, appliances, goods or materials belonging to or hired by him, and in default the Employer may (without being responsible for any loss or damage) remove and sell any such property of the Contractor, hold the proceeds less all costs incurred to the credit of the Contractor.

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

35. Release from Performance

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

36. Corrupt Gifts and Payment of Commission

36.1. The Contractor shall not;

a) Offer or give or agree to give to any person in the service of the Employer any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other Contract for the Employer or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract for the Employer.

b) Enter into this or any other contract with the Employer in connection with which commission has been paid or agreed to be paid by him or on his behalf or to his knowledge, unless before the Contract is made particulars of any such commission and of the terms and conditions of any agreement for the payment thereof have been disclosed in writing to the Employer.

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

37. Settlement of Disputes

37.1. In case any dispute or difference shall arise between the Employer or the Project Manager on his behalf and the Contractor, either during the progress or after the completion or termination of the works, such dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within thirty days of the notice. The dispute shall be referred to the arbitration and final decision of a person to be agreed between the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointed by the Chairman or Vice Chairman of any of the following professional institutions;

(i) Architectural Association of Kenya

(ii) Institute of Quantity Surveyors of Kenya

(iii) Association of Consulting Engineers of Kenya

(iv) Chartered Institute of Arbitrators (Kenya Branch)

(v) Institute of Engineers of Kenya

37.2. On the request of the applying party, the institution written to first by the aggrieved party shall take precedence over all other institutions.

37.3. The arbitration may be on the construction of this Contract or on any matter or thing of whatsoever nature arising hereunder or in connection therewith, including any matter or thing left by this Contract to the discretion of the Project Manager, or the withholding by the Project Manager of any certificate to which the Contractor may claim to be entitled to or the measurement and valuation referred to in clause 23.0 of these conditions, or the rights and liabilities of the parties subsequent to the termination of Contract.

37.4. Provided that no arbitration proceedings shall be commenced on any dispute or difference where notice of a dispute or difference has not been given by the applying party within ninety days of the occurrence or discovery of the matter or issue giving rise to the dispute.

37.5. Notwithstanding the issue of a notice as stated above, the arbitration of such a dispute or difference shall not commence unless an attempt has in the first instance been made by the parties to settle such dispute or difference amicably with or without the assistance of third parties. Proof of such attempt shall be required.

37.6. Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the works or abandonment of the works or termination of the Contract by either part:

a. The appointment of a replacement Project Manager upon the said person ceasing to act.

b. Whether or not the issue of an instruction by the Project Manager is empowered by these Conditions.

c. Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.

d. Any dispute or difference arising in respect of war risks or war damage.

37.7. All other matter shall only be referred to arbitration after the completion or alleged completion of the works or termination or alleged termination of the Contract, unless the Employer and the Contractor agree otherwise in writing.

37.8. The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision requirement or notice had been given.

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

APPENDIX TO CONDITIONS OF CONTRACT

CONDITIONS OF CONTRACT CLAUSE 1

The Employer is: **Government of the Republic of Kenya**

Represented by: **The Principal / CEO**
Kenya Utalii College
P.O Box 31052-00600
Nairobi.

Name of Employer's Representative: **The Principal / CEO**
Kenya Utalii College
P.O Box 31052-00600
Nairobi.

CONDITIONS OF CONTRACT CLAUSE 1

The Project Manager is: **The Chief Architect, Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development – State Department of Public Works, Nairobi**

Address: **P.O. Box 30743 - 00100, NAIROBI**

CONDITIONS OF CONTRACT CLAUSE 1

The name (and identification number) of the Contract is **:proposed construction of individual training kitchen for Kenya Utalii College along Thika Road in Nairobi.**

CONDITIONS OF CONTRACT CLAUSE 1

The contract works consist of **the proposed supply, installation, testing and commissioning of kitchen exhaust and fire suppression systems installation works at Kenya Utalii College along Thika Road in Nairobi.**

CONDITIONS OF CONTRACT CLAUSE 1

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

CONDITIONS OF CONTRACT CLAUSE 1

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

CONDITIONS OF CONTRACT CLAUSE 2

The following documents also form part of the Contract: **Only as listed in Clause 2 of the conditions of contract.**
The Site Possession Date shall be as **stated in the Letter of Acceptance**.

CONDITIONS OF CONTRACT CLAUSE 1

The Site is located along Thika road in Nairobi .

CONDITIONS OF CONTRACT CLAUSE 13

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

CONDITIONS OF CONTRACT CLAUSE 1
The Defects Liability Period is 6 months from practical completion date

CONDITIONS OF CONTRACT CLAUSE 32
Period of final measurement**: 6 months after practical completion**

INSTRUCTION TO TENDERERS CLAUSE 20
The tender opening date and time is **as stated in the Tender Invitation Notice.**

INSTRUCTION TO TENDERERS CLAUSE 20
The name and Address of the Employer's representative for the purposes of submission of Tenders is **as stated in the Tender Invitation Notice**

INSTRUCTION TO TENDERERS CLAUSE 13
Amount of Tender Security is **Kshs. 900,000.00**

INSTRUCTION TO TENDERERS CLAUSE 29
The amount of performance security is **5 percent** bank guarantee of the Contract Price.

CONDITIONS OF CONTRACT CLAUSE 27
Liquidated and Ascertained damages: **At the rate of Kshs. 30,000.00 per week or part thereof.**

CONDITIONS OF CONTRACT CLAUSE 23
Period of honouring certificate : **30 days**

Percentage of certified value retained: **10%**

Limit of certified value retained : **5%**

Period between program updates is **14 days**

The completion period for the Contract works: **six months**

OMIT CLAUSE 23.7

SECTION C:

SUB-CONTRACT PRELIMINARIES

AND

GENERAL CONDITIONS

CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

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SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1.01 Examination of Tender Documents

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

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

1.02 Discrepancies

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

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

1.03 Conditions of Contract Agreement

The Contractor shall be required to enter into a Sub-contract 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 Principal / CEO Kenya Utalii College.**

ii) **Architect:** The term **"Architect"** shall mean **The Chief Architect, Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development**

iii) **Quantity Surveyor:** The term **"Quantity Surveyor"** shall mean **The Chief Quantity Surveyor, Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development**

iv) **Civil/Structural Engineers:** The term **"Civil/Structural Engineers "** shall mean **The Chief Engineer(Structural), Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development**

v) **Engineer:** The term **"Engineer"** shall mean **Chief Engineer [Mechanical (BS)], Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development**

vi) **Electrical Engineer:** The term **"Electrical Engineer"** shall mean **Chief Engineer (Electrical), Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development**

vi) **Main Contractor:** The term **"Main Contractor"** shall mean the firm or company appointed to carry out the Builders 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 in **Nairobi along Thika Road.** 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
d) The Contract Drawings.
e) The Bye-laws of the Local Authority.
f) The Architect's and/or Engineer's Instructions.

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

1.11 **Validity of Tender**

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

1.12 **Firm – Price Contract**

Unless specifically stated in the documents or the invitation to tender, this is a firm-price Contract and the contractor must allow in his tender for the increase in the cost of labour and/or materials during the duration of the contract. No claims will be allowed for increased costs arising from the fluctuations in duties and/or day to day currency fluctuations. The 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 utilized by the Contractor shall be deducted from the value of the Contract price when calculating the final account.

1.15 **Bond**

The tenderer must submit with his tender the name of one Surety who must be an established Bank only who will be willing to be bound to the Government for an amount equal to 7½ % of the Contract amount as Clause 28 of the Conditions of Contract.

1.16 **Government Legislation and Regulations**

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

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

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

1.17 **Import Duty and Value Added Tax**

The 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 siting of appliances, pipework, etc., may vary from that indicated.

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

Services through the ducts shall be arranged to allow maximum access along the ducts and the services shall be readily accessible for maintenance. Any work, which has to be re-done due to negligence in this respect, shall be the 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.

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

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

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

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

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

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

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

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

1.34 **Maintenance Manual**

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

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

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

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

Plant

Valve Operation

Switch Operation

Procedure of Fault Finding

Emergency Procedures

Lubrication Requirements

Maintenance and Servicing Periods and Procedures

Color Coding Legend for all Services

Schematic and Writing Diagrams of Plant and Apparatus

Record Drawings, true to scale, folded to International A4 size

Lists of Primary and Secondary Spares.

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

1.35 **Hand-over**

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

The procedure to be followed will be as follows:
On the completion of the Contract Works to the satisfaction of the Engineer and the Employer, the Contractor shall request the Engineer, at site to arrange for handing over.
The Engineer shall arrange a Hand-over Meeting or a series thereof, at site.

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

1.36 **Painting**

It will be deemed that the Contractor allowed for all protective and finish painting in the Contract Sum for the Contract Works, including color coding of service pipework to the approval of the Engineer. Any special requirements are described in the text of the Specifications.

1.37 **Spares**

The Contractor shall supply and deliver such spares suitably protected and boxed to the Engineer's approval as are called for in the Specifications or in the Price Schedules.

1.38 **Testing and Inspection – Manufactured Plant**

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

The right of the Engineer relating to the inspection, examination and testing of plant during manufacture shall be applicable to Insurance companies and inspection authorities so nominated by the Engineer.
The Contractor shall give two week's notice to the Engineer of his intention to carry out any inspection or tests and the Engineer or his representative shall be entitled to witness such tests and inspections.

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

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

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

1.39 **Testing and Inspection -Installation**

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

1.40 **Labour Camps**

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

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

If practicable, W.C. accommodation shall be allocated for the sole use of the Contractor's workmen and the 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 sub-divided as follows:

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

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

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

1.51 **Fair Wages**

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

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

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

1.52 **Supervision**

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

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

Any instructions given to the Supervisor on site shall be deemed to have been given to the 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 **Discounts 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, 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, all relevant taxes and attendance on these funds. The funds shall be expended according 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.

1.70 APPENDIX TO SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1 OMIT CLAUSE 1.12

This is a firm price contract

2 MODIFY CLAUSE 1.15

Amount of performance security will be Five per cent (5%)

3 ADD TO CLAUSE 1.17

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

4 ADD TO CLAUSE 1.40

There are no labour camps.

5. 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

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GENERAL MECHANICAL SPECIFICATION

2.01 General

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

2.02 Quality of Materials

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

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

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

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

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

2.03 Regulations and Standards

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

a) The Kenya Government Regulations.
a) The United Kingdom Institution of Electrical Engineers (IEE) Regulations for the Electrical Equipment of Buildings.
b) The United Kingdom Chartered Institute of Building Services Engineers (CIBSE) Guides.
c) British Standard and Codes of Practice as published by the British Standards Institution (BSI)
e) The Local Council By-laws.
f) The Electricity Supply Authority By-laws.
g) Local Authority By-laws.
h) The Kenya Building Code Regulations.
i) The Kenya Bureau of Standards

2.04 Electrical Requirements

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

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

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

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

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

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

2.05 **Transport and Storage**

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

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

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

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

2.06 **Site Supervision**

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

2.07 **Installation**

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

2.08 **Testing**

2.08.1 General

The Sub-contractor's attention is drawn to Part 'C' Clause 1.38 of the "Preliminaries and General Conditions".

2.08.2 Material Tests

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

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

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

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

Certified mill test reports of plates, piping and other materials shall be deemed acceptable.

2.08.3 Manufactured Plant and Equipment – Work Tests

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

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

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

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

2.09 **Colour Coding**

Unless stated otherwise in the Particular Specification all pipe work shall be color coded in accordance with the latest edition of B.S 1710 and to the approval of the Engineer or Architect.

2.10 **Welding**

2.10.1 Preparation

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

2.10.2 Method

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

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

2.10.3 Welding Code and Construction

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

a) Pipe Welding

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

b) General Welding

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

2.10.4 Welders Qualifications

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

The Engineer may require to see the appropriate to see the appropriate certificate obtained by any welder and should it be proved that the welder does not have the necessary qualifications the Engineer may instruct the Sub- contractor to replace him by a qualified welder.

SECTION E:

GENERAL SPECIFICATION FOR MECHANICAL VENTILATION INSTALLATIONS

SECTION E:

GENERAL SPECIFICATION FOR MECHANICAL VENTILATION INSTALLATIONS

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SECTION E:

GENERAL SPECIFICATION FOR MECHANICAL VENTILATION INSTALLATIONS

1.0 SCOPE OF WORK

The scope of the works comprises Installation, Testing, and Commissioning of Mechanical Ventilation and Air Conditioning systems in accordance with Specifications and drawings.

All the necessary elements and details for complete system are to be included.
Excluded from the specifications are the following:-

- All concrete works
- All block work
- Electrical wiring, isolators and switch boards, except internal wiring for control system from a local isolator.

2.0 SYSTEM COMPONENTS

Dimensions and capacities of ducts and fans are calculated and based on a specific requirement of air, and on an assumed resistance through grilles, silencers etc.
However, the installer shall be responsible for the correct functioning of the system. Subsequently it is therefore his duty to size the systems' components with consideration to his offered equipment.

3.0 DRAWINGS

The Engineer's drawings show the main layout and principles for the Ventilation and Air Conditioning Systems. If need for further detailing is required in order to carry out the work, working drawings and details shall be produced for approval by the Engineer before the work is executed.

In preparation of the working drawings care should be taken to coordinate the Ventilation and Air Conditioning works with other services involved and avoid any interference with these.

4.0 MATERIALS AND WORKMANSHIP GENERALLY

In the specification, equipment is generally described according to capacities and a given standard in order to aid in identification of the particular equipment to satisfy specifications. The equipment selected shall be of reputable manufacture with adequate Back-Up service.

If the Engineer finds it necessary, samples of the materials will be submitted for approval before placing an order. The Engineer shall reject any materials which he finds to be of unsatisfactory quality.

Works shall be carried out by competent workmen under experienced supervision.
The Engineer shall have the authority to have any substandard work or equipment redone and/ or equipment replaced.

5.0 DUCTWORK GENERALLY

5.1 Ductwork

All seams, joints and connections to plant shall be so made as to reduced air leakage to a minimum. Internal roughness and obstructions to airflow will not be accepted. Sharp edges or corners on the outside of ductwork, flanges, supports, etc. will not be accepted. Any part of galvanized ductwork where the galvanizing is damaged during manufacture or erection shall be painted with two coats of aluminum, zinc or other corrosion – resisting paint to the approval of the Engineer.

Where ducts pass through roofs (and external walls where applicable) these shall be fitted with angle flanges and weather cravats to ensure a weather-proof fitting to the building structure.

Connections to equipment shall be made with angle flanged joints. Ductwork which may have to be moved to enable plant to be removed shall incorporate angle flanged joints. For long duct runs, angle flanged joints shall be included at intervals to facilitate any subsequent alternations.

Bends and offsets shall have a minimum throat radius equal to the width of the duct. Where short radius elbows are indicated or agreed by the Engineer as necessary due to site limitations the dimensions and internal vane (s) shall be in accordance with HVCA publication DW/121.

Ductwork shall be constructed by galvanized, cold rolled, close annealed patent flattened sheets. Tests ho les shall be provided in branch ducts from grilles and there shall be three or four tests holes on side of duct according to duct depth at each test position. At branch positions there shall be one test hole. Air tight swivel type metal covers shall be fitted over the test holes in such a manner that they shall be readily removed as required.

5.2 Rectangular ductwork

Construction of ductwork shall be as per the following Guidelines:

- Up to 300mm longer side – 22 S.W.G.
- over 300mm and up to 460mm longer size – 20 S.W.G.
- over 460mm and up to 900mm longer side 18 S.W.G (stiffening to be 25mm x 25mm x 3mm. M.S angle at slip joints at 180mm spacing)
- Over 900mm and up to 1370mm. longer side 16 S.W.G. (stiffening to be 30mm x 30mm x 3mm M.S angle at 900mm spacing).
- Over 1370mm longer side – 14 S.W.G. (Stiffening to be 40mm x 40mm x 5mm M.S angle at 900mm. spacing).

Ductwork constructed from 22 and 20 S.W.G sheet shall have folded locked seams and ductwork constructed from 18, 16 and 14 S.W.G. sheets shall have riveted seam with 8 S.W.G rivets at 2" pitch.

Joints for ductwork having a side greater in width than 610mm shall be flanged by means of 30mm x 30mm x 3mm mild steel angles.

Mild steel used as flanges or stiffeners shall be riveted to the ductwork, with 8 S.W.G rivets at 2" pitch. The joint faces of flanges shall be drilled for 10mm bolts at 75mm pitch.

Air tight access doors shall be provided on the ductwork wherever indicated on the drawings. The access doors, of sufficiently heavy construction to avoid distortion, complete with handles, shall be secured by brass wing nuts screwed into studs provided, on galvanized mild steel stiffening frames riveted, or bolted to the ductwork. The access doors shall be provided with felt or rubber gaskets to ensure that when closed they are perfectly tight.

The ductwork shall be installed with all joints air tight and adequately stiffened and braced shall have the largest radius possible with a minimum throat radius of one diameter if possible. Square or miter elbows will only be allowed where shown on the drawings. Turning vanes shall be fitted in square or miter elbows.

Transformer pieces except where situated on fan suction shall be constructed so that the angle on any side does not exceed 15° to the axis of the duct where possible.

Branch ducts shall enter main ducts expansion sections where possible. Where branch ducts occur, at taper or transformation pieces, the length of such pieces in the main duct shall be symmetrical about the axis of the branch.

6. BRACKETS AND SUPPORTS

Supports and brackets for ductworks shall be made adjustable for height, spaced to ensure support and where practicable shall be fitted at each joint of the ductwork. Vertical ductwork shall be supported at each floor level, horizontal ducts at intervals not exceeding 2280mm and adjacent to fans, canvas joints and other equipment. All members of supports in contact with metal ductwork shall be galvanized after fabrication. Socketed joints shall have a minimum overlap of 50mm in the direction of flow. The joint shall be made with an approved type jointing compound with bolts or rivets at centres not exceeding 50mm. wherever access cannot be made for riveting or bolting self tapping screw of the shortest length which will give a satisfactory joint shall be used in lieu of the rivets or bolts, on size or diameters up to 530mm. All slip joints on circular ductwork are to have a spigot carefully swaged damper leaves shall be multi leaf type. The quadrants shall be of robust construction and securely fixed to the ductwork. The leaves shall be linked with a connecting rod and the ends of the spindle shall be housed in bearings. Dampers are to indicate the full and closed positions and are to be marked and then locked after air Volume has been set.

7.0 JOINTS

7.1 Flexible Joints

Flexible joints shall be provided on fan inlet and outlet connections and elsewhere on the ductwork where indicated. They shall be over the full cross-sectional area of the mating fan inlet or outlet section. The ends of the duct and fan connections shall be in line.

Flexible joints shall consist of, or be protected by, material having a fire penetrating time of at least fifteen minutes when tested in accordance with BS 476 Part 1 Section 3. The material shall be of the glass fibre cloth type, canvas or other approved material. The width of joints from metal edge to metal edge shall not be less than 80mm and more than 250mm.

All flexible joints other than fan inlet connections shall be between flanged ends. The flexible material flange shall be backed by an angle or flat iron flange and the flexible joint flat iron bar used with fan inlets shall not be less than 5mm thick.

7.2 Flexible Connections.

Where flexible connections are indicated or required between rigid ductwork and particular components or items of equipment, the internal diameter of the flexible duct shall be equal to the external diameter of the rigid ductwork and of the spigot type. The use of flexible duct between rigid sections of sheet metal ductwork to change direction or plane will not be permitted except where indicated or expressly authorized by the Engineer.

The flexible duct shall have a liner a cover of tough tea-resistant fabric equal in durability and flexibility to glass fibre shall be impregnated and coated with plastics. It shall be reinforced with a bonded galvanized spring steel wire helix or glass fibre cord or equal and shall be bonded to cover to ensure regular convolutions.

Alternatively the flexible duct shall consist of flexible corrugated metal tubing of stainless steel, aluminium, tinplated steel or aluminium coated steel. The metal may be lined on the inside or the outside or both with plastics materials.

The joints to rigid spigots shall be sealed with a brush coat of pipe jointing paste or mastic compound. Ducts up to 150mm diameter shall be secured with a worm drive type hose clip complying with BS 3628. Ducts over 150mm diameter shall be secured with band clip.

The frictional resistance to air flow per unit length of the flexible duct shall not exceed 50% more than the frictional resistance per unit length of galvanized steel ducts of equivalent diameter. The radius ratio R/D for bends shall not be less than 2, where R is the centre line radius and D is the diameter of the flexible duct.

Flexible ducts shall be suitable for an operating temperature range of 18oC to 120oC and shall comply with BS 476 Part 1, Section 2, Clause 7 (Clause 1; surface of very low flame spread).

8.0 FINISH PAINTING

Upon completion of the installation and after all tests have been carried out to the satisfactory of the Engineer, the plant, equipment, supports, etc. shall be examined and all priming coats damaged during erection made good.

Any plant or equipment, ductwork, etc., which is to be insulated, shall have had the priming paint protection made good before the application of the insulation. After the above procedures have been carried out to the satisfaction of the Project Manager, the various surface shall be given the necessary preparation as recommended by the paint and insulation manufacturers and finish painted in colours to be agreed between the Sub-Contractor and Project Manager, at a later date.
For the purposed of the Specification, however, it shall be deemed that the sub-contractor's tender price was based on the identification requirements for the various services detailed in Code of Practice DW/161 Identification of Ductwork as published by the H.V.A.

9.0 AIR INTAKES AND OUTLETS

Unless otherwise indicated fixed louvers on external walls will be fitted at air intake and outlet positions. A galvanized steel wire mesh screen of 20mm diamond mesh and at 2mm diameter wire and complete with a frame of galvanized steel rod with securing lugs or of flat iron shall also be fitted on the inner side of the louvers.

10.0 FANS

10.1 General

Fans shall capable of giving the specified performance when tested in accordance with BS 848. Although estimated values of the resistance to airflow of items of equipment may be indicated, this does not relieve the Contractor to the responsibility for providing fans capable of delivering the required air volume flow through the system.

The make and design of fans shall be approved by the Engineer and evidence supporting noise levels and fan efficiencies shall be provided. Where fans are supplied with noise attenuations, full details of the attenuations shall be given.

Belt driven fans shall be fitted with pulleys suitable for V-belts; pulleys of the taper lock type may be used for drivers up to 30KW output. Alternatively, and in any case above 30KW output, pulleys shall be secured to the fan and the motor shafts by keys fitted into machined keyways. Pulleys shall be keyed to the fan shaft in the overhung position. Keys shall be easily accessible so that they can be withdrawn or tightened and they shall be accurately fitted so that the gib head does not protrude beyond the end of the shaft.

Machined bolts, nuts and washers only shall be used for the assembly of fans; all bearing surfaces for the heads of bolts or washers shall be count faced. Holding down bolts for fans and meters shall be square section under the head or be fitted with snugs to prevent them tuning in the fan base plate when the nuts are tightened.

Any fan which is too large or too heavy for safe manhandling shall provided with eyebolts or other lifting facilities to enable mechanical lifting equipment to be used.

10.2 Axial Flow Fans

Axial flow fans shall be of either the single stage type or the multi-stage contra-rotating type with each impeller mounted on an independent motor. Casings shall be rigidly constructed of mild steel stiffened and braced to obviate drumming and vibration. Cast iron of fabricated steel feet shall be provided where necessary for bolting to the base or supports. Inlet and outlet ducts shall terminate in flanged rings for easy removal. The length of the fan (s) and motors(s) shall also terminate in flanges in order that the complete section may be removed without disturbing adjacent ductwork. Electrical connections to the motor(s) shall be through an external terminal box secured to the casing. Impellers shall be of steel or aluminium, the blades shall be secured to the hub or the blades and the hub shall be formed in one piece. The hub shall be keyed to a substantial mild steel shaft and the whole statically balanced. Blades shall be of aerofoil section. Shafts shall be carried in two bearings which may be ball roller or sleeve type. Lubricators shall be extended to the outside of the casing.

Where axial flow fans are driven by a motor external to the casing the requirements for pulleys and for V-belt drives and guards shall be met. Unless otherwise indicated a guard is not required for any part of a drive which is within the fan casing. An access door of adequate size shall be provided.

Where axial flow fans of the bifurcated type are indicated the motors shall be out of the air stream. Motors may be placed between the two halves of the casing in the external air or may be placed within the fan casing provided that effective ventilation is given to the motor. Where hot gases or vapours are beings handled the motor and the bearings shall be suitable for operation at the temperature they may experience.

11.0 DAMPERS

11.1 General

Sufficient dampers shall be provided to regulate and balance the system. Dampers on grills or diffusers shall be used for fine or secondary control. All dampers shall be sufficiently rigid to prevent fluttering. Unless otherwise indicated, the air leakage past dampers in the fully-closed position shall not exceed 5% of maximum design air flow in the duct. All duct dampers except fire dampers and self-closing flaps shall be fitted with locking devices and position indicators. Dampers shall be generally in accordance with the appropriate HVCA Specification.

Each Primary control damper shall be fitted with a non-corrodible label stating the actual air flow in M3/S and the cross-sectional area. Alternatively, these figures shall be painted in a visible position on the adjoining ductwork or insulation. The position of a damper as set after final regulation and balancing be indelibly marked on the damper quadrant

11.2 Butterfly dampers

Butterfly dampers shall each consist of two plates' edge seamed, and of the same thickness of material as that from which the associated duct is made, and rigidly fixed to each side of a mild steel operating spindle, the ends of which shall be turned and housed in non-ferrous bearings.

11.3 Bifurcating dampers

Bifurcating dampers shall be of 2mm thick sheet for sizes up to 450mm square. For larger sizes, the thickness shall be as indicated. Damper plates shall be rigidly fixed to square section mild steel spindles the ends of which shall be turned and housed in non-ferrous bearings.

11.4 Multi-leaf dampers

Multi – leaf dampers shall consist of two plates of material of the same thickness as the associated duct and rigidly fixed to each side of an operating spindle, the ends of which shall be housed in brass, nylon, oil impregnated sintered metal, PTFE impregnated or ball bearings. The ends of the spindles shall be linked such that one movement of the operating handled shall move each leaf an equal amount. An inspection door shall be provided adjacent to each multi-leaf damper.
On low velocity systems only, multi-leaf damper blades may be of a single plate, at least 1.6mm thick and suitably stiffened, and the blade linkages may be within the duct. Those dampers shall have bearings and inspection doors as specified above.

11.5 Damper Quadrants and Operating Handles

Quadrants and Operating handles shall be of die-cast aluminium with the words" OPEN" and "SHUT" cast on the Quadrants. Quadrants shall be securely fixed to the damper spindles and shall be close-fitting in the quadrants hubs to prevent any damper movement when the damper levers are locked.

11.6 Self-closing dampers

Self-closing dampers shall be designed so as to present the minimum of resistance to airflow under running conditions, to take up a firm, non-fluctuating position under running conditions and to give a tight shut-off when closed. They shall incorporate rubber stops to prevent rattling and to give a tight shut-off when closed. They shall incorporate rubber stops to prevent rattling.

11.7 Sliding Dampers

Sliding dampers shall be provided only where indicated. They shall be of 2mm. thick sheet steel for size up to 450mm square. For larger sizes the thickness shall be as indicated. They shall run in guides lined with felt.

11.8 Iris type dampers.

Iris type dampers may be used in ducting up to 600mm, dia. Or 450mm square. The control shall be on the outside of the damper. The design shall be such that the leaves of the damper can be easily moved for adjustment.

12.0 GRILLES

12.1 Supply & Return Registers

Supply registers shall be manufactured from high grade, extruded Aluminium sections with lacquered finish and fixing shall be 32mm with bevelled edges.

The registers shall have a front set of blades parallel to the long dimension, of rear set of blades parallel to the short dimension, the blades being at 17mm centres and individually adjustable with opposed blade dampers.

12.2 Extract grilles

Extract grilles shall be similar to the Supply Registers described above with the exception that they have only one set of blades parallel to the long dimension.

12.3 Fresh Air Grilles

These shall be manufactured from sheet steel with steel fixing flanges and shall be galvanized after manufacture. An insect screen shall be fixed downstream.

12.4 Diffusers

These shall be manufactured from high grade extruded sections with lacquered finish, bevelled flanges and removable core. Fixing shall be by self-tapping screws through the duct into neck of the diffuser.

12.5 Louvres

Discharge and Fresh air Intake louvres shall be manufactured from mild steel and be galvanized after manufacture. A screen shall be fixed to the back of the louvres

13.0 ATTENUATORS

13.1 General

Purpose made attenuators and sound absorbing material shall be designed to air flow, have adequate strength and cohesion to resist erosion by air flow and do not produce dust. They shall be free of odour and proof against rot, damp and vermin and shall comply with the requirements as to fire and smoke hazards. Adhesives shall be compatible with the sound absorbent material and should preferably be non-flammable.

Where sound absorbent material and /or special attenuators are indicated they shall either reduce the sound level in the space, due to the equipment, to the specified value or shall give the specified sound level attenuation over the specified range of frequencies. Purpose made attenuators shall be tested in accordance with HVRA Laboratory Report No. 55 (Code for the measurement of the performance of unit silencers). The insertion loss and generated noise level for each octave band and the pressure loss of the silencer shall be stated.
Attenuators shall be suitable for internal air pressure of 100N/m2, air stream temperatures of up to 40oc and free from air stream erosion for velocities up to 25m/s. The mineral wool lining shall be rot, vermin and fire-proof. Attenuator casing shall be pre-galvanized sheet steel with galvanized pre-drilled flanges.

13.2 Rectangular Attenuators

These shall be rectangular in section with splitters forming air passages in parallel. The mineral wool lining shall be resin bonded.

13.3 Circular Attenuators

Circular section attenuators will have a central pod. The mineral wool lining shall be retained by expanded steel. The end flanges shall be match drilled to suit the fan which they are fixed to.

13.4 Acoustic lining

Where indicated on the contract drawings, the ductwork shall be acoustically lined. The lining shall consist of resin bonded mineral wool 25mm, thick fixed to the ductwork by a suitable adhesive.

14.0 INSTRUMENTS

14.1 General

The instruments, gauges etc, detailed in this section shall be provided in addition to those associated with specific items of plate and detailed elsewhere, they shall be mounted in accessible positions and shall be easily read.

14.2 System Static Pressure Gauge

A system static pressure gauge shall be provided for the system. It shall consist of a small inclined manometer gauge similar to a filter gauge. The edge of the gauge shall be connected to the system and the other end shall be left open to the plant room but where fluctuation of the static pressure in the plant room may occur the gauge shall be connected across the main fan. Such fluctuations may be caused by wind pressure affecting large open air intakes to the plant room.

15.0 VIBRATION, NOISE AND SOUND INSULATION

15.1 Anti-Vibration Mountings

Fans, compressors, motors and any other vibration-inducing equipment shall be isolated from the building structure by anti-vibration mountings which shall be compressed machinery cork, spring or rubber dampers or rubber/metal bearers as indicated.

15.2 Noise

The noise produced by the installation in the spaces served, in any adjacent buildings and in the open air surrounding plant rooms shall be kept as low as possible. This shall be specially considered in the selection of fan motors, grilles and the internal finish and arrangements of extraction ducting.

Noise level information for fans based on octave analysis data, shall be stated. The reference level and the testing technique shall be stated.

The sound level in the spaces served, due to the equipment shall comply with the recommended design criteria given in the IHVE Guide (Table 13.1 of 1965 Edition). The maximum sound pressure level due to ventilation system must not exceed value mentioned below measured by a reference value of $2 \times 10 \times 10^{-5}$ N/m^2 transferred to a logarithmic scale, and measured at any point 1.5 meters above the floor and 1.0 meters from the walls.

The maximum sound pressure level measured at any point 4 metres from the extract point must not exceed 55dB.

The maximum sound pressure level measured at any point 4 metres from fans must not exceed 60dB.

16.0 THERMAL INSULATION

16.1 General Description

All heated, cooled, and recirculated air ductwork shall be insulated.

Insulation shall be of 25mm thick expanded polystyrene sheet, or spray applied polyurethane foam to a uniform thickness of 25mm. Polystyrene shall be fixed so that the edges butt closely without gap and the insulation shall overlap at corners by the thickness of the insulation. The sheet shall be fixed by means of a suitable adhesive and plastic impingement pines attached to the ductwork.

16.2 Ductwork In Plant Room

The insulation described above in Clause 5.1 above shall be finished by the application of a 15mm thick layer of hard setting finish. Insulation shall bevelled thick to angle of 45o at all connecting flanges, access hatches and all other places where operation or maintenance is likely to cause the breaking of the insulation.

The insulation shall then be given a vapour sealing by the application of two coats of anti-condensation paint.

16.3 Ductwork External to plant Rooms

The insulation described in Clause 5.1 above shall finish by the application of two coats of bitumastic.

17.0 ELECTRICAL EQUIPMENT AND WIRING

17.1 Scopes

The responsibility for electrical equipment and wiring shall be as defined as below-:

An on-off starter shall be provided and placed in the appropriate position for connection of the fans required for the installation and within a time agreed with the Engineer fully detailed wiring diagrams for all connections to them shall be availed.

The Installer shall be responsible for the accuracy of all wiring diagrams provided by him and for the correct internal wiring of all pre-wired equipment supplied. The Installer shall reimburse the full cost of abortive or remedial work arising from any error in these aspects.

17.2 General

Unless otherwise indicated all electrical equipment and installation shall be suitable for use in ambient temperatures up to 40^{o}C and relative humidities up to 90%. For tropical climates, electrical equipment shall be suitable for use in the temperature and humidity as indicated; it shall be proof against atmospheric corrosion, including that of saline air where relevant, and materials shall not be susceptible to mould growth or attack by termite and similar hazards.

17.3 Electrical Motors

Electrical motors shall comply with BS 170 2048 or with BS 2613 and BS 3979 as appropriate. All motors shall have Class E insulation (BS2757) and can be continuously rated.

They shall be screen protected (BS2817) unless otherwise indicated. Under all normal conditions without being overloaded. All motors larger than 0.75kw output shall be three phase, for motors above 15kw output the type of motor and method of starting shall be such as to limit the starting and run-up currents to three times the rated full load current unless otherwise indicated. No motor shall run faster than 25 rev/s unless otherwise indicated.

18.0 INSPECTION, COMMISSION AND TESTING

18.1 General

Unless otherwise indicated tests shall be carried out in accordance with the appropriate BS or CP. Test certificates for works tests, site tests and tests required by BS shall be submitted in duplicate to the Engineer.

18.2 Testing

Where an individual inspection or tests take place at outside the site of the works representatives of the Engineer will be required to be present.

Unless otherwise indicated the contract shall include the cost of all tests, necessary instruments, plant supervision and labour both at work and on site. The accuracy of the instruments shall be demonstrated where so directed by the Engineer.

The site test shall be of at least six hours duration. Any defects or workmanship, materials and performance maladjustments or other irregularities which become apparent during the tests shall be rectified by the supplier at his expense and the tests shall be repeated at his expense to the satisfaction of the Engineer.

The Supplier/Installer's representative present at the site tests shall be fully conversant with the operation of the thermostatic controls and shall be expected to explain the operation and safety controls forming part of the installation to the employer's representatives.

18.2.1 Site Tests

The Installer shall supply all instruments and equipment necessary to carry out site tests and shall arrange with other parties for the testing of associated equipment which may affect the performance of the plants installed under these works.

18.2.2 Site Tests-Fans

All fans shall be charged with suitable lubricant and shall be tested upon completion of the auxiliary system erection to ascertain that the performance of each fan complies with the requirements of the specification.

18.2.3 Completion of Works – Balancing And Commissioning

Following the site tests and prior to handover, Mechanical Ventilation or Air-Conditioning systems shall be balanced by means of grills, dampers and other special controls installed so to give the required air flow rates and where applicable the required temperatures, pressures and humidity conditions in all areas served by the said systems.

The complete system shall be balanced and commissioned as a whole. Sectional balancing and commissioning on any part of the system where this excludes final complete system balancing and commissioning shall not be accepted.

Test volumes within ducts shall be within +5% of the design volumes, and volumes at grills and diffusers shall be within +10% of the design volumes.

When the system has been balanced to the satisfaction of the project manager, it shall be run under complete automatic control for 72 hours continuous operation to ascertain any faults in operation before acceptance and handover. Any faults discovered during this time shall be corrected and another test or tests of 72 hours duration shall be carried out to ensure satisfactory operation, all at the expense of the Supplier/Installer..

During this phase, particular attention shall be paid to:

- The maintenance of cleanliness of all plant and extraction systems during construction and ensuring that extraction systems are cleaned through as part of commissioning.
- The protection of plant, particularly sensitive or fragile items, from the activities of other trades during construction and from dirt and mal operation during commissioning.
- The protection of electrical of electrical equipment from damp during construction and commissioning.

19.0 CONTROL SYSTEM

Particular attention shall be paid to the following features:

- Satisfactory operation of any automatic or manually operated sequence to be used in the event of fire.
- Safety in the event of failure and of sudden resumption of electricity supply.
- Satisfactory operation of safety interlocks designed for the protection of personnel, such as those associated with the high voltage electrically operated plant.

The following items shall be checked and/or tested and recorded on the site Test Certificate:-

- Set devised value of all control devices
- Satisfactory operation of equipment protection devices.
- Satisfactory operation of all sequencing operations and alternate working selections and automatic or manual change-over of duplicate plant.

20.0 NOISE AND SOUND CONTROL

Sound level reading shall be taken with a simple sound level meter using the 'A' scale weighting network. The spaces in which readings shall be taken shall be as agreed with the Engineer but will in general be the following: -

- Plant rooms
- Occupied rooms adjacent to plant rooms
- Outside plant rooms facing air intakes and exhaust to assess possible nuisance to adjacent accommodation. If the adjacent accommodation is private residential building
- tests may be required at night.
- In the space served by the first grille or diffuser after a fan outlet.
- In any space where, by the addition of special silencing material or techniques of by classification of use, a low level of noise is clearly required.

Alternatively, sound level reading shall be taken using a sound analyzer to give an octave band analysis of the ground spectrum and to pinpoint the frequency values of peak sound levels. The spaces in which readings shall be taken shall be as agreed with the Engineer but will in general be as detailed in paragraph above.

21.0 OPERATING AND MAINTAINANCE INSTRUCTION

The Supplier/Installer shall demonstrate and explain the plant and the method of starting, running and stopping to such staff as the Engineer shall nominate.
He shall provide three sets of operating and maintenance instructions which shall be enclosed in durable covers. The operating and maintenance instructions shall include;-

- A brief outline of the operation of the plant.
- Instructions on how to start and stop the plant, noting any safety and / or sequencing arrangements.

- Details of required maintenance with suggested frequency of action

- Details of all lubricating oils and greases required and filter replacement

- Details of each item of plant including the name and address of the manufacturer, type and model, serial number, duty and rating.

The operating and maintenance instructions shall be handed to the Engineer not later than at the end of the commissioning period.

22.0 SPARE PARTS

The Installer shall submit a priced list of any extra materials which he recommends should be purchased for the Ventilating and Air Conditioning Plants and all associated equipment and control gear and extras not supplied as standard. He shall be required to give a guarantee that he will hold sufficient running stock of spare parts for the maintenance of the equipment.

PART F

PARTICULAR SPECIFICATIONS
FOR
KITCHEN EXTRACT SYSTEM

PARTICULAR SPECIFICATIONS FOR KITCHEN EXTRACT SYSTEM

4.1 EXTRACT HOOD

Three kinds of Extract Hood are in this works:

1. The wall type canopy with 3 exposed sides of size 18m long by 1.2m wide that shall be assembled from manufactured from 1.2mm stainless steel sheets and stiffened by a frame of stainless steel 38 x 38mm square steel tubes. The sub-contractor shall ensure that it shall have a 75mm x 25mm grease channel all around the bottom edge with 20mm diameter drainage holes all round. The holes shall have plastic plugs for drainage of grease. The contractor shall do the lighting conduits to Electrical Engineers detail.

2. The island type canopy with 4 exposed sides of size 18m long by 2.4m wide that shall be assembled from manufactured from 1.2mm stainless steel sheets and stiffened by a frame of stainless steel 38 x 38mm square steel tubes. The sub-contractor shall ensure that it shall have a 75mm x 25mm grease channel all around the bottom edge with 20mm diameter drainage holes all round. The holes shall have plastic plugs for drainage of grease. The contractor shall do the lighting conduits to Electrical Engineers detail.

3. The wall type canopy with 3 exposed sides of size 3.9m long by 1.2m wide that shall be assembled from manufactured from 1.2mm stainless steel sheets and stiffened by a frame of stainless steel 38 x 38mm square steel tubes. The sub-contractor shall ensure that it shall have a 75mm x 25mm grease channel all around the bottom edge with 20mm diameter drainage holes all round. The holes shall have plastic plugs for drainage of grease. The contractor shall do the lighting conduits to Electrical Engineers detail.

All the hoods support shall be made of suitable stainless-steel rods with strength to carry the weight of the hood suspended from the ceiling and to Structural Engineers directions.

The contractor shall install in the Hood a grease eliminator made of a STAINLESS-STEEL Vee bank unit incorporating 6 No. filter panels with a grease drip tray (Stainless Steel) at the bottom.

The assembly shall be as VOKE DS 20/6 (washable) or equal for the island canopy with 4 sides exposed.

The assembly shall be as VOKE TE 20/3 (washable) or equal for the wall type canopy with 3 sides exposed.

4.2 EXTRACT DUCTWORK

The existing ductwork, made in 20 S.W.G Duct and conforming with specification DW 142, 1982 published by H.V.C.A., shall be dismantled and cleaned off any debris, dirt, etc and shall be reinstalled. The rusted 25x25mm angle stiffeners shall be removed and be replaced anew. Any portion of the existing ductwork that is not in good condition shall be replaced.

All points between the ductwork and the concrete (floors and roof slabs) shall be made air-tight and water-proofed as directed by the Engineer.

See National Fire Protection Association Standard No. 96, Ventilation of Restaurant Cooking Equipment for more information. Important considerations in duct construction are:

1. A circular duct requires a smaller space. If rectangular ducts are used, they should be as nearly square as possible.
2. The duct should be constructed of 16 gauge or heavier steel (see NFPA #96).
3. A minimum of 18" clearance should be provided from unprotected combustible construction. (See NFPA #96, Appendix B, for clearance from protected construction.)
4. All seams and joints shall have a liquid tight continuous external weld.
5. Exhaust ducts from kitchen hoods must be independent and not connected with any other ventilating system.
6. An opening shall be provided at each duct direction change for inspection and cleaning.
7. Vertical risers should be located outside the building and adequately supported by the exterior building wall. When risers must be located within the building, they should be enclosed in a continuous enclosure (see NFPA #96). A base residue trap should be provided on all risers. Exhaust ducts should not pass through fire walls or fire partitions.

4.3 EXTRACT FAN

The extract fan shall be an axial extract fan of duty $7m^3/s$ against 360 Pa. The fan shall be as WOODS 80 JM Series, 3 phase motor, 1440RPM or equal. The fan shall be mounted in accordance with manufacturer's instructions.

4.4 FAN CONTROL PANEL

The panel shall be fabricated from G.I sheet of minimum 18 SWG (1.2mm) with a hinged door and the powder coated after manufacture. It shall be provided with an integral lock. It shall be complete with the following:

- Isolator on the door.
- Motor starter with current overload relay.
- Miniature circuit breaker.
- Phase failure relay with over voltage and under voltage protection
- Timer switch to switch off the fan at a preset time.
- Push buttons for start and stop.
- **The contractor is advised to include the price of the fan control panel when filling the Bills of Quantities**

4.5 ELECTRICAL WORKS

The contractor shall be responsible for providing power to a local Isolator and connecting power to it.

The contractor shall be responsible for the connections between the Isolator and the control panel.

The contractor shall be responsible for connections between the panel and the fan.

Electrical works under this contract shall include conduit works and a suitable weatherproof Isolator next to the fan all that shall be done under the Electrical Engineer's direction.

PART G

PARTICULAR SPECIFICATIONS FOR FIRE PROTECTION USING INERT GAS

INERT GAS FIRE SUPPRESSION SYSTEM

5.1 General

The Inert Gas shall be used to extinguish fires in a commercial kitchen that has **Hood to Exhaust Air** in an individual training kitchen for students under training as specified herein and as shown on contract drawings. It shall be the responsibility of the bidder to confirm all the necessary dimensions that will ensure the system performs satisfactorily The gas shall be stored under pressure in liquefied form inside cylinders and piped to fire protected areas. Each Inert gas system in a given zone shall be supplied complete with its control unit that shall receive the signal from smoke detector or break glass and automatically release the gas after switching off the Ventilation system and sounding an alarm bell. The fire detection system in all areas where Inert gas pipe is not installed shall be supplied and installed by the Contractor who shall extend detection signal outputs into the Master Alarm Control Panel in the desired office as will be instructed by the Engineer.

5.1.1 The Design and installation shall be made in accordance with these specifications, drawings, all applicable National Fire Protection Association Standards and the requirements of the local authority having jurisdiction.

5.1.2 The fire suppression systems shall be designed by competent personnel who are trained and authorized by the equipment manufacturer for design of total flooding Inert gas systems and the integrated detection systems.

Working Drawings shall be in sufficient detail to indicate the type, size, and arrangement of component materials and devices; and the dimensions needed for installations and correlation with other materials and equipment.

All Working Drawings shall be submitted for review and approval prior to installation.

5.1.3 The Contractor shall furnish detailed literature outlining the operation, recharge and service of the system. Maintenance procedures for the owner shall be outlined. In addition, the contractor shall furnish the equipment manufacturer's recommended spare parts lists with information regarding availability and ordering instructions.

5.1.4. The contractor shall utilize an equipment manufacturer that will provide a 12-month warranty against false discharges when all conditions of the equipment manufacturer are fulfilled for this type of warranty. Details of this warranty be furnished upon request.

5.2 SYSTEM ARRANGEMENT

5.2.1. The Inert gas fire suppression system shall be of the engineered, permanently piped, fixed nozzle type with all pertinent components of the same manufacturer. **The system shall have one common bank of cylinders to discharge into the room at a time through the use of selector valves.** All agent storage containers shall be centrally located as vertical, free-standing cylinders with wall mounted retaining brackets. Where multiple cylinders are required for the same hazard, a common manifold should be employed.

Manifolded cylinders shall employ a flexible discharge hose to facilitate installation and system maintenance. Each cylinder on a manifold shall also include an agent check valve installed to the manifold inlet.

5.2.2 Detection system shall be of the engineered type, suitable for direct interface with the Inert gas fire suppression system. All pertinent components shall be of the same manufacturer or approved for use with the control/release panel.

Detection network shall be cross-zoned or counting zone for positive and accurate response to fire condition.

For each hazard, both Ionization and Photoelectric type smoke detectors shall be used to provide automatic input to the control panel.

In addition, manual pull station(s) shall be provided for the direct electric release of the used Inert gas Fire Suppression System.

The sequence of operation for the control panel shall be as follows: -

i) Activation and annunciations of general alarms.

ii) Activation of shutdown and / or startup of auxiliary function.

iii) Activation and annunciation of the time delay

iv) Release of agent.

Alarm bells shall be used for general alarm for visual/ audible signal of system discharge.

An adjustable time delay shall be used prior to Argon release (with) manual abort capability.

5.3 DESIGN PARAMETERS

5.3.1 Design of the total flooding Inert gas system shall be based upon the enclosure being sufficiently tight against agent leakage with all ventilation shut down and / or fire dampered or provide for static air condition upon discharge.

Inert gas quantity calculations shall be determined from dimension furnished on the construction drawings and in this specification for a at the minimum anticipated **hazard temperature of above 200 ^{0} C**.

Calculation for the maximum design concentration shall be based upon maximum anticipated hazard temperature of _____ ^{0} F (_____ ^{0} C).

When applicable, agent quantity shall be adjusted for:

i) Altitudes of more than (915m) above sea level.

ii) Non-flooded false ceiling volume.

iii) Multiple hazards from a common agent supply.

iv) Manufacturer standard tanks and fill increments

v) Duct volume for HVAC system.

5.3.2 The system shall be designed to discharge the calculated agent quantity in a nominal 60 second period.

5.3.3 Nozzle spacing shall be in accordance with the listed approved coverage for each nozzle type. In all cases, the need for additional nozzle shall be considered based upon site conditions and manufacturer's recommendations.

5.3.4 Hydraulic calculations for each system shall be used upon two-phase flow equations for unbalanced systems as defined by NFPA (that is relevant) regardless if a single nozzle or balanced piping network is used.

Computerized verification of hydraulic calculations shall be submitted for Inert gas system and include the following data as a minimum.

a) Quantity of Agent Per Nozzle.
b) Type of Nozzle.
c) Pressure at Nozzle (bar)
d) Nozzle Body Nominal Size (mm).
e) Nozzle Drill Size (64'/inch).
f) Number and size of Tanks.
g) Tank Fill Weight.
h) Tank Filling Density.
i) Total Agent Weight.
j) Pipe Size Per Pipe Section.
k) Pipe schedule Per Pipe Section.
l) Number, Size and Type of Fitting Per Pipe Section
m) Actual Length Per Pipe Section (m).
n) Equivalent Length Per Section (m).
o) Elevation Change Per Pipe Section (m).
p) Piping Volume (m^3).
q) Discharge Time (sec).
r) Percent of Agent in Pipe.
s) Pressure at Start of Network (bar)
t) Pressure Available at the Start and End of Each Pipe Section (bar).
u) Density at the Start and End of Pipe Section (kg/m^3).
v) Flow rate Per Pipe Section (litres/sec.).
w) Pressure Drop Per Pipe Section (N/m^2)
x) Y and Z Factors at the Start and End of Each Pipe Section.

5.3.5 The contractor shall provide data to indicate the free venting area required per NFPA-2001 for each hazard volume.

5.3.6 DESIGN PARAMETERS – DETECTION

5.3.6.1 The design of the detection/control system shall be based on a clean, vibration free, electrical non-hazardous environment

5.3.6.2 As a minimum detector spacing, shall be based upon NFPA recommended practices for ceiling construction, air flow and manufacturer recommendations.

At least one smoke detector of each type (ionization and photoelectric) shall be used in each protected area.

Where multiple detectors are sued, detection shall alternate such that ionization are adjacent to photoelectric.

5.3.6.3 Unless otherwise stated on the drawings manual pull station(s) shall be located at all points of aggress from the protected area.

otherwise stated on the drawings at least one alarm device shall be located within the protected area for the general alarm function.

Battery capacity shall be sufficient to permit normal non-alarm condition for 24 hours with subsequent general alarm for 5 minutes after loss of primary line power.

5.3.7 EQUIPMENT AND MATERIAL

5.3.7.1 General

All materials and equipment furnished by the contractor shall be of new, unused, and undamaged condition in strict accordance with the requirement of this section. Equipment shall be required to meet the following standards; **ISO 14520, UNE 23575, NFPA 2001 AND CEA 4008.**

Where items are specified to a nationally recognized standard of manufacture, any component meeting this standard will be considered equal.

Manufacturer's equipment other than as specified shall be bid as an alternate with the base as an alternate with the base bid furnished as specified.

All equipment's and materials shall only be used for their intended application, in locations for which they were designed, and installed in accordance with the manufacturer's instructions and /or recognized standard trade practice.

5.3.7.2. Pipe Material

The inert gas fire system piping shall be of non –combustible materials having physical and chemical characteristics such that its integrity under stress can be predicted with reliability.

Materials other than listed below, such as stainless steel or nonferrous piping or tubing may be used if the materials satisfy the applicable requirements of NFPA (relevant for commercial kitchens.

As a minimum, piping materials shall be black galvanized seamless steel pipe conforming To BS specifications and **(fill in the space)**. Under no conditions shall ordinary cast iron pipe, steel pipe or non- metallic pipe be used.

Inert gas fire system piping joints shall be suitable for the design conditions and shall be selected with consideration of joint tightness and mechanical strength.

As a minimum, fittings shall be black galvanized ANSI 300lb. Class malleable iron, ASTM A-197, m ANSI 300lb. Class ductile iron, ASTM A-395; or steel ASTM A-234.

Ordinary cast iron fittings shall not be permitted. Piping shall be installed accordance with good commercial practice to the appropriate codes, **securely supported** with Listed hangers, and arranged with close attention to the design layout since deviations may alter the design flow performance as hydraulically calculated.

All Piping must be reamed, blown clear, and swabbed with appropriate solvent to remove mill varnish and cutting oils before assembly. The piping shall also be finished off with two coats of red paint after testing.

Multi- outlet fittings other than tees shall not be permitted.

Assembly of all joints shall conform to the appropriate standards. Threaded pipe joints shall utilize Teflon tape applied to male thread s only.

5.3.7.3 Agent Storage Tank

Inert gas fire storage containers shall be of high strength alloy steel construction in accordance with NFPA finished in (baked red enamel) (red epoxy) paint.

Tank assemblies shall be filled with an Inert gas pressurized to bars at (^{0}C).

Filling of the tank assembly shall be by a factory authorized U.L listed filing station. Initial filling and recharge shall be done in accordance with the manufacturer's established procedures and shall not require replacements components for normal service.

The size and fill weights of all cylinders shall le based-on computer verified system design requirements and shall be of the following nominal sizes: _

i) 80 litres

Nominal 33.2kg tank assembly shall be equipped with an internal liquid level measuring rod, marked in ¼ inch increments to allow direct reading of the liquid level and conversation to the weight of Inert gas within the tank.

Tank assembles shall be vertical, free standing modules employing suitable wall mounted retaining brackets. Tank assemblies shall be listed or approved to perform in the temperature range of – 650F to 1300F (-540°C to 540°C).

Aluminum name **plates** indicating manufacturer's name and part number, agent fill weight, total charged weight date of fill, and U.L. Listed fill station case shall be permanently bonded to each tank.

Each tank assembly shall have the means to accommodate lifting devices to facilitate weighing removal and replacing.

Tank assembly shall include a low-pressure switch that operates at approximately 225 (1551kpa) to facilitate continuous supervisions of tank pressure.

5.3.7.4 Tank Valve

Agent storage tank assemblies shall include an integral, high flow valve assembly connected to the tank by a machined thread and sealed by an 0-ring.

Valve outlet sizes shall be based on the nominal tank capacity with a one-inch size for 18,33,54 and 72-pound assemblies, and three inch for 600-pound assemblies.

The valve design shall be of the differential pressure type which utilizes tank pressure to seal the valve assembly. The valve shall be compatible with separate, removable, stackable type actuators for electric, pneumatic, and/or manual actuation.

Operation of the valve by the stackable type actuator shall be such actuation. Operation of the valve by the stackable type actuator shall be such that pressure is relieved from the upper chamber of the valve causing the valve to open. Valves shall be forged brass construction with an O-ring sealed brass spool incorporating the main elastomeric seal surface.

The valve assembly shall include recessed pressure gauge 0 to 250 bar, overpressure safety relief disc assembly, normally pressurized connection port for an optional low-pressure switch, normally unpressurized connection port used as pneumatic source for a salve cylinder valve actuation, and brass shipping caps on exposed thread connection.

When pneumatically operated main/reserve systems are used, pilot valves shall be equipped with actuation isolators.

All 3-inch valve assemblies shall be equipped with a removable pressure gauge feature. This gauge shall be capable of being removed from the valve assembly when the tank is pressurized.

5.3.7.5 Tanks Brackets

Each Inert gas tank shall be furnished with a stainless steel, two-part, strap type retaining bracket designed for installation with standard 15/8n continuous slotted channel.

5.3.7.6 Valve Actuators

The gas valve actuators shall be of brass construction stackable design, with swivel connections to allow removal of actuators for maintenance or testing.

Operation of actuators neither shall nor require replacement of components.

No electro-explosive devices may be used to actuate the valve assembly.

Electric actuators shall be of the **continuous duty solenoid type** with a maximum power requirement of 7 watts for 24VDC operation.

Pneumatic actuators shall be designed to operate from either Inert gas tank pressure with appropriate interconnections or by nitrogen pressure from a separate listed or approved source.

Manual override actuators shall be designed to attach to electric actuator or directly to the valve assembly and permit manual operation of the pilot Inert gas tank assembly. This actuator shall incorporate a detent action with a red phenolic palm bottom and safety ring pin.

Where actuation hose (s) are required stainless steel, braid covered types shall be used.

5.3.7.7 Discharge Hose/Check Valve

When manifolding, all tank assemblies shall include a flexible discharge hose and check valve for connection to manifold inlet.

Nominal one and two inch hosed shall be elastometric with standard NPT male threads and be compatible with the manufacturer's check valve.

Nominal three inch hosed shall be braided stainless construction and incorporate and integral check valve providing a 1 ½ inch height adjustment to compensate for the height variance between cylinder and manifold connection.

A swivel connection at valve outlet shall be provided on all tank installation to facilitate removal for service and testing.

5.3.7.9 Discharge Nozzles

Gas discharge nozzles shall be of one-piece (brass) construction sized to provide flow rates in accordance with system design hydraulics.

Orifice (s) shall be machined in the nozzle body to provide a horizontal discharge in 90 ^{0}, 180 ^{0}, or 360 ^{0} patterns based upon the approved coverage arrangements. Separate, interchangeable orifice plates are not acceptable.

Nozzles shall be permanently marked with the manufacturer's part number, number of orifice and orifice code. The nozzle shall be threaded directly to the discharge piping without the use of special adaptors.

5.3.7.10 Warning Signs

Etched aluminium Warning Signs shall be provided at all Entrance and Exits of the protected area.

Entrance sign shall read: "WARNING \DO NOT ENTRE ROOM WHEN ALARM SOUNDS, **INERT GAS** BEING RELEASED."

Exit sign shall read: "WHEN ALARM SOUNDS, VACATE AT ONCE, **INERT GAS** BEING RELEASED..."

5.3.8 EQUIPEMENT AND MATERIAL –ELECTRICAL

5.3.8.1 General Materials

All electrical trunkings and conduits shall be employed in accordance with applicable codes and intended use and contain only those electrical circuits associated with the fire detection and control system and shall not contain any circuit that is unrelated to the system.

Unless specifically provided otherwise in each case, all conductors shall be enclosed in steel conduit, rigid or thin walled as conditions dictate, except in computer room where they shall be PVC conduit concealed in building fabrics electrically hazardous classification shall be observed and any equipment for materials installed shall be must meet or exceed the requirements of service.

All wiring shall be of the proper size to conduct the circuit current shall not smaller than No.18 AWG unless otherwise specified for a given purpose. Wire that has scrapes nicks, gouges, or crushed insulation shall not be used.

The use of aluminum wire is strictly prohibited.

Splicing of circuits shall be kept to a minimum and are only to be found in an electrical device suited for the purpose.

Wire spliced together shall have the same colour insulation. Wire splices shall be made with appropriate devices suited for the purposes.

All wire terminations shall be made with crimp terminals unless the device at the termination is designed for bare wire termination.

All electrical circuits shall be numerically tagged with suitable devices at its terminating point and/ or splice. All circuits' numbers shall correspond with the installation drawings.

The use of coloured wires is encouraged. White coloured wire shall be used exclusively for the identification of the neutral conductor of an alternating current circuit.

Green coloured wire shall be used exclusively for the identification of the earth ground conductor of an AC and DC circuit.

5.3.8.2 Control Panels – General

All control panels shall be F.M approved and be utilized with listed or approved operating devices shall be capable of the following features:

i) Ground Fault Indication

ii) Supervised Detection Circuits (s).

iii) Supervised Alarm Circuit

iv) Supervised Release Circuit

v) Supervised Manual Pull Circuit

vi) Supervised Line Power Circuit

vii) Alarm Overrides Trouble Logic.

viii) Battery Standby

ix) Front Panel Indicating Lamps

x) Key Lock Steel Enclosure

xi) Programmable Time Delay

xii) Programmable Detection Logic

xiii) Prioritized Trouble Logic

xiv) Solid State Integrated circuitry

5.3.8.3 Control Panel – Dual Zone Unit

In addition to the general requirements foe control panels, dual zone control units shall meet the requirements of this section.

The control unit shall consist of power supply, programmable zone actuation, five supervised circuits and six auxiliary relays.

The internal power supply shall operate from 240V 50Hz A.C power supply.

The control unit shall provide provisions for housing its own set of "on-line" float charged emergency batteries within the enclosure.;

The control unit shall provide two supervised detection (input circuits) programmable for:

i) Independent Zoning

ii) Priority Zoning

iii) Cross-Zoning

A supervised dedicated manual pull circuit designated for immediate operation of the release circuit shall be provided.

Abort function (if used) shall be programmed foe (immediate Release) (timed release) after abort.

A programmable time delay of 0.60 seconds in 5 seconds increments shall be provided between verification of a fire situation and suppression system release.

A fused polarity reversing, 1 amp, 24VDC supervised dedicated release circuit for use with approved fire suppression system releasing devices shall be provided.

Battery supervision shall be provided for condition and placement of the batteries.

An auxiliary trouble circuit for supervision of other normally closed accessory devices shall be provided.

Six plugs in relays shall be provided for auxiliary function. Each of the following actions shall cause one of the six relays to transfer.

i) System Discharge
ii) Zone 1 Alarm
iii) Zone 2 Alarm
iv) Pre-Discharge Alarms
v) General Alarm
vi) System Trouble

LED indicators shall be provided on the front door to annunciate the following conditions:

i) Power – (Green)
ii) System Trouble - (Red)
iii) Zone 1 Alarm – (Red)
iv) Zone 2 Alarm – (Red)
v) Pre-Discharge Alarm – (Red)
vi) System Fired – (Red)

A prioritized LED troubleshooting code shall be provided in Oder to restore the control unit to normal condition as quickly as possible.

The control unit shall be housed in steel cabinet of approved type with conduit knockouts in a (red) (beige) enamel finish.

The door shall have a continuous hinge a 180^{0} swing. Wiring connections shall be screw terminal blocks.

A trim ring shall be supplied for semi-flush installations. When two dual zone control units are required, they shall be available in a single enclosure, if this feature simplifies the installation and system arrangement.

The control unit shall be F.M Approved as an alarm/releasing control unit

5.3.8.4 Smoke Detector - Ionization

Ionization type smoke detector shall be dual chamber type and compatible with the control unit. The detector shall have an LED in its base which is illuminated in a steady "on" mode when in alarm. Reset of the detector shall be performed by the control unit reset se\witch.

The design of the ionization detector compensating circuits shall provide stable operation with regard to minor changes in temperature, humidity, and atmosphere conditions.

The sensitivity voltage shall be factory set as per U.L 268. A special locking screw shall be provided to lock the head to the base; the head to base connection shall be by use of bifurcated contracts. Terminal connections to the base shall be of the screw type.

Where specifically identified on the contract drawings, detector vases shall incorporate a relay with Form C contacts rated at 1 amp 120 VAC or 28VDC for remote LED alarm annunciation of the detector. The detector shall be F.M Approved.

5.3.8.5 Smoke Detector - Photoelectric

Photoelectric detector shall be a solid-state sensing chamber unit providing stable operations (sensitivity) and compatible with the control unit. The detector shall utilize a light sensing photodiode and a pulse signal processor to measure the density of the combustion products within the sensing chamber. The detector head shall have a stainless-steel mesh to prevent foreign objects from entering the sensing chamber.

The sensitivity voltage shall be factory set.

A special locking screw shall be provided to lock the head to the base. The head to base connection shall be by use of bifurcated cont\acts. Terminal connections to the base shall be of the screw type.

Where specifically identified on the contract drawings, detector bases shall incorporate a relay with Form C contacts rated at 1-amp 120VAC or 28VDC for remote LED alarm annunciation of thee detector.

The detector shall be U.L. Listed or F.M Approved.

5.3.8.6 Alarm Bells

The vibrating Alarm Bell shall be approved for use with the listed control unit. The polarized alarm bell shall be rated at 24VDC and draw no more than .063 amps and shall contain a series diode foe use in supervised systems.

It shall have a dB level of 86 – 90 at 3 metres.

The bell shall be constructed of high-quality materials to ensure reliability and long life and have a baked red enamel finish.

The device shall be F.M Approved.

5.3.8.7 **Manual Pull Stations (Fire man's switch**)

The Manual Pull Station shall be provided for the release (electrical) of the Inert gas in case of an emergency. The unit shall be contained within a metal body having a (single) (double) pole switch.

[The device shall be that approved by Fire Authority.]

5.3.8.8 Abort Switch

The abort switch shall be used where an investigation delay is desired between detection and actuation of the Inert Gas System.

This switch shall be a momentary contact "dead-man" type switch requiring constant pressure to transfer one set of normally open and one set of normally closed contacts on each contacts on each contact block. Clear operating instruction shall be provided at the abort switch.

The terminal connections shall be of the screw type.

The device shall be U.L listed of F.M Approved for a delay switch.

5.3.8.9 Pressure Switch

This pneumatically actuated switch shall be used to give positive identification of release of Inert gas in the piping system.

The switch shall have one set of normally open and one set of normally closed contacts.

5.3.8.10 Selector Switch – Key Operated

The key operated selector switch shall be approved for use with the listed control unit and provide an electrical means of transferring the release circuit signal to the inert gas system from the main supply to the reserve supply.

The switch contracts shall provide a set of normally open and normally closed contacts.

5.4 SYSTEM INSPECTION AND TESTING

The completed installation shall be inspected by authorized personnel and shall include a full operational test of all components per the equipment's manufacturer recommendation including agent discharge.

This shall be done in the presence of the owner's representative and other insuring authority having jurisdiction.

All mechanical and electrical components shall be tested according to the manufacturer's recommended procedure to verify system integrity.

An inspection shall be provided by the contractor. Inspection shall include a complete checkout of the electronic system, and certification of weight and cylinder pressure. A written report shall be filed with the owner.

Two copies of drawings shall be provided by the Contractor indicating the installed details. All routing or piping and electrical conduit and accessories shall be noted.

Equipment, Installation and Maintenance Manuals shall be provided in additions to the as-built drawings.

Prior to final acceptance, the contractor shall provide operational training in all concepts of this system to the owner's key personnel. Training shall consist of: -

i) System Control Unit Operation

ii) Trouble Procedures

iii) Abort Procedures

iv) Emergency Procedures

v) Safety Requirements

vi) A functional test shall be completed prior to the concentration test consisting of detection, release alarm, accessories related to system, control unit, and a review of the tanks, piping, fittings, hangers and cylinder pressure.

Concentration test shall be provided under the supervision of the contractor's authorized personnel in the presence of the owner's representative, local authorities and any other insuring authority.

Inert gas test procedures shall be recommended by equipment manufacturer and the Inert gas supplier.

The contractor shall provide a 3-chart thermal conductivity gas analyzer capable of automatically recording three sampling points. Concentration recording shall continue until authorities are satisfied with hazard integrity or 10 minutes have elapsed.

The sampling points shall be located at strategic areas but no higher than the highest combustible contents. If the tests results indicate that the design concentration was not achieved and/or held, the contractor shall determine the cause of failure.

After determination of cause, the system should be recharged and again placed in operation. The contractor shall only be responsible to retest based on equipment failure.

SECTION H:

BILLS OF QUANTITIES

AND

SCHEDULE OF UNIT RATES

SECTION H:

BILLS OF QUANTITIES AND SCHEDULE OF UNIT RATES

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5.01 SPECIAL NOTES

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.

2. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (**including 16% VAT**).

   In accordance with Government policy, **3% Withholding Tax shall be deducted** from all payments made to the Tenderer, and the same shall be forwarded to the **Kenya Revenue Authority (KRA).**

3. All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part there of.

4. The brief descriptions of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere. 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 approva**l 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**.

   Tenderers must enclose, together with their submitted tenders, detailed manufacturer's Brochures detailing Technical Literature and specifications on all the equipment they intend to offer.

5.02 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: ……..……

5.03 BILLS OF QUANTITIES

A) PRICING OF PRELIMINARIES ITEMS.

Prices will be inserted against item of preliminaries in the sub-contractor's Bills of Quantities and specification. These Bills are designated as Bill 1 in this Section. Where the sub-contractor fails to insert his price in any item he shall be deemed to have made adequate provision for this on various items in the Bills of Quantities. The preliminaries form part of this contract and together with other Bills of Quantities covers for the costs involved in complying with all the requirements for the proper execution of the whole of the works in the contract.

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

a. Preliminaries – Bill 1

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

b. Installation Items – Other Bills

i. The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the contract Drawings, conditions of contract and specifications.
ii. The unit of measurements and observations are as per those described in clause 3.05 of the section

c. Summary

The summary contains tabulation of the separate parts of the Bills of Quantities carried forward with provisional sum, contingencies and any prime cost sums included. The sub-contract shall insert his totals and enter his grand total tender sum in the space provided below the summary.
This grand total tender sum shall be entered in the Form of Tender provided elsewhere in this document

BILL No. 1 PRELIMINARIES

ITEM	DESCRIPTION	QTY	UNIT	RATE	KSHS
1	Discrepancies clause 1.02				
2	Conditions of sub-contract Agreement clause 1.03				
3	Payments clause1.04				
4	Site location clause 1.06				
5	Scope of Contract Works clause 1.08				
6	Extent of the Contractor's Duties clause 1.09				
7	Firm price contract clause 1.12				
8	Variation clause 1.13				
9	Prime cost and provisional sum clause 1.14 (insert profit, tax and attendance which is a percentage of expended PC or provisional sum.)				
10	Bond clause 1.15				
11	Government Legislation and Regulations clause 1.16				
12	Import Duty and Value Added Tax clause 1.17 (Note this clause applies for materials supplied only. VAT will also be paid by the sub-contractor as allowed in the summary page)				
13	Insurance company Fees clause 1.18				
14	Provision of services by the Main contractor clause 1.19				
15	Samples and Materials Generally clause 1.21				
SUB-TOTAL CARRIED TO PAGE…… H -6					

ITEM	DESCRIPTION	QTY	UNIT	RATE	KSHS
16	Supplies clause 1.20				
17	Bills of Quantities clause 1.23				
18	Contractor's Office in Kenya clause 1.24				
19	Builder's Work clause 1.25				
20	Setting to work and Regulating system clause 1.29				
21	Identification of plant components clause 1.30				
22	Working Drawings clause 1.32				
23	Record Drawings (As Installed) and Instructions clause 1.33				
24	Maintenance Manual clause 1.34				
25	Hand over clause 1.35				
26	Painting clause 1.36				
27	Testing and Inspection – manufactured plant clause 1.38				
28	Testing and Inspection – Installation clause 1.39				
29	Storage of Materials clause 1.41				
30	Initial Maintenance clause 1.42				
SUB-TOTAL CARRIED TO PAGE……. H-6					

ITEM	DESCRIPTION	QTY	UNIT	RATE	KSHS
31	Attendance Upon Tradesmen, etc. (Insert percentage only) clause 1.58				
32	Local and other Authorities notices and fees clause 1.60				
33	Temporary Works clause 1.63				
34	Patent Rights clause 1.64				
35	Mobilization and Demobilization Clause 1.65				
36	Extended Preliminaries Clause 1.66(see appendix on page C- 17)				
37	Supervision by Engineer and Site Meetings Clause 1.67	1	Item	**700,000**	**700,000.00**
38	Allow for profit, tax and Attendance for the above				
39	Sum for Clerk of Works on site				
40	Amendment to Scope of Sub-contract Works Clause 1.68				
41	Contractor Obligation and Employers Obligation clause 1.69(see appendix page C- 18)				
42	Any other preliminaries; Any other preliminaries; 1. a sum for continuous professional development and training of Public Works technical staff to be provided to the Chief Engineer [Mechanical (BS)] through the project engineer once the contract is signed 2.	1	Item	**1,000,000**	**1,000,000.00**
	Subtotal above				
	Sub-total brought forward from page…… H-4				
	Sub-total brought forward from page…….. H-5				
TOTAL FOR BILL NO. 1- PRELIMINARIES CARRIED FORWARD TO PRICE MAIN SUMMARY PAGE…… H-29					

KITCHEN EXTRACT SYSTEM INSTALLATION WORKS ITK 1

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Cooker Cooking Area Supply, deliver, install and fix the following equipment/ items as described. Where trade names are mentioned the the intention is to guide as to the quality of the item expected and not to necessarily mean that it forms a basis for purchasing that item.				
A	**Extract Hood Canopy Wall Type With 3 Sides Exposed** 18000 x 1200 x 600mm deep kitchen extract hood manufactured from 1.2mm Stainless Steel sheet complete with its framework, supports and stiffened by a frame of 38 x 38mm stainless R.H.S. The hood shall have a 75mm wide by 25mm deep grease drainage channel all round with 6No. 20mm diameter drain holes and a plenum box.	2	No		
B	**Extract Hood Canopy Island Type With 4 Sides Exposed** 18000 x 1200 x 600mm deep kitchen extract hood manufactured from 1.2mm Stainless Steel sheet complete with its framework, supports and stiffened by a frame of 38 x 38mm stainless R.H.S. The hood shall have a 75mm wide by 25mm deep grease drainage channel all round with 6No. 20mm diameter drain holes and a plenum box.	1	No		
	Extract Hood Canopy Island Type With 4 Sides Exposed 3900 x 1200 x 600mm deep kitchen extract hood manufactured from 1.2mm Stainless Steel sheet complete with its framework, supports and stiffened by a frame of 38 x 38mm stainless R.H.S. The hood shall have a 75mm wide by 25mm deep grease drainage channel all round with 2No. 20mm diameter drain holes and a plenum box.	1	No		
C	**Grease Filter Bank for Island Canopy** The grease filter unit consisting of a Double Sided unit housing with top exit for use in island canopy applications for housing 2 Wide x 3 Long panles of 1436mm x 622 mm top exit washable type stainless steel filter panels. The unit shall have removable grease trays and framework made out of stainless steel. Such as Vokes DS 20/6 or equal.	14	Item		
D	**Grease Filter for Island Canopy** The grease filters of size 508 x 254mm washable type stainless steel filter panels. The unit shall have removable grease trays and framework made out of stainless steel. The filter shall be composed of folded woven metal material interspersed with layers of expanded metal mesh of stainless steel and shall be capable of filtering a total of 12240 m^3/hr. The filter panels shall be easily removable for washing as and when necessary. As "Vokes" or equal.	74	No.		
Total Carried Forward to Collection for Kitchen Extract Works					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Grease Filter Bank for Wall Canopy				
A	The grease filter unit consisting of a Single Sided unit housing with top exit for use in wall canopy applications for housing 3 Long panels of 1436mm x 279 mm top exit washable type stainless steel filter panels. The unit shall have removable grease trays and framework made out of stainless steel. Such as Vokes TE 20/3 or equal.	24	Item		
	Grease Filter for Wall Canopy				
B	The grease filters of size 508 x 254mm washable type stainless steel filter panels. The unit shall have removable grease trays and framework made out of stainless steel. The filter shall be composed of folded woven metal material interspersed with layers of expanded metal mesh of stainless steel and shall be capable of filtering a total of 6120 m^3/hr. The filter panels shall be easily removable for washing as and when necessary. As "Vokes" or equal.	72	No.		
	Ductwork				
C	800 x 800 mm at 1200 mm seams extract duct from hood to fan, constructed from 1.2mm stainless steel sheet and connected to the fan by flexible connections and flanged joints. All joints and seams shall be sealed with mastic to make them airtight.	250	SM		
	Cooking Island Extract Fan				
D	Axial case fan capable of extracting 7.0m^3/s of air against a 360Pa static pressure. To have a running speed of 1440 RPM, pitch angle of 28 degrees, sound level 73 dBA, weight of 163 kg and power supply of 6.3kW, 415V, 50Hz. The fan will be driven by an electric motor. The fan shall be installed complete with guard kit, plate fan inlet guard, protection guard, silencer and flexible connector, in accordance with the manufacturer's printed instructions. To be as 'Wood Model No. 80JM' or equal.	13	No		
	Make-Up Air Fan				
E	A centrifugal fan suitable for supply air application in an industrial building - it shall be capable of extracting 20.0 m^3/s of air - against a total pressure 1250 Pa - have a fan speed of 650 RPM - an outlet velocity of 12 m/s, - a dynamic pressure of 90 Pa - absorbed power 14 kW - have an efficiency of 78% - a sound level 97 dB(A) The fan shall have a housing suitable to be placed on a plinth in accordance with the manufacturer's printed instructions. The fan shall have a welded frame that gives inceased stiffness and rigidity for higher operating performance and it shall be of 360 degrees rotation The fan shall be a belt driven single inlet	4	No		
	Total Carried Forward to Collection for Kitchen Extract Works				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Ductwork for Make-Up Air				
A	2500 x 2500 mm at 1200 mm seams extract duct from hood to fan, constructed from 16 S.W.G. rolled galvanized steel sheet and connected to the fan by flexible connections and flanged joints. All joints and seams shall be sealed with mastic to make them airtight.	400	SM		
	Vapor Proof Light Fitting				
B	Vapor proof light fittings, capacity 65 watts in a heat resistant and watertight enclosure all complete with in approved heat resistant conduits and wiring in the kitchen hood.	36	No		
	Fire Damper				
C	Shutter fire damper complete with fusible link and micro switch for de-activating the fan when damper closes suitable for a duct size 800 x 800mm	12	No		
Total Carried Forward to Collection for Kitchen Extract Works					

COLLECTION FOR KITCHEN EXTRACT WORKS IN ITK 1

Item	Description		Amount (Kshs)
1	Total carried forward from page H-7	.....	
2	Total carried forward from page H-8	.....	
3	Total carried forward from page H-9	.....	
Total Cost for Kitchen Extract Works in ITK 1			

KITCHEN EXTRACT SYSTEM INSTALLATION WORKS ITK2

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Cooker Cooking Area				
	Supply, deliver, install and fix the following equipment/ items as described. Where trade names are mentioned the the intention is to guide as to the quality of the item expected and not to necessarily mean that it forms a basis for purchasing that item.				
	Extract Hood Canopy Wall Type With 3 Sides Exposed				
A	18000 x 1200 x 600mm deep kitchen extract hood manufactured from 1.2mm Stainless Steel sheet complete with its framework, supports and stiffened by a frame of 38 x 38mm stainless steel R.H.S. The hood shall have a 75mm wide by 25mm deep grease drainage channel all round with 6No. 20mm diameter drain holes and a plenum box.	2	No		
	Extract Hood Canopy Island Type With 4 Sides Exposed				
B	18000 x 1200 x 600mm deep kitchen extract hood manufactured from 1.2mm Stainless Steel sheet complete with its framework, supports and stiffened by a frame of 38 x 38mm stainless R.H.S. The hood shall have a 75mm wide by 25mm deep grease drainage channel all round with 6No. 20mm diameter drain holes and a plenum box.	1	No		
	Extract Hood Canopy Island Type With 4 Sides Exposed				
	3900 x 1200 x 600mm deep kitchen extract hood manufactured from 1.2mm Stainless Steel sheet complete with its framework, supports and stiffened by a frame of 38 x 38mm stainless R.H.S. The hood shall have a 75mm wide by 25mm deep grease drainage channel all round with 2No. 20mm diameter drain holes and a plenum box.	0	No		
	Grease Filter Bank for Island Canopy				
C	The grease filter unit consisting of a Double Sided unit housing with top exit for use in island canopy applications for housing 2 Wide x 3 Long panles of 1436mm x 622 mm top exit washable type stainless steel filter panels. The unit shall have removable grease trays and framework made out of stainless steel. Such as Vokes DS 20/6 or equal.	12	Item		
	Grease Filter for Island Canopy				
D	The grease filters of size 508 x 254mm washable type stainless steel filter panels. The unit shall have removable grease trays and framework made out of stainless steel. The filter shall be composed of folded woven metal material interspersed with layers of expanded metal mesh of stainless steel and shall be capable of filtering a total of 12240 m^3/hr. The filter panels shall be easily removable for washing as and when necessary. As "Vokes" or equal.	72	No.		
	Total Carried Forward to Collection for Kitchen Extract Works				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Grease Filter Bank for Wall Canopy				
A	The grease filter unit consisting of a Single Sided unit housing with top exit for use in wall canopy applications for housing 3 Long panels of 1436mm x 279 mm top exit washable type stainless steel filter panels. The unit shall have removable grease trays and framework made out of stainless steel. Such as Vokes TE 20/3 or equal.	24	Item		
	Grease Filter for Wall Canopy				
B	The grease filters of size 508 x 254mm washable type stainless steel filter panels. The unit shall have removable grease trays and framework made out of stainless steel. The filter shall be composed of folded woven metal material interspersed with layers of expanded metal mesh of stainless steel and shall be capable of filtering a total of 6120 m^3/hr. The filter panels shall be easily removable for washing as and when necessary. As "Vokes" or equal.	72	No.		
	Ductwork				
C	800 x 800 mm at 1200 mm seams extract duct from hood to fan, constructed from 1.2mm stainless steel sheet and connected to the fan by flexible connections and flanged joints. All joints and seams shall be sealed with mastic to make them airtight.	230	SM		
	Cooking Island Extract Fan				
D	Axial case fan capable of extracting 7.0m^3/s of air against a 360Pa static pressure. To have a running speed of 1440 RPM, pitch angle of 28 degrees, sound level 73 dBA, weight of 163 kg and power supply of 6.3kW, 415V, 50Hz. The fan will be driven by an electric motor. The fan shall be installed complete with guard kit, plate fan inlet guard, protection guard, silencer and flexible connector, in accordance with the manufacturer's printed instructions. To be as 'Wood Model No. 80JM' or equal.	12	No		
	Make-Up Air Fan				
E	A centrifugal fan suitable for supply air application in an industrial building - it shall be capable of extracting 20.0 m^3/s of air - against a total pressure 1250 Pa - have a fan speed of 650 RPM - an outlet velocity of 12 m/s, - a dynamic pressure of 90 Pa - absorbed power 14 kW - have an efficiency of 78% - a sound level 97 dB(A) The fan shall have a housing suitable to be placed on a plinth in accordance with the manufacturer's printed instructions. The fan shall have a welded frame that gives inceased stiffness and rigidity for higher operating performance and it shall be of 360 degrees rotation The fan shall be a belt driven single inlet	4	No		
	Total Carried Forward to Collection for Kitchen Extract Works				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Ductwork for Make-Up Air				
D	2500 x 2500 mm at 1200 mm seams extract duct from hood to fan, constructed from 16 S.W.G. rolled galvanized steel sheet and connected to the fan by flexible connections and flanged joints. All joints and seams shall be sealed with mastic to make them airtight.	400	SM		
	Vapor Proof Light Fitting				
E	Vapor proof light fittings, capacity 65 watts in a heat resistant and watertight enclosure all complete with in approved heat resistant conduits and wiring in the kitchen hood.	36	No		
	Fire Damper				
F	Shutter fire damper complete with fusible link and micro switch for de-activating the fan when damper closes suitable for a duct size 800 x 800mm	12	No		
Total Carried Forward to Collection for Kitchen Extract Works					

COLLECTION FOR KITCHEN EXTRACT WORKS IN ITK 1

Item	Description		Amount (Kshs)
1	Total carried forward from page H-10	.....	
2	Total carried forward from page H-11	.....	
3	Total carried forward from page H-12	.....	
Total Cost for Kitchen Extract Works in ITK 2			

KITCHEN HOOD AUTOMATIC FIRE SUPPRESSION SYSTEM FOR ITK 1

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
`	**KITCHEN HOOD FIRE SUPPRESSION SYTEM (HOOD SIZE: 18000x1200mm)** **Supply , Installation as per computer verification, fixing , testing and commissioning of the following:-** **Cylinders**				
A	A 3.0 gallon capacity cylinder of size 203mm in dia and 578mm in height with 637mm to below cylinder control head and 783mm top of cylinder control head that is capable of providing a 10 flow point coverage. To contain PYRO-CHEM Potassium Carbonate wet chemical solution stored at 225 psig (15.5 bar). Includes pressure gauge for visual maintenance checks.	4	No		
B	A 4.6 gallon capacity cylinder of size 254mm in dia and 578mm in height with 637mm to below cylinder control head and 783mm top of cylinder control head that is capable of providing a 15 flow point coverage. To contain PYRO-CHEM Potassium Carbonate wet chemical solution stored at 225 psig (15.5 bar). Includes pressure gauge for visual maintenance checks.	6	No		
	Cylinder Control Head				
C	To have an integral design that allows for direct connection of the actuation pressure cylinder to the control head without the need of high pressure hose or pipe. it shall in clude separate wire cable activation lines for automatic fusible links and remote pull station. SUITABLE FOR EACH OF THE 3.0 GALLON CYLINDERS	4	No.		
D	To have an integral design that allows for direct connection of the actuation pressure cylinder to the control head without the need of high pressure hose or pipe. it shall in clude separate wire cable activation lines for automatic fusible links and remote pull station. SUITABLE FOR EACH OF THE 4.6 GALLON CYLINDERS	6	No.		
Total amount carried forward to Summary page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	Actuator to serve each of the above cylinder heads **The tenderer shall supply each of the nozzles together with a swivel adaptor, rubber blow out and an aiming device**	10	No		
B	A 2 flow duct nozzle that is capable of protecting a square or rectangular duct with a maximum perimeter of 2540mm having a diagonal of 949mm as maximum.	12	No.		
C	A 2 flow high proximity fryer nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	20	No.		
D	A 2 flow high proximity large range nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	10	No.		
E	A 1 flow high proximity work protection nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	26	No.		
F	A 1 flow high proximity single V bank protection nozzle that can protect hazard area of 3000mm long and 1200mm wide.	12	No.		
G	Enclosure/or bracket assembly for all the items that require the brackets	1	Item		
H	Instruction sign "MANUAL RELEASE CONTROL POINT"	2	No		
I	Any other accessories for the satisfactory installation and functioning of the suppression system	1	Item		
Total amount carried forward to Summary page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Schedule 40 Seamless black iron pipework, pipework fittings and accessories				
A	1/2" (15mm) diameter Schedule 40 black iron chrome plated pipe	120	Lm		
B	Elbows for the pipe size stated above	136	No.		
C	Tees for the pipe size stated above	76	No.		
D	In addition to the above pipe fittings the tenderer should allow a sum for accessories including anchorage, unions, etc. necessary for complete installation of the pipework and to make it function satisfactorily	1	Item		
E	Photoelectric detectors complete with detector base, wiring to control unit by 2 core Fire Resistant cabling drawn through 25 mm diameter galvanized steel conduit and inclusive of the conduit and all accessories	30	No.		
F	Ionisation detectors complete with detector base, wiring to control unit by 2 core Fire Resistant cabling drawn through 25 mm diameter galvanized steel conduit and inclusive of the conduit and all accessories	30	No.		
G	150mm wall mounted 6" 24V DC Bell	2	No		
H	External siren with visible strobe	2	No		
I	Addressable Repeater panel located on the wall.	2	No		
J	12V, 7AH batteries	10	No		
K	Intelligent agent release pull station	10	No		
L	Allow for electrical works,connection to mains power and standby power supply	1	Item		
M	Allow for painting of the system pipework to signal red	1	Item		
Total amount carried forward to Summary page					

SUMMARY PAGE FOR CANOPIES FITTED AGAINST A WALL

Item	Description	Amount (Kshs)
1	Total amount brought forward from page H-13	
2	Total amount brought forward from page H-14	
3	Total amount brought forward from page H-15	
TOTAL AMOUNT FOR CANOPIES FITTED AGAINST A WALL CARRIED TO ISLAND SUMMARY PAGE FOR ITK 1		

KITCHEN HOOD AUTOMATIC FIRE SUPPRESSION SYSTEM FOR ITK 1

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
`	**KITCHEN HOOD FIRE SUPPRESSION SYTEM (HOOD SIZE: 18000x2400mm)** **Supply , Installation as per computer verification, fixing , testing and commissioning of the following:-** **Cylinders**				
A	A 6.0 gallon capacity cylinder of size 254mm in dia and 851mm in height with 910mm to below cylinder control head and 1056mm top of cylinder control head that is capable of providing a 10 flow point coverage. To contain PYRO-CHEM Potassium Carbonate wet chemical solution stored at 225 psig (15.5 bar). Includes pressure gauge for visual maintenance checks.	3	No		
B	A 4.6 gallon capacity cylinder of size 254mm in dia and 578mm in height with 637mm to below cylinder control head and 783mm top of cylinder control head that is capable of providing a 15 flow point coverage. To contain PYRO-CHEM Potassium Carbonate wet chemical solution stored at 225 psig (15.5 bar). Includes pressure gauge for visual maintenance checks.	4	No		
	Cylinder Control Head				
C	To have an integral design that allows for direct connection of the actuation pressure cylinder to the control head without the need of high pressure hose or pipe. it shall in clude separate wire cable activation lines for automatic fusible links and remote pull station. SUITABLE FOR EACH OF THE 3.0 GALLON CYLINDERS	3	No.		
D	To have an integral design that allows for direct connection of the actuation pressure cylinder to the control head without the need of high pressure hose or pipe. it shall in clude separate wire cable activation lines for automatic fusible links and remote pull station. SUITABLE FOR EACH OF THE 4.6 GALLON CYLINDERS	4	No.		
Total amount carried forward to Summary page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	Actuator to serve each of the above cylinder heads **The tenderer shall supply each of the nozzles together with a swivel adaptor, rubber blow out and an aiming device**	7	No		
B	A 2 flow duct nozzle that is capable of protecting a square or rectangular duct with a maximum perimeter of 2540mm having a diagonal of 949mm as maximum.	12	No.		
C	A 2 flow high proximity fryer nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	20	No.		
D	A 2 flow high proximity large range nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	10	No.		
E	A 1 flow high proximity work protection nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	26	No.		
F	A 1 flow high proximity single V bank protection nozzle that can protect hazard area of 3000mm long and 1200mm wide.	6	No.		
G	Enclosure/or bracket assembly for all the items that require the brackets	1	Item		
H	Instruction sign "MANUAL RELEASE CONTROL POINT"	2	No		
I	Any other accessories for the satisfactory installation and functioning of the suppression system	1	Item		
Total amount carried forward to Summary page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Schedule 40 Seamless black iron pipework, pipework fittings and accessories				
A	3/8" (9.5mm) diameter Schedule 40 black iron chrome plated pipe	162	Lm		
B	Elbows for the pipe size stated above	134	No.		
C	Tees for the pipe size stated above	77	No.		
D	In addition to the above pipe fittings the tenderer should allow a sum for accessories including anchorage, unions, etc. necessary for complete installation of the pipework and to make it function satisfactorily	1	Item		
E	Photoelectric detectors complete with detector base, wiring to control unit by 2 core Fire Resistant cabling drawn through 25 mm diameter galvanized steel conduit and inclusive of the conduit and all accessories	29	No.		
F	Ionisation detectors complete with detector base, wiring to control unit by 2 core Fire Resistant cabling drawn through 25 mm diameter galvanized steel conduit and inclusive of the conduit and all accessories	29	No.		
G	150mm wall mounted 6" 24V DC Bell	9	No		
H	External siren with visible strobe	9	No		
I	Addressable Repeater panel located on the wall.	9	No		
J	12V, 7AH batteries	9	No		
K	Intelligent agent release pull station	9	No		
L	Allow for electrical works,connection to mains power and standby power supply	1	Item		
M	Allow for painting of the system pipework to signal red	1	Item		
Total amount carried forward to Summary page					

SUMMARY PAGE FOR FIRE SUPPRESSION IN ITK 1

Item	Description	Amount (Kshs)
1	Total amount for two canopies fitted against a wall brought forward from H-16	
2	Total amount brought forward from page H-17	
3	Total amount brought forward from page H-18	
4	Total amount brought forward from page H-19	
TOTAL AMOUNT FOR FIRE SUPPRESSION IN ITK 1 CARRIED TO SUMMARY PAGE		

KITCHEN HOOD AUTOMATIC FIRE SUPPRESSION SYSTEM FOR ITK 2

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
`	**KITCHEN HOOD FIRE SUPPRESSION SYTEM (HOOD SIZE: 18000x1200mm)** **Supply , Installation as per computer verification, fixing , testing and commissioning of the following:-** **Cylinders**				
A	A 3.0 gallon capacity cylinder of size 203mm in dia and 578mm in height with 637mm to below cylinder control head and 783mm top of cylinder control head that is capable of providing a 10 flow point coverage. To contain PYRO-CHEM Potassium Carbonate wet chemical solution stored at 225 psig (15.5 bar). Includes pressure gauge for visual maintenance checks.	4	No		
B	A 4.6 gallon capacity cylinder of size 254mm in dia and 578mm in height with 637mm to below cylinder control head and 783mm top of cylinder control head that is capable of providing a 15 flow point coverage. To contain PYRO-CHEM Potassium Carbonate wet chemical solution stored at 225 psig (15.5 bar). Includes pressure gauge for visual maintenance checks.	6	No		
	Cylinder Control Head				
C	To have an integral design that allows for direct connection of the actuation pressure cylinder to the control head without the need of high pressure hose or pipe. it shall in clude separate wire cable activation lines for automatic fusible links and remote pull station. SUITABLE FOR EACH OF THE 3.0 GALLON CYLINDERS	4	No.		
D	To have an integral design that allows for direct connection of the actuation pressure cylinder to the control head without the need of high pressure hose or pipe. it shall in clude separate wire cable activation lines for automatic fusible links and remote pull station. SUITABLE FOR EACH OF THE 4.6 GALLON CYLINDERS	6	No.		
Total amount carried forward to Summary page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	Actuator to serve each of the above cylinder heads **The tenderer shall supply each of the nozzles together with a swivel adaptor, rubber blow out and an aiming device**	10	No		
B	A 2 flow duct nozzle that is capable of protecting a square or rectangular duct with a maximum perimeter of 2540mm having a diagonal of 949mm as maximum.	12	No.		
C	A 2 flow high proximity fryer nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	20	No.		
D	A 2 flow high proximity large range nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	10	No.		
E	A 1 flow high proximity work protection nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	26	No.		
F	A 1 flow high proximity single V bank protection nozzle that can protect hazard area of 3000mm long and 1200mm wide.	12	No.		
G	Enclosure/or bracket assembly for all the items that require the brackets	1	Item		
H	Instruction sign "MANUAL RELEASE CONTROL POINT"	2	No		
I	Any other accessories for the satisfactory installation and functioning of the suppression system	1	Item		
Total amount carried forward to Summary page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Schedule 40 Seamless black iron pipework, pipework fittings and accessories				
A	1/2" (15mm) diameter Schedule 40 black iron chrome plated pipe	120	Lm		
B	Elbows for the pipe size stated above	136	No.		
C	Tees for the pipe size stated above	76	No.		
D	In addition to the above pipe fittings the tenderer should allow a sum for accessories including anchorage, unions, etc. necessary for complete installation of the pipework and to make it function satisfactorily	1	Item		
E	Photoelectric detectors complete with detector base, wiring to control unit by 2 core Fire Resistant cabling drawn through 25 mm diameter galvanized steel conduit and inclusive of the conduit and all accessories	30	No.		
F	Ionisation detectors complete with detector base, wiring to control unit by 2 core Fire Resistant cabling drawn through 25 mm diameter galvanized steel conduit and inclusive of the conduit and all accessories	30	No.		
G	150mm wall mounted 6" 24V DC Bell	2	No		
H	External siren with visible strobe	2	No		
I	Addressable Repeater panel located on the wall.	2	No		
J	12V, 7AH batteries	10	No		
K	Intelligent agent release pull station	10	No		
L	Allow for electrical works,connection to mains power and standby power supply	1	Item		
M	Allow for painting of the system pipework to signal red	1	Item		
Total amount carried forward to Summary page					

SUMMARY PAGE FOR CANOPIES FITTED AGAINST A WALL

Item	Description	Amount (Kshs)
1	Total amount brought forward from page H-21	
2	Total amount brought forward from page H-22	
3	Total amount brought forward from page H-23	
TOTAL AMOUNT FOR CANOPIES FITTED AGAINST A WALL CARRIED TO ISLAND SUMMARY PAGE FOR ITK 2		

KITCHEN HOOD AUTOMATIC FIRE SUPPRESSION SYSTEM FOR ITK 2

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
`	**KITCHEN HOOD FIRE SUPPRESSION SYTEM (HOOD SIZE: 18000x2400mm)** **Supply , Installation as per computer verification, fixing , testing and commissioning of the following:-** **Cylinders**				
A	A 6.0 gallon capacity cylinder of size 254mm in dia and 851mm in height with 910mm to below cylinder control head and 1056mm top of cylinder control head that is capable of providing a 10 flow point coverage. To contain PYRO-CHEM Potassium Carbonate wet chemical solution stored at 225 psig (15.5 bar). Includes pressure gauge for visual maintenance checks.	3	No		
B	A 4.6 gallon capacity cylinder of size 254mm in dia and 578mm in height with 637mm to below cylinder control head and 783mm top of cylinder control head that is capable of providing a 15 flow point coverage. To contain PYRO-CHEM Potassium Carbonate wet chemical solution stored at 225 psig (15.5 bar). Includes pressure gauge for visual maintenance checks.	4	No		
	Cylinder Control Head				
C	To have an integral design that allows for direct connection of the actuation pressure cylinder to the control head without the need of high pressure hose or pipe. it shall in clude separate wire cable activation lines for automatic fusible links and remote pull station. SUITABLE FOR EACH OF THE 3.0 GALLON CYLINDERS	3	No.		
D	To have an integral design that allows for direct connection of the actuation pressure cylinder to the control head without the need of high pressure hose or pipe. it shall in clude separate wire cable activation lines for automatic fusible links and remote pull station. SUITABLE FOR EACH OF THE 4.6 GALLON CYLINDERS	4	No.		
Total amount carried forward to Summary page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	Actuator to serve each of the above cylinder heads **The tenderer shall supply each of the nozzles together with a swivel adaptor, rubber blow out and an aiming device**	7	No		
B	A 2 flow duct nozzle that is capable of protecting a square or rectangular duct with a maximum perimeter of 2540mm having a diagonal of 949mm as maximum.	12	No.		
C	A 2 flow high proximity fryer nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	20	No.		
D	A 2 flow high proximity large range nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	10	No.		
E	A 1 flow high proximity work protection nozzle that can be placed anywhere within the proximity of the hazard area and at a height of 1219mm above the cooking surface of the appliance being proteted and it shall be aimed at the centre of the cooking area.	26	No.		
F	A 1 flow high proximity single V bank protection nozzle that can protect hazard area of 3000mm long and 1200mm wide.	6	No.		
G	Enclosure/or bracket assembly for all the items that require the brackets	1	Item		
H	Instruction sign "MANUAL RELEASE CONTROL POINT"	2	No		
I	Any other accessories for the satisfactory installation and functioning of the suppression system	1	Item		
Total amount carried forward to Summary page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Schedule 40 Seamless black iron pipework, pipework fittings and accessories				
A	3/8" (9.5mm) diameter Schedule 40 black iron chrome plated pipe	162	Lm		
B	Elbows for the pipe size stated above	134	No.		
C	Tees for the pipe size stated above	77	No.		
D	In addition to the above pipe fittings the tenderer should allow a sum for accessories including anchorage, unions, etc. necessary for complete installation of the pipework and to make it function satisfactorily	1	Item		
E	Photoelectric detectors complete with detector base, wiring to control unit by 2 core Fire Resistant cabling drawn through 25 mm diameter galvanized steel conduit and inclusive of the conduit and all accessories	29	No.		
F	Ionisation detectors complete with detector base, wiring to control unit by 2 core Fire Resistant cabling drawn through 25 mm diameter galvanized steel conduit and inclusive of the conduit and all accessories	29	No.		
G	150mm wall mounted 6" 24V DC Bell	9	No		
H	External siren with visible strobe	9	No		
I	Addressable Repeater panel located on the wall.	9	No		
J	12V, 7AH batteries	9	No		
K	Intelligent agent release pull station	9	No		
L	Allow for electrical works,connection to mains power and standby power supply	1	Item		
M	Allow for painting of the system pipework to signal red	1	Item		
Total amount carried forward to Summary page					

SUMMARY PAGE FOR FIRE SUPPRESSION IN ITK 2

Item	Description	Amount (Kshs)
1	Total amount for two canopies fitted against a wall brought forward from H-24	
2	Total amount brought forward from page H-25	
3	Total amount brought forward from page H-26	
4	Total amount brought forward from page H-27	
TOTAL AMOUNT FOR FIRE SUPPRESSION IN ITK 2 CARRIED TO SUMMARY PAGE		

SUMMARY PAGE KITCHEN EXTRACT AND HOOD AUTOMATIC FIRE SUPPRESSION SYSTEM

Item	Description	Amount (Kshs)
1	Total amount for **Bill No. 1: Preliminaries** brought forward from page H-6	
2	Total amount brought forward from page H-9	
3	Total amount brought forward from page H-12	
4	Total amount brought forward from page H-20	
5	Total amount brought forward from page H-28	
6	Allow a provisional sum for builders work as instructed by the Architect and Engineer on site	**1,000,000.00**
7	Sum for unforeseen works that may lead to variations that will have to be authorised before being done	**5,000,000.00**
TOTAL AMOUNT FOR KITCHEN EXTRACT AND AUTOMATIC FIRE SUPPRESSION SYSTEM CARIED TO FORM OF TENDER		

Amount in words…….....
…….……..……...…….
……
……
Tenderer's Name and Stamp ……..
……..
……

Signature …….. Date……

Tenderer's P.I.N No …..…… VAT Certificate No……

Witness. ……..……..Address…..……..

Tenderer's Signature…….. Date…….……

SCHEDULE OF UNIT RATES

ITEM	DESCRIPTION	UNIT	RATE (Kshs)
1.	Stainless steel sheet 1.2mm	SM.	
2.	Single Sided unit housing with top exit for use in wall canopy applications for housing 3 Long panels of 1436mm x 279 mm top exit washable type stainless steel filter panels and all its filters	No.	
3.	Double Sided unit housing with top exit for use in island canopy applications for housing 2 Wide x 3 Long panels of 1436mm x 622 mm top exit washable type stainless steel and all its filters	No.	
4.	Axial case fan with 7.0 m^3/s	No.	
5.	Centrifugal fan of capacity 20 m^3/s	No.	
6.	A 3.0-gallon capacity cylinder using PYRO-CHEM	No.	
7.	A 4.6-gallon capacity cylinder using PYRO-CHEM	No.	
8.	A 6.0-gallon capacity cylinder using PYRO-CHEM	No.	
9.	Cylinder control head for a whole circuit	No.	
10.	Schedule 40 pipes (insert the pipe diameters that will be used in the system)		
	1.	LM.	
	2.	LM.	
	3.	LM.	
	4.	LM.	
	5.	LM.	
11.	The inert gas to be used in the system	KG.	

SECTION I:

TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED

CONTENTS

CLAUSE No.		PAGE
1.	TABLE OF CONTENTS……..…….	(i)
2.	GENERAL NOTES TO THE TENDERER…….	I-1
3.	TECHNICAL SCHEDULE…….	I-2-I-3
4.	MAINTENANCE SERVICE …….	I-4
5.	APPENDIX A …….	I-5
6.	APPENDIX B ……..…….	I-6
7.	APPENDIX C ……..…….	I-7

General Notes to the Tenderer

1.1 The tenderer shall submit technical schedules for all materials and equipment upon which he has based his tender sum.

1.2 The tenderer shall also submit separate comprehensive descriptive and performance details for all plant apparatus and fittings described in the technical schedules. Manufacturer's literature shall be accepted. Failure to comply with this may have his tender disqualified.

1.3 Completion of the technical schedule shall not relieve the Contractor from complying with the requirements of the specifications except as may be approved by the Engineer.

TECHNICAL SCHEDULE

The tenderer must complete in full the technical schedule. Apart from the information required in the technical schedule, the tenderer **MUST SUBMIT** comprehensive manufacturer's technical brochures and performance details for all items listed in this schedule (fill forms attached).

ITEM	DESCRIPTION	MANUFACTURER	COUNTRY OF ORIGIN	REMARKS (Catalogue No. etc.)
1	Stainless steel sheet 1.2mm			
2	Single Sided unit housing with top exit for use in wall canopy applications for housing 3 Long panels of 1436mm x 279 mm top exit washable type stainless steel filter panels and all its filters			
3	Double Sided unit housing with top exit for use in island canopy applications for housing 2 Wide x 3 Long panels of 1436mm x 622 mm top exit washable type stainless steel and all its filters			
4	Axial case fan with 7.0 m^3/s			
5	Centrifugal fan of capacity 20 m^3/s			
6	A 3.0-gallon capacity cylinder using PYRO-CHEM			
7	A 4.6-gallon capacity cylinder using PYRO-CHEM			
8	A 6.0-gallon capacity cylinder using PYRO-CHEM			
9	Cylinder control head for a whole circuit Schedule 40 pipes (insert the pipe			

	diameters that will be used in the system) 1. 2. 3. 4. 5.			
10	The inert gas to be used in the system			

Catalogue must be attached for all the items in the schedule of material above

MAINTENANCE SERVICE

FULL-SERVICE MAINTENANCE DURING 60 MONTHS AFTER DEFECTS LIABILITY PERIOD

1.1 The tenderer is advised to note that their price shall be used in the evaluation of the tenders.

1.2 The tenderer shall price for both labour and consumables (materials) during the 60 months full-service period in appendix A of this section. The price shall be for supply, installation, testing and commissioning including all taxes applicable at the time of tender.

1.3 The tenderer shall list and price the consumables/spares/materials to be used during the 60 months full-service period in appendix B of this section. The price shall be for supply, installation, testing and commissioning including all taxes applicable at the time of tender.

1.4 The tenderer shall list and price the consumables/spares/materials to be used during the 60 months full-service period. This list is to be comprehensive as possible and shall include major spares as cards, fan motors etc. The price shall be for supply, installation, testing and commissioning including all taxes applicable at the time of tender. These are spare parts that are not required during normal routine maintenance and shall only be paid for as and when replaced. The tenderer shall give the details of these spare parts in appendix C of this section.

1.5 The tenderer is required to read clause 1.41 on page C-16 while completing this section.

1.6 The tenderer must fill all the prices and rates in the appendixes A, B, and C of this section. Failure to do so shall lead to disqualification.

APPENDIX A

PRICE FOR FULL NORMAL ROUTINE MAINTENANCE DURING 60 MONTHS AFTER DEFECTS LIABILITY PERIOD

ITEM	DESCRIPTION	Kshs.	Cts.
A	Labour costs per month		
B	Material costs for spare parts (consumables) per month – see Appendix C of this section		
Sub-total for one (1No.) month maintenance after the defect's liability period (Not to be carried to form of tender)			
Grand total for 60 months maintenance after the defect's liability period (Not to be carried to form of tender)			

Signed by the Tenderer: …….

Official stamp: ……

Date: ……...

APPENDIX B

SCHEDULE OF UNIT RATES OF SPARE PARTS THAT MAY BE REQUIRED DURING 60 MONTHS AFTER DEFECTS LIABILITY MAINTENANCE PERIOD (ATTACHMENTS ARE ALLOWED IF THE LIST IS LONG)

ITEM	DESCRIPTION	Unit	Qty	Amount in Kshs.
Grand total (Not to be carried to form of tender)				

Signed by the Tenderer: ……

Official stamp: ……

Date: ……...

APPENDIX C

PRICE BREAKDOWN OF SPARES/CONSUMABLES TO BE USED DURING 60 MONTHS AFTER DEFECTS LIABILITY MAINTENANCE PERIOD (ATTACHMENTS ARE ALLOWED IF THE LIST IS LONG)

Note: the price total in this appendix C should tally with the grand price total in appendix A of this section

ITEM	DESCRIPTION	Unit	Qty	Amount in Kshs.
Grand total (Not to be carried to form of tender)				

Signed by the Tenderer: ……

Official stamp: ……

Date: ……...

SECTION J:

DRAWING SCHEDULE

CONTENTS

CLAUSE No.		PAGE
1.	DRAWING SCHEDULE…….	J-1

DRAWING SCHEDULE:

As shall be provided during project implementation.

SECTION K:

STANDARD FORMS

CONTENTS

FORM		PAGE
1.	PERFORMANCE BANK GUARANTEE……..	K-1
2.	TENDER QUESTIONNAIRE……	K-2
3.	CONFIDENTIAL BUSINESS QUESTIONNAIRE…….	K-3
4.	KEY PERSONNEL……	K-5
5.	CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS….	K-6
6	SCHEDULE OF ON-GOING PROJECTS……..	K-7
7	FINANCIAL REPORTS FOR THE LAST FIVE YEARS ….	K-8
8	EVIDENCE OF FINANCIAL RESOURCES……..	K-9
9	NAME OF THE BANKERS……..	K-10
10	DETAILS OF LITIGATIONS OR ARBITRATION PROCEEDINGS ……	K-11
11	SCHEDULE OF MAJOR ITEMS OF CONTRACTOR'S EQUIPMENT PROPOSED FOR CARRYING OUT THE WORKS……	K-12

NOTE: **ALL FORMS IN THIS SECTION MUST BE FILLED AS THEY SHALL BE PART OF THE EVALUATION CRITERIA**

PERFORMANCE BANK GUARANTEE

To: THE PRINCIPAL / CEO
KENYA UTALII COLLEGE
P.O. Box 31052-00600
NAIROBI.

Dear Sir,

WHEREAS …… (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. …… dated …… to execute …… (hereinafter called "the Works");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of:
Kshs. …… (*amount of Guarantee in figures*)
Kenya Shillings ……
……(*amount of Guarantee in words*),
and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of Kenya Shillings …….. …….. (*amount of Guarantee in words*) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change, addition or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any change, addition, or modification.

This guarantee shall be valid until the date of issue of the Certificate of Completion.

SIGNATURE AND SEAL OF THE GUARANTOR ……

Name of Bank ……

Address ……

Date ……

TENDER QUESTIONNAIRE

Please fill in block letters.

1. Full names of Tenderer:

   ……

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

   ……

3. Telephone number (s) of Tenderer:

   ……

4. Telex/Fax Address of Tenderer:
   ……

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

6. Details of Tenderer's nominated agent (if any) to receive tender notices. This is essential if the Tenderer does not have his registered address in Kenya (name, address, telephone, telex):

   ……

   ……

_____
Signature of Tenderer

CONFIDENTIAL BUSINESS QUESTIONNAIRE

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

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

Part 1 – General

Business Name ……

Location of business premises: Country/Town…….

Plot No…… Street/Road ……

Postal Address…… Tel No……..

Nature of Business……..

Current Trade Licence No…… Expiring date……

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

Name of your bankers……

Branch……

Part 2 (a) – Sole Proprietor

Your name in full…… Age……

Nationality…… Country of Origin……

Citizenship details ……

Part 2 (b) – Partnership

Give details of partners as follows:

	Name in full	*Nationality*	*Citizenship Details*	*Shares*
1.	……	…….	……..	……..
2.	……	…….	……..	……
3.	……	……	……	……
4.	……	……	……	……

Part 2(c) – Registered Company

Private or Public ……

State the nominal and issued capita of the company:

Nominal KShs. ……..

Issued KShs. ……..

Give details of all directors as follows:

	Name in full	*Nationality*	*Citizenship Details**	*Shares*
1.	……..	……	……..	……..
2.	……..	……	……..	……..
3.	……..	……	……..	……..
4.	……..	……	……..	……..

Part 2(d) Interest in the Firm:

Is there any person/persons in the employment of the Government of Kenya WHO has interest in this firm? Yes/No ……. (Delete as necessary)

I certify that the above information is correct.

…….. …….

…….

Title Signature

Date

* *Attach proof of citizenship*

KEY PERSONNEL

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

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

I certify that the above information is correct.

…….. …….. ……. ……..……

Title Signature Date

CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

Work performed on works of a similar nature and volume over the last five years.

PROJECT NAME	NAME OF CLIENT	TYPE OF WORK AND YEAR OF COMPLETION	VALUE OF CONTRACT (Kshs.)

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

…… …… ……..

Title Signature Date

SCHEDULE OF ON-GOING PROJECTS

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

PROJECT NAME	NAME OF CLIENT	CONTRACT SUM	% COMPLETE	COMPLETION DATE

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

……. ……..…… …….

Title Signature Date

FINANCIAL REPORTS FOR THE LAST FIVE YEARS
(Balance sheets, Profits and Loss Statements, Auditor's reports, etc.
List below and attach copies)

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

EVIDENCE OF FINANCIAL RESOURCES TO MEET QUALIFICATION REQUIREMENTS

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

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

NAME, ADDRESS AND TELEPHONE, TELEX AND FACSIMILE OF BANKS
(This should be for banks that may provide reference if contacted by the employer)

NAME	ADDRESS	TELEPHONE	TELEX	FACSIMILE

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

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

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

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