



REPUBLIC OF KENYA

**MINISTRY OF TRANSPORT, INFRASTRUCTURE,
HOUSING, URBAN DEVELOPMENT AND PUBLIC WORKS
(STATE DEPARTMENT OF PUBLIC WORKS)**

**PROPOSED CCTV SECURITY SYSTEM
AT
KIAMBU INSTITUTE OF SCIENCE AND TECHNOLOGY.**

TENDER NO: KIST/PRIN/CCTVSS/2022/VOL.1

TENDER DOCUMENT

DIRECTOR COUNTY PUBLIC WORKS
(DIRECTORATE OF PUBLIC WORKS)
P.O. BOX 189 -00900
KIAMBU

COUNTY ARCHITECT
(DIRECTORATE OF PUBLIC WORKS)
P.O. BOX 189-00900
KIAMBU

COUNTY QUANTITY SURVEYOR
(DIRECTORATE OF PUBLIC WORKS)
P.O. BOX 189-00900
KIAMBU

COUNTY CIVIL/STRUC. ENGINEER
(DIRECTORATE OF PUBLIC WORKS)
P.O. BOX 189-00900
KIAMBU

COUNTY MECH/ELEC. ENGINEER
(DIRECTORATE OF PUBLIC WORKS)
P.O. BOX 189-00900
KIAMBU

JUNE, 2022

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SECTION I: INVITATION FOR TENDERS

Tender Reference No. KIST/PRIN/CCTVSS/2022/VOL.1

PROPOSED INSTALLATION CCTV SECURITY SYSTEM AT KIAMBU INSTITUTE OF SCIENCE AND TECHNOLOGY

KIAMBU INSTITUTE OF SCIENCE AND TECHNOLOGY invites sealed tenders from eligible candidates for the **Proposed Installation CCTV Security System at Kiambu Institute of Science And Technology**

S.NO	TENDER NUMBER	TENDER NAME	TENDER SECURITY	CLOSING DATE
1.	KIST/PRIN/CCTVSS /2022/VOL.1	<i>Proposed Installation CCTV Security System At Kiambu Institute Of Science And Technology</i>	2% OF TENDER SUM	5 TH JULY,2022 At 10.00 A.M

Interested eligible candidates may obtain further information from and inspect the tender documents in the Procurement Office at KIAMBU INSTITUTE OF SCIENCE AND TECHNOLOGY during normal office working hours.

A complete set of tender documents may be obtained by interested candidates upon payment of a nonrefundable fee of Ksh.1,000.00 through playbill no. 700076 account name Tender no. **KIST/PRIN/CCTVSS/2022/VOL.1** payable to KIAMBU INSTITUTE OF SCIENCE AND TECHNOLOGY and paid in KIAMBU INSTITUTE OF SCIENCE AND TECHNOLOGY Finance Office. Electronic tenders will not be permitted. (Block A)

Prices quoted should be net inclusive of all taxes, and delivery costs, must be in Kenya Shillings and shall remain valid for 120 days from the closing date of the tender.

Completed tender documents are to be enclosed in plain sealed envelopes, marked **Tender No. KIST/PRIN/CCTVSS/2022/VOL.1** and be deposited in the Tender Box at the (Block B) Administration block and be addressed to;

The Principal,
Kiambu Institute of Science and Technology,
P.O Box 414-00900,
Kiambu, Kenya

So as to be received on or before **5TH July, 2022 at 10.00 A.M.**

Tenders will be opened publicly in the **Conference room** immediately after the above stated closing date and time in the presence of the candidates or their representatives who choose to attend. Late bids will be returned unopened.

Principal

FORM OF TENDER

To: The Principal,
Kiambu Institute of Science and Technology,
P.O Box 414-00900,
Kiambu, Kenya

PROPOSED INSTALLATION OF PROPOSED CCTV SECURITY SYSTEM AT KIAMBU ISTITUTE
OF SCIENCE AND TECHNOLOGY

1. In accordance with the Instructions to Tenderers, Conditions of Contract, Specifications and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct, install and complete such Works and remedy any defects therein for the sum of:

Kshs[Amount in figures]

Kenya Shillings [Amount in words]

2. We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Employer’s Representative’s notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Appendix to Conditions of Contract.
3. We agree to abide by this tender for a period of 120 days from the date of tender opening, and shall remain binding upon us and may be accepted at any time before the expiry of that period.
4. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.

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

Name.....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 (BANK SECURITY)

To: The Principal,
Kiambu Institute of Science and Technology,
P.O Box 414-00900,
Kiambu, Kenya

WHEREAS.....(hereinafter called “the Tenderer”) has submitted his tender dated. for the construction/installation of(name of Contract)

KNOW ALL PEOPLE by these presents that WE..... having our registered office at(hereinafter called “the Bank”), are bound unto(hereinafter called “the Employer” in the sum of Kshs for which payment well and truly to be made to the said Employer, the Bank bind itself, its successors and assigns by these presents sealed with the Common Seal of the said Bank thisDay of20.....

THE CONDITIONS of this obligation are:

- 1. If after tender opening the tenderer withdraws his tender during the period of tender validity specified in the instructions to tenderers

Or
- 2. If the tenderer, having been notified of the acceptance of this tender by the Employer during the period of tender validity:
 - a) fails or refuses to execute the form of Agreement in accordance with the Instructions to Tenderers, if required; or
 - b) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Tenderers;

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

This guarantee will remain in force for Two Hundred and Seventy (270) days from the date of tender opening, and any demand in respect thereof should reach the Bank not later than the said date.

[date]

[witness]

[signature of the Bank]

[seal]

FORM OF TENDER SECURITY (*INSURANCE SECURITY*)

To: The Principal,
Kiambu Institute of Science and Technology,
P.O Box 414-00900,
Kiambu, Kenya

WHEREAS.....(hereinafter called “the Tenderer”) has submitted his tender dated. for the construction/installation of
.....(n ame of Contract)

KNOW ALL PEOPLE by these presents that WE..... of(Name of Insurance Company)...having our registered office at.....(hereinafter called “ the Guarantor”), are bound unto(hereinafter called “the Procuring Entity” in the sum of Kshs.....for which payment well and truly to be made to the said Procuring Entity , the Guarantor bind itself, its successors and assigns by these presents sealed with the Common Seal of the said Guarantor thisDay of..... 20.....

THE CONDITIONS of this obligation are:

1. If after tender opening the tenderer withdraws his tender during the period of tender validity specified in the instructions to tenderers

Or

2. If the tenderer, having been notified of the acceptance of this tender by the Employer during the period of tender validity:
 - a) fails or refuses to execute the form of Agreement in accordance with the Instructions to Tenderers, if required; or
 - b) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Tenderers;

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

This guarantee will remain in force for a period of Two Hundred and Seventy (270) days from the date of tender opening, and any demand in respect thereof should reach the Bank not later than the said date.

[date]

[signature of the Guarantor]

[witness]

[seal]

SECTION A
INSTRUCTIONS TO TENDERERS

INSTRUCTIONS TO TENDERERS

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INSTRUCTION TO TENDERERS

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

GENERAL

1. Definitions

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

2. Eligibility and Qualification Requirements

- 2.1 This invitation to tender is open to all tenderers who have been prequalified.
- 2.2 To be eligible for award of Contract, the tenderer shall provide evidence satisfactory to the Employer of their eligibility under Sub clause 2.1 above and of their capability and adequacy of resources to effectively carry out the subject Contract. To this end, the tenderer shall be required to update the following information already submitted during prequalification: -
 - (a) Details of experience in ICT Networks as detailed by the Information and Communication Authority of Kenya
 - (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 (if any) 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.

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.

3. Site Visit

3.1 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.

3.2 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.

3.3 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

4. Tender Documents

4.1 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

4.2 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.

4.3 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".

5. Clarification of Tender Documents

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

6. Amendment of Tender Documents

6.1 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.

6.2 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.

6.3 If during the period of tendering, any circular letters (tender notices) shall be issued to tenderers by, or on behalf of, the Employer setting forth the interpretation to be placed on a part of the tender documents or to make any change in them, such circular letters will form part of the tender documents and it will be assumed that the tenderer has taken account of them in preparing his tender. The tenderer must promptly acknowledge any circular letters he may receive.

6.4 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

7. 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.

8. 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].

9. Tender Prices

9.1 All the insertions made by the tenderer shall be made in INK and the tenderer shall clearly form the figures. The relevant space in the Form of Tender and Bills of Quantities shall be completed accordingly without interlineations or erasures except those necessary to correct errors made by the tenderer in which case the erasures and interlineations shall be initialed by the person or persons signing the tender.

9.2 A price or rate shall be inserted by the tenderer for every item in the Bills of Quantities whether the quantities are stated or not items against which no rate or price is entered by the tenderer will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bills of Quantities.

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

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

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

- 9.3 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.
- 9.4 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.
- 9.5 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.

10. Currencies of Tender and Payment

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

11. Tender Validity

- 11.1 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.
- 11.2 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.

12. Tender Surety

12.1 The tenderer shall furnish as part of his tender, a Tender Surety in the amount stated in the Appendix to Instructions to Tenderers.

12.2 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.

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

12.4 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.

12.5 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.

13. No Alternative Offers

13.1 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.

13.2 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.

14. Pre-Tender Meeting

- 14.1 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.
- 14.2 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.

15. Format and Signing of Tenders

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

SUBMISSION OF TENDERS

16. Sealing and Marking of Tenders

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

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

18 Deadline for Submission of Tenders

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

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

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

- 18.2 The Employer may, at his discretion, extend the deadline for the submission of tenders through the issue of an Addendum in accordance with clause 7, in which case all rights and obligations of the Employer and the tenderers previously subject to the original deadline shall thereafter be subject to the new deadline as extended.
- 18.3 Any tender received by the Employer after the prescribed deadline for submission of tender will be returned unopened to the tenderer.

19 Modification and Withdrawal of Tenders

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

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

- 19.2 No tender may be modified subsequent to the deadline for submission of tenders.
- 19.3 No tender may be withdrawn in the interval between the deadline for submission of tenders and the period of tender validity specified on the tender form. Withdrawal of a tender during this interval will result in the forfeiture of the Tender Surety.
- 19.4 Subsequent to the expiration of the period of tender validity prescribed by the Employer, and the tenderer having not been notified by the Employer of the award of the Contract or the tenderer does not intend to conform with the request of the Employer to extend the 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 Dayworks where priced competitively) to Kenya Shillings at the selling rates stated in clause 25.1.

26 Evaluation and Comparison of Tenders

- 26.1 The Employer will evaluate only tenders determined to be substantially responsive to the requirements of the tender documents in accordance with clause 23.
- 26.2 In evaluating tenders, the Employer will determine for each tender the evaluated tender price by adjusting the tender price as follows:

- (a) Making any correction for errors pursuant to clause 24.
 - (b) Excluding Provisional Sums and provision, if any, for Contingencies in the Bills of Quantities, but including Day works where priced competitively.
- 26.3 The Employer reserves the right to accept any variation, deviation or alternative offer. Variations, deviations, alternative offers and other factors which are in excess of the requirements of the tender documents or otherwise result in the accrual of unsolicited benefits to the Employer, shall not be taken into account in tender evaluation.
- 26.4 Price adjustment provisions in the Conditions of Contract applied over the period of execution of the Contract shall not be taken into account in tender evaluation.
- 26.5 If the lowest evaluated tender is seriously unbalanced or front loaded in relation to the Employer's estimate of the items of work to be performed under the Contract, the Employer may require the tenderer to produce detailed price analyses for any or all items of the Bills of Quantities, to demonstrate the relationship between those prices, proposed construction methods and schedules. After evaluation of the price analyses, the Employer may require that the amount of the Performance Security set forth in clause 29 be increased at the expense of the successful tenderer to a level sufficient to protect the Employer against financial loss in the event of subsequent default of the successful tenderer under the Contract.
- 26.6 Firms incorporated in Kenya where indigenous Kenyans own 51% or more of the share capital shall be allowed a 10% preferential bias provided that they do not contract work valued at more than 50% of the Contract Price excluding Provisional Sums to a non-indigenous contract.

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 Contract in consideration of the execution and completion of the Works as prescribed by the Contract.
- 28.2 Notification of award will constitute the formation of the Contract.
- 28.3 Upon the furnishing of a Performance Security by the successful tenderer, the unsuccessful tenderers will promptly be notified that their tenders have been unsuccessful.
- 28.4 Within twenty-eight [28] days of receipt of the form of Contract Agreement from the Employer, the successful tenderer shall sign the form and return it to the Employer together with the required Performance Security.

29 Performance Guarantee

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

30 Advance Payment

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

APPENDIX TO INSTRUCTIONS TO TENDERERS

1. CLAUSE 2.1

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

2. OMIT

Clauses 4.1 (a), (d), (f), (h), (i), (j), 10.4, 10.5, 11.2, 11.4,15, 25, 26.6, 30

4. ADD TO CLAUSE 13.1

Amount of tender surety shall be **2% OF TENDER SUM** either from a reputable Bank or an Insurance Firm recommended by Public Procurement Regulatory Authority (PPRA)

5. ADD TO CLAUSE 29.1

Amount of performance security shall be one per cent (1%)

6. ADD TO CLAUSE 29.2

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

7. ADD CLAUSE 13.2

Tender surety shall be valid for ONE HUNDRED AND TWENTY (1200) days from the date of tender opening and shall be subject to extension upon agreement by the project implementation committee.

8. ADD TO CLAUSE 24

(i) In the event of a discrepancy between the tender amount as stated in the form of Tender and the corrected tender figure in the Main summary of the Bills of Quantities, the tender shall be automatically rejected.

9. MODIFY CLAUSE 10.5

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

10. MODIFY CLAUSE 16.2

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

11. CLAUSE 28.4 AND 29.1

Replace “twenty-eight (28) days” with “twenty-one (21) days”

12. MODIFY CLAUSE 16 & 17

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

13. ADD TO CLAUSE 26.

The evaluation criteria in **Appendix pages A18 – A24 shall** form part of the evaluation.

TENDER EVALUATION CRITERIA

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

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

STAGE 1: PRELIMINARY /MANDATORY REQUIREMENTS

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

These conditions may include the following:

- i) Company Certificate of incorporation/registration;
- ii) Valid company CR12 from the Registrar of Companies.
- iii) Current category of registration with Information and Communication Technology Authority of Kenya (ICT Authority) under ICT Networks Category ICTA 2 and above
- iv) Current category of Registration with National Construction Authority (NCA) in electrical specialist works category NCA8 and above
- v) Current Annual practicing License from National Construction Authority
- vi) The Bid has been submitted in the format required by the procuring entity (the bid should be submitted complete with all the sections as issued by the procuring entity) ;
- vii) Provision of a tender Security of **2% of Tender sum**, that is in the required format, amount and that the tender is valid for the period required;
- viii) Duly filled Form of Tender;
- ix) Valid KRA PIN Certificate;
- x) Valid Tax Compliance Certificate;
- xi) Duly filled Confidential Business Questionnaire;
- xii) Duly signed Statement of Compliance;
- xiii) The required number of copies of the Bid have been submitted, and all required documents and information have been submitted as stipulated in the tender, advertisement/Invitation letter;
- xiv) Proof of authorization shall be furnished in the form of a written power of attorney which shall accompany the tender if the signatory to the tender is not a director of the company (provide name and attach proof of citizenship of the signatory to the Tender).
- xv) Serialization of bid document

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 PPRA 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 **120 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”.
- a) 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 Instructions to Tenderers in Section A of this tender document and the one stated in the tender advertisement or invitation letter, the bid security shall be taken as the amount in the tender advertisement/ letter of invitation.

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

STAGE 2: TECHNICAL EVALUATION

The tender document shall be examined based on clause 2.2 of the Instructions 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 Instructions to Tenderers and their capability and adequacy of resources to effectively carry out the subject contract.

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

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

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

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

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

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

The pass-mark under the Technical Evaluation is 70 points

The detailed scoring plan shall be as shown in table 1.

TABLE 1: Technical Evaluation

Item	Description	Points Scored	Max. Point
1	<p>Compliance with Technical Specifications</p> <ul style="list-style-type: none"> • Compliant -----40 • Non-compliant ----- 0 <p><i>(Note: Tender Evaluation Committee to carryout analysis showing how decision on this requirement has been arrived at. Attach analysis on this as an Appendix)</i></p>		40
2	<p>Tender Questionnaire Form</p> <ul style="list-style-type: none"> • Completely filled -----3 • Not filled ----- 0 		3
3	<p>Key Personnel (Attach evidence)</p> <p>Director of the firm</p> <ul style="list-style-type: none"> • Holder of degree in relevant field-----4 • Holder of diploma in relevant field -----3 • Holder of certificate in relevant field----- 2 • Holder of trade test certificate in relevant field --- 1 • No relevant certificate ----- 0 <p>At least 1No. degree/diploma holder of key personnel in relevant field</p> <ul style="list-style-type: none"> • With over 10 years relevant experience----- 4 • With over 5 years relevant experience -----2 • With under 5 years relevant experience----- 1 <p>At least 1No certificate holder of key personnel in relevant field</p> <ul style="list-style-type: none"> • With over 10 years relevant experience----- 2 • With over 5 years relevant experience ----- 1 • With under 5 years relevant experience----- 0.5 <p>At least 2No artisan (trade test certificate in relevant field)</p> <ul style="list-style-type: none"> • Artisan with over 10 years relevant experience ----- 2 • Artisan with under 10 years relevant experience -----1 • Non skilled worker with over 10 years relevant experience --- 0 		12
4	<p>Contracts completed in the last five (5) years 2017-2022 (Max of 3No. Projects)- <u>Provide Evidence as completion certs</u></p> <ul style="list-style-type: none"> • 3 Project of similar nature and value -----3mks per project • 3 Project of similar nature but of lower value than the one in consideration2mks per project • No completed project of similar nature ----- 0 		9

Item	Description	Points Scored	Max. Point
5	On-going projects – Provide Evidence as award letters. & LPOs <ul style="list-style-type: none"> • No Project of similar nature, complexity and magnitude _____ 4 • Three and below Projects of similar, nature complexity and magnitude – _____ 3 • Four and above Projects of similar nature, complexity and magnitude _____ 2 		4
6	Schedule of contractor’s equipment and transport (proof or evidence of ownership/Lease)		
	a) Relevant Transport (at least 3No. each 2mks) <ul style="list-style-type: none"> • Means of transport (Vehicle) ----- 6 • No means of transport _____ 0 	6	12
	b) Relevant Equipment (at least 6No. each 1mks) <ul style="list-style-type: none"> • Has relevant equipment for work being tendered ----- 6 • No relevant equipment for work being tendered ----- 0 	6	
7	Financial report		
	a) Audited financial report signed and stamped by Audit firm (last three (3) years) ----- 15 <ul style="list-style-type: none"> • Average Annual Turn-over equal to or greater than the cost of the project _____ 6 • Average Annual Turn-over above 50% but below 100% of the cost of the project _____ 3 • Average Annual Turn-over below 50% of the cost of the project _____ 1 		15
	Name, Address and Telephone of Banks (Contractor to provide)		
	Information Provided----- 3 No Information Provided -----0		3
8	Litigation History <ul style="list-style-type: none"> • Duly Filled _____ 2 • Not filled _____ 0 		2
9	<ul style="list-style-type: none"> • TOTAL 		100

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

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

STAGE 3 - FINANCIAL EVALUATION

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

The evaluation shall be in **three stages**

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

A) Determination of Arithmetic Errors

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

- 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. Pursuant to Section 82 of the Public Procurement and Asset Disposal Act 2015, the tender sum as submitted and read out during the tender opening shall be absolute and final and shall not be the subject of correction, adjustment or amendment in any way by any person or entity;

If, in the opinion of the Tender Evaluation Committee, the arithmetic error is substantial and is to the disadvantage of the bidder under consideration, then the bidder under consideration shall be notified in writing for concurrence of such an error. If such a bidder does not concur with the error, then the bidder shall be considered financially non-responsive and disqualified from further analysis.

- ii) Error correction factor shall be computed by expressing the difference between the amount and the corrected tender sum as a percentage of the corrected contract works (i.e. corrected tender sum less P.C; and Provisional Sums);
- iii) The Error correction factor shall be applied to all contract works (as a rebate or addition as the case may be) for the purposes of valuations for Interim Certificates and valuation of variations.

B) Comparison of rates

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

The evaluation committee shall evaluate the responses and make an appropriate recommendation to the procuring entity 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

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.

“Employer’s Representative” is the person appointed by the Employer and notified to the Contractor for the purpose of supervision of the Works.

“A Variation” is an instruction given by the Employer’s Representative which varies the Works.

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

2.0 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.

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.

3.0 Language and Law

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

4.0 Project Manager's Decision

- 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.

5.0 Delegation

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

6.0 Communications

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

7.0 Subcontracting

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

8.0 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.

9.0 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.

10.0 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.

11.0 Safety and Temporary Works

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

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

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

12.0 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.

13.0 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. The Contractor shall submit to the Project Manager for approval an updated program at intervals no longer than the period stated in the Appendix to Conditions of Contract. If the Contractor does not submit an updated program within this period, the Project Manager may withhold the amount stated in the said Appendix from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue program has been submitted. The Project Manager's approval of the program shall not alter the Contractor's obligations. The Contractor may revise the program and submit it to the Project Manager again at any time. A revised program shall show the effect of Variations and Compensation Events.

14.0 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.

15.0 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.

16.0 Instructions

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

17.0 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

18.0 Management Meetings

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

19.0 Early Warning

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

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

20.0 Defects

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

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

20.3 Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified by the Project Manager's notice.

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

21.0 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.

22.0 Variations

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

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

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

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

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

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

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

23.0 Payment Certificates, Currency of Payments and Advance Payments

- 23.1 The Contractor shall submit to the Project Manager monthly applications for payment giving sufficient details of the Work done and materials on Site and the amounts which the Contractor considers himself to be entitled to. The Project Manager shall check the monthly application and certify the amount to be paid to the Contractor within 14 days. The value of work executed and payable shall be determined by the Project Manager.
- 23.2 The value of work executed shall comprise the value of the quantities of the items in the Bills of Quantities completed; materials delivered on site, variations and compensation events. Such materials shall become the property of the Employer once the Employer has paid the Contractor for their value. Thereafter, they shall not be removed from site without the Project Manager's instructions except for use upon the works.
- 23.3 Payments shall be adjusted for deductions for retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of issue of each certificate. If the Employer makes a late payment, the Contractor shall be paid simple interest on the late payment in the next payment. Interest shall be calculated on the basis of number of days delayed at a rate three percentage points above the Central Bank of Kenya's average rate for base lending prevailing as of the first day the payment becomes overdue.
- 23.4 If an amount certified is increased in a later certificate as a result of an award by an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.
- 23.5 Items of the works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.
- 23.6 The Contract Price shall be stated in Kenya Shillings. All payments to the contractor shall be made in Kenya Shillings and foreign currency in the proportion indicated in the tender, or agreed prior to the execution of the Contract Agreement and indicated therein. The rate of exchange for the calculation of the amount of foreign currency payment shall be the rate of exchange indicated in the Appendix to Conditions of Contract. If the contractor indicated foreign currencies for payment other than the currencies of the countries of origin of related goods and services, the Employer reserves the right to pay the equivalent at the time of payment in the currencies of the countries of such goods and services. 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.

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

- a) On signature of the Contract, the Contractor shall at his request, and without furnishing proof of expenditure, be entitled to an advance of 10% (ten percent) of the original amount of the contract. The advance shall not be subject to retention money.
- b) No advance payment may be made before the Contractor has submitted proof of the establishment of deposit or a directly liable guarantee satisfactory to the Employer in the amount of the advance payment. The guarantee shall be in the same currency as the advance.
- c) Reimbursement of the lump sum advance shall be made by deductions from the Interim payments and where applicable from the balance owing to the contractor. Reimbursement shall begin when the amount of the sums due under the Contract reaches 20% of the original amount of the contract. It shall have been completed by the time 80% of this amount is reached.

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

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

Where:

R = the amount to be reimbursed

A = the amount of the advance which has been granted

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

X¹¹ = the amount of the previous cumulative payments as a percentage of the original amount of the Contract.

This figure will be below 80% but not less than 20%.

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

24.0 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. 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.

24.4 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.

- 24.5 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the Appendix to Conditions of Contract.
- 24.6 The Contractor shall give written notice to the Project Manager of his intention to make a claim within thirty days after the event giving rise to the claim has first arisen. The claim shall be submitted within thirty days thereafter.

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

25.0 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. 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.
- 25.3 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 there under;
- i) The price contained in the Contract Bills of Quantities shall be deemed to be based upon the rates of wages and other emoluments and expenses as determined by the Joint Building Council of Kenya (J.B.C.) and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.
 - ii) Upon J.B.C. determining that any of the said rates of wages or other emoluments and expenses are increased or decreased, then the Contract Price shall be increased or decreased by the amount assessed by the Project Manager based upon the difference, expressed as a percentage, between the rate set out in the schedule of basic rates issued 30 days before the date for submission of tenders and the rate published by the J.B.C. and applied to the quantum of labour incorporated within the amount of work remaining to be executed at the date of publication of such increase or decrease.

- iii) No adjustment shall be made in respect of changes in the rates of wages and other emoluments and expenses which occur after the date of Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.
- 25.4 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.
- 25.5 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.
- 25.6 No adjustment shall be made in respect of changes in basic prices of materials which occur after the date for Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.
- 25.7 The provisions of sub-clause 25.1 to 25.2 herein shall not apply in respect of any materials included in the schedule of basic rate.
- 26.0 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.
- 27.0 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.

28.0 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.

29.0 Dayworks

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

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

29.3 The Contractor shall be paid for Day works subject to obtaining signed Day worksforms.

30.0 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.

31.0 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.

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

33.0 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. 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.

34.0 Payment Upon Termination

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

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

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

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

35.0 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.

36.0 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.

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.

37.0 Settlement of Disputes

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

- (i) Architectural Association of Kenya
- (ii) Institute of Quantity Surveyors of Kenya
- (iii) Association of Consulting Engineers of Kenya
- (iv) Chartered Institute of Arbitrators (Kenya Branch)
- (v) Institute of Engineers of Kenya

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

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

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

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

- 37.5 Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the works or abandonment of the works or termination of the Contract by either part:
- 37.5.1 The appointment of a replacement Project Manager upon the said person ceasing to act.
 - 37.5.2 Whether or not the issue of an instruction by the Project Manager is empowered by these Conditions.
 - 37.5.3 Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.
 - 37.5.4 Any dispute or difference arising in respect of war risks or war damage.
- 37.6 All other matter shall only be referred to arbitration after the completion or alleged completion of the works or termination or alleged termination of the Contract, unless the Employer and the Contractor agree otherwise in writing.
- 37.7 The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision requirement or notice had been given.
- 37.8 The Arbitrator shall, without prejudice to the generality of his powers, have powers to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision, requirement or notice had been given.
- 37.9 The award of such Arbitrator shall be final and binding upon the parties.

APPENDIX TO CONDITIONS OF CONTRACT

CONDITIONS OF CONTRACT CLAUSE 1

The Employer is: **KIAMBU INSTITUTE OF
SCIENCE AND TECHNOLOGY,**

Represented by The Principal

Address: P.O Box 414-0900, KIAMBU, Kenya

CONDITIONS OF CONTRACT CLAUSE 1

The name (and identification number) of the Contract is: **Proposed Installation of CCTV
SECURIY SYATEM AT KIAMBU INSTITUTE OF SCIENCE AND
TECHNOLOGY**

CONDITIONS OF CONTRACT CLAUSE 1

The Contract Works consist of **Supply, Installation, Testing, Integration &
Commissioning of CCTV SECURITY SYSTEM**

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 per the Main
Contract Works.**

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.**

CONDITIONS OF CONTRACT CLAUSE 1

The Site is located at **Kiambu County**

The site possession Date shall be as per the Contract Agreement (KABCEC)

CONDITIONS OF CONTRACT CLAUSE 1

Contract Period is to be determined on award

The Defects Liability Period is **6 months from Practical Completion Date**

CONDITIONS OF CONTRACT CLAUSE 32

Period of final measurement: **3 months after practical completion**

CONDITIONS OF CONTRACT CLAUSE 27

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

CONDITIONS OF CONTRACT CLAUSE 23

Period of honouring certificate	:	30 days
Percentage of certified value retained	:	10%
Limit of certified value retained	:	5%

SECTION C

CONTRACT PRELIMINARIES

AND

GENERAL CONDITIONS

CONTRACT PRELIMINARIES AND GENERAL CONDITIONS		
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SECTION C

CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1.01 Examination of Tender Documents

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

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

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

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

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

1.02 Discrepancies

The contract 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 Contract 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 Contract shall be required to enter into a Contract with the Main Contract.

The Conditions of the Contract between the Main Contract and the Contract as hereinafter defined shall be the latest edition of the Agreement and Schedule of Conditions of Kenya Association of Building and Civil Engineering Contracts 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 Contract, unless he specifically agrees to forego this right, in which case direct payment can be made to the Contract. 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 **KIAMBU INSTITUE OF SCIENCE AND TECHNOLOGY**
Represented by: **The Principal of KIST**
- ii) Main Contract:** The term “**Main Contract**” shall mean the firm or company appointed to carry out the Building Works and shall include his or their heir, executors, assigns, administrators, successors, and duly appointed representatives.
- vii) Contract:** The term “**Contract**” 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 Contract for the execution of the Contract Works, and shall include his or their heirs, executors, administrators, assigns, successors and duly appointed representatives.
- viii) Contract Works:** The term “**Contract Works**” shall mean all or any portion of the work, materials and articles, whether the same are being manufactured or prepared, which are to be used in the execution of this Contract and whether the same may be on site or not.

- viii) **Contract Works:** The term “**Contract Works**” shall mean all or any portion of the work, materials and articles, whether the same are being manufactured or prepared, which are to be used in the execution of this Contract and whether the same may be on site or not.
- ix) **Contract Drawings:** The term “**Contract Drawings**” shall mean those drawings required or referred to herein and forming part of the Bills of Quantities.
- x) **Working Drawings:** The term “**Working Drawings**” shall mean those drawings required to be prepared by the Contract as hereinafter described.
- xi) **Record Drawings:** The term “**Record Drawings**” shall mean those drawings required to be prepared by the Contract showing “as installed” and other records for the

Contract Works.

xii) Abbreviations:

CM shall mean **Cubic Metre**

SM shall mean **Square Metre**

LM shall mean **Linear Metre**

M shall mean **Metre**

LS shall mean **Lump Sum**

mm shall mean **Millimetres**

No. shall mean **Number**

Kg. shall mean **Kilogramme**

KEBS shall mean **Kenya Bureau of Standards**

BS shall mean. **Current standard British Standard Specification published**

by the British Standard Institution, 2 Park Street, London W1, England

“**Ditto**” shall mean the whole of the preceding description in which it occurs.

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

1.06 Site Location

The site of the Contract **Works is situated in KIST, KIAMBU County.**

The tenderer is recommended to visit the site and shall be deemed to have satisfied himself with regard to access, possible conditions, the risk of injury or damage to property on/or adjacent to the site, and the conditions under which the contract Works shall have to be carried out and no claims for extras will be considered on account of lack of knowledge in this respect.

1.07 Duration of Contract

The Contract shall be required to phase his work in accordance with the Main contract's programme (or its revision). The programme is to be agreed with the Main contract.

1.08 Scope of Contract Works

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

1.09 Extent of the Contract's Duties

At the commencement of the works, the Contract 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 Contract 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 Contract from supplying the specified materials and equipment in time.

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

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

1.10 Execution of the Works

The works shall be carried out strictly in accordance with:

- a) All relevant Kenya Bureau of Standards Specifications.

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

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

1.11 Validity of Tender

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

1.12 Firm – Price Contract

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

1.13 Variation

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

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

Where the Architect requires additional work to be performed, the Contractor, if he considers it necessary, will give notice within seven (7) days to the Main Contract of the length of time he (the Contractor) requires over and above that allotted for completion of the Contract.

If the Contractor fails to give such notice he will be deemed responsible for the claims arising from the delay occasioned by reason of such extension of time.

1.14 Prime Cost and Provisional Sums

A specialist Contract may be nominated by the Architect 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 Architect.

The whole or any part of these sums utilised by the Contract 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 Main Contract for an amount equal to 7½ % of the Contract amount as Clause 31 of the Main Contract.

1.16 Government Legislation and Regulations

The Contract'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 Contract 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 Contract 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 Contract 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 Contract 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 Contract

In accordance with Clause 1.08 of this Specification the Main Contract shall make the following facilities available to the Contract:

- a) Attendance on the Contract 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 Contract. Any purpose made fixing brackets shall not constitute Builder's Work and shall be provided and installed by the Contract unless stated hereinafter otherwise.
- b) The provision of temporary water, lighting and power: All these services utilised shall be paid for by the Main Contract. The Contract shall, however, allow for additional connections/extensions required for his purposes.
- c) Fixing of anchorage and pipe supports in the shuttering, except that all anchorage shall be
Supplied by the Contract who shall also supply the Main Contract with fully dimensioned drawings detailing the exact locations.
- d)
 - i) Provision of scaffolding, cranes, etc. but only in so far as it is required for the Main Contract Works. It shall be the Contract's responsibility to liaise with the Main Contract to ensure that there is maximum co-operation with other Contracts in the use of scaffolding, cranes, etc.
 - ii) Any specialist scaffolding, cranes, etc. by the Contract for his own exclusive use shall be paid for by the Contract.

1.20 Suppliers

The Contract 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 Contract 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 Contract shall deal direct with the Employer or Engineer, it shall mean “through the Contract” who is responsible to the Employer for the whole of the works including the 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 Contract but the value thereof shall be deducted from the Contract Sum and the value of the work ordered by the Engineer and executed there under 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 Contract shall give notice to the Quantity Surveyor or Engineer to carry out measurements before covering up. If the Contract shall make default in these respects he shall, if the Architect so directs, uncover the work to enable the necessary measurements to be taken and afterwards reinstate at his own expense.

1.24 Contract's Office in Kenya

The Contract 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 Contract to represent him at meetings and in discussions with the Main Contract, the Engineer and other parties who may be concerned and any liaison with the Contract'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 Contract's responsibility to procure work permits, entry permits, licences, registration, etc., in respect of all expatriate staff.

The Contract 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 Contract'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 Main Contract but the contract shall mark out in advance and shall be responsible for accuracy of the size and position of all holes and chases required.

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

Any purpose made fixing brackets shall not constitute builder's work and shall be provided and installed by the Contract unless stated hereinafter to the contrary.

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 Contract stated otherwise when submitting his tender.

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

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

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 Contract or the Main Contract.

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

The Contract 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 Contract 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 Contract 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 (Contract's own preliminary and proving tests excepted).

It will be deemed that the Contract 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 Contract shall commission the Contract Works and provide attendance during the commissioning of all services, plant and apparatus connected under the Contract Agreement or other Contract Agreements, related to the project.

Each system shall be properly balanced, graded and regulated to ensure that correct distribution is achieved and where existing installations are affected, the Contract 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 Contract 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 Contract 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 Contract's proposals, detailed designs and intentions in the execution of the Contract Works.

If the Contract requires any further instructions, details, Contract Drawings or information drawings to enable him to prepare his Working Drawings or proposals, the Contract 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 Contract to ensure that the installations shown on the Working Drawings have been cleared with the Main Contract and any other Contracts whose installations and works might be affected.

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

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

- a) Any drawings required by the Main Contract, or Engineer to enable structural provisions to be made including Builder's Working Drawings or Schedules and those for the detailing of holes, fixings, foundations, cables and paperwork ducting below or above ground or in or outside or below buildings.
- b) General Arrangement Drawings of all plant, control boards, fittings and apparatus or any part thereof and of installation layout arrangement of such plant and apparatus.
- c) Schematic Layout Drawings of services and of control equipment.
- d) Layout Drawings of all embedded and non-embedded paperwork, ducts and electrical conduits.

- e) Complete circuit drawings of the equipment, together with associated circuit description.
- f) Such other drawings as are called for in the text of the Specification or Schedules or as the Engineer may reasonably require.

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

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

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

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

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

1.33 Record Drawings (As Installed) and Instructions

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

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

- a) Working Drawings amended as necessary but titled "Record Drawings" and certified as a true record of the "As Installed" Contract Works. Subject to the approval of the Engineer such Working Drawings as may be inappropriate may be omitted.

- b) Fully dimensioned drawings of all plant and apparatus.
- c) General arrangement drawings of equipment, other areas containing plant forming part of the Contract Works and the like, indicating the accurate size and location of the plant and apparatus suitability cross-referenced to the drawings mentioned in (b) above and hereinafter.
- d) Routes, types, sizes and arrangement of all pipework and ductwork including dates of installation of underground pipework.
- e) Relay adjustment charts and manuals.
- f) Routes, types, sizes and arrangement of all electric cables, conduits, ducts and wiring including the dates of installation of buried works.
- g) System schematic and trunking diagrams showing all salient information relating to control and instrumentation.
- h) Grading Charts.
- i) Valve schedules and locations suitability cross-referenced.
- j) Wiring and piping diagrams of plant and apparatus.
- k) Schematic diagrams of individual plant, apparatus and switch and control boards. These diagrams to include those peculiar to individual plant or apparatus and also those applicable to system operation as a whole.
- l) Operating Instruction

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

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

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

- a) The Marked-up Drawings during the execution of the Contract Works or
- b) The Record Drawings, etc., within one month of the Section or Practical Completion

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

1.34 Maintenance Manual

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

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

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

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

- a) System Description.
- b) Plant
- c) Valve Operation
- d) Switch Operation
- e) Procedure of Fault Finding
- f) Emergency Procedures
- g) Lubrication Requirements
- h) Maintenance and Servicing Periods and Procedures
- i) Colour Coding Legend for all Services

- j) Schematic and Writing Diagrams of Plant and Apparatus
- k) Record Drawings, true to scale, folded to International A4 size
- l) Lists of Primary and Secondary Spares.

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

1.35 Hand-over

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

The procedure to be followed will be as follows:

- a) On the completion of the Contract Works to the satisfaction of the Engineer and the Employer, the Contract shall request the Engineer, at site to arrange for handing over.
- b) The Engineer shall arrange a Hand-over Meeting or a series thereof, at site.
- c) The Contract shall arrange with the Engineer and Employer for a complete demonstration of each and every service to be carried out and for instruction to be given to the relevant operation staff and other representatives of the Employer.
- d) In the presence of the Employer and the Engineer, Hand-over will take place, subject to Agreement of the Hand-over Certificates and associated check lists.

1.36 Painting

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

1.37 Spares

The Contract 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 Contract 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 Contract's own risk and should the test certificate not be approved new tests may be ordered by the Engineer at the Contract'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 Contract shall provide the necessary temporary workshop and mess-room in position to be approved by the Architect.

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

If practicable, W.C. accommodation shall be allocated for the sole use of the Contract's workmen and the Contract will be required to keep the same clean and disinfected, to make good any damage thereto and leave in good condition.

1.41 Storage of Materials

Space for storage will be provided by the Main contract but the contract will be responsible for provision of any lock-up sheds or stores required.

Nominated Contracts 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 contract 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 contract 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 contract 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 contract shall, if required, enter into a maintenance and service agreement with the employer for the installation for a period of up to five years from the day following the last day of the liability for Defects Period which offers the same facilities as specified in Clause 1.42 (Initial Maintenance).

The terms of any such agreement shall not be less beneficial to the employer than the terms of Agreements for either similar installation.

The contract shall submit with his tender for the works, where called upon a firm quotation for the maintenance and service of the installation as specified herein, which shall be based upon the present day costs and may be varied only to take into account increases in material and labour unit rate costs between the time of tendering and the signing of the formal maintenance

and service agreement and which shall remain valid and open for acceptance by the Employer to and including the last day of the fifth complete calendar month following the end of the liability for Defects Period.

1.44 Trade Names

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

1.45 Water and Electricity for the Works

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

1.46 Protection

The contract 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 12 months from the date of completion of the Main Contract as certified by the Engineer.

1.48 Damages for Delay

Liquidated and Ascertained damages as stated in the Main Contract Agreement will be claimed against the Main Contract for any unauthorised delay in completion. The Contract 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 contract 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 contract 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 - Summarising statement A and B giving the net grand total due to the Contract for the execution of the Contract.

1.51 Fair Wages

The contract 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:

- a) The contract shall pay rates of the wages and observe hours and conditions of labour not less favourable than those established for the trade or industry in the district where work is carried out.
- b) In the absence of any rates of wages, hours or conditions of labour so established the contract 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 Contract is engaged are similar.

1.52 Supervision

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

In addition, during the whole of the time the works are under construction, the contract 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 contract.

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 contract.

1.53 Test Certificates

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

1.55 Discount to the Main Contract

No discount to the Main Contract will be included in the tender for this installation.

1.56 Guarantee

The whole of the work will be guaranteed for a period of 12 months from the date of the Engineer's certification of completion and under such guarantee the Contract shall remedy at his expense all defects in materials and apparatus due to faulty design, construction or workmanship which may develop in that period.

1.60 Local and other Authorities notices and fees

The contract 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 contract 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 contract 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 contract 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 contract.

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

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

The contract 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 contract shall take precaution to prevent damage to such works.

The contract 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 contract 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 contract to the Project Manager. In like manner the Government of Kenya shall fully indemnify the contract 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 contract, 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 contract from liability should he manufacture for supply to other buyers.

1.65 Mobilization and Demobilization

The contract 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 contract has not made any provision for mobilization and demobilization of labour, plant and equipment in the preliminary bills of quantities or elsewhere in this tender.

1.66 Extended Preliminaries

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

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

1.67 Supervision by Engineer and Site Meetings

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

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

1.68 Amendment to Scope of Contract Works

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

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

1.69 Contractor's Obligation and Employers Obligation

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

1.70 APPENDIX TO CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1. ADD TO CLAUSE 1.40

There is no labour camp.

2. MODIFY CLAUSE 1.66

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

3. ADD TO CLAUSE 1.17

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

4. OMIT CLAUSE 1.12

5. MODIFY CLAUSE 1.15

Replace 7 1/2% with 5%

SECTION D
GENERAL SPECIFICATIONS
OF
MATERIALS AND WORKS

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

- 2.1 General
- 2.2 Standard of Materials
- 2.3 Workmanship
- 2.4 Procurement of Materials
- 2.5 Shop Drawings
- 2.6 Record Drawings
- 2.7 Regulations and Standards
- 2.8 Setting out Works
- 2.9 Testing on Site

2.1 GENERAL

This specification is to be read in conjunction with any other information herein issued with it. Bills of quantities and schedule of unit rates shall be the basis of all additions and omissions during the progress of the works.

2.2 STANDARD OF MATERIALS

Where the material and equipment are specifically described and named in the Specification followed by approved equal, they are so named or described for the purpose of establishing a standard to which the contractor shall adhere.

Should the contractor install any material not specified herein before receiving approval from the proper authorities, the Engineer shall direct the contractor to remove the material in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.

All materials condemned by the Engineer as not approved for use, are to be removed from the premises and suitable materials delivered and installed in their place at the expense of the Contractor. All materials required for the works shall be from branded manufacturers, and shall be new and the best of the respective kind and shall be of a uniform pattern.

2.3 WORKMANSHIP

The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman and to the satisfaction of the Engineer. Helpers shall have qualified supervision.

Any work that does not in the opinion of the Engineer conform to the best standard practice will be removed and reinstated at the contractor's expense.

Permits, Certificates or Licences must be held by all tradesmen for the type of work; in which they are involved where such permits, certificates or licences exist under Government legislation.

2.4 PROCUREMENT OF MATERIALS

The contractor is advised that no assistance can be given in the procurement or allotment of any materials or products to be used in and necessary for the construction and completion of the work.

Contractors are warned that they must make their own arrangements for the supply of materials and/or products specified or required.

2.5 RECORD DRAWINGS

These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

2.6 REGULATIONS AND STANDARDS

All work executed by the contractor shall comply with the current edition of the “Regulations” for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, Electric Power Act, Kenya Bureau of Standards (KBS), Institution of Electrical Engineers (I.E.E) Wiring Regulations, Current recommendation of CCITT and CCIR, and with the Regulations of the Local Electricity Authority and the Communications Commission of Kenya (CCK)

Where the sets of regulations appear to conflict, they shall be clarified with the Engineer.

2.7 SETTING OUT WORK

The contractor, at his own expenses, is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail to the Engineer before proceeding and must allow in his tender for all such modifications and for the provision of any such sketches or drawings related thereto.

2.9 TESTING ON SITE

The contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specifications No. 1 and No.2, Electric Supply Company’s By-Laws, Communications Commission of Kenya (CCK) requirements or any other supplementary Regulations as may be produced by the engineer.

Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation shall be rectified by the contractor at his own expense.

SECTION E
SCHEDULE OF CONTRACT DRAWINGS

SCHEDULE OF CONTRACT DRAWINGS

1.0 There are currently drawings in this contract.

The drawings shall be availed, on award of the tender, to the contractor.

SECTION F
PARTICULAR AND TECHNICAL SPECIFICATIONS
OF
MATERIALS AND WORKS

PARTICULAR SPECIFICATIONS

1.00 SITE LOCATION

The location of the proposed works is in **Kiambu, kiambu County**.

i) CLIMATE CONDITIONS

The following climate conditions can apply at the site of the contract works and all the plant, equipment, apparatus, materials and installations shall be suited for these conditions:

Mean maximum temperature	26.9 °C D.B.
Mean minimum temperature	14.6 °C D.B.
Range of relative humidity	49% - 83%
Salt content in the atmosphere	0.2%
Altitude	1088 metres above sea level
Latitude	01' 22S
Solar radiation, June	652 mean max. Langleys.

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

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

It is intended that ventilation and air filtration, if any shall be provided by others. It is not intended that the accommodation shall be air conditioned. Any requirements of this nature upon which the tender is conditional shall be clearly stated in the tender.

ii) EXTENT OF THE WORKS

The works to be carried out include the supply, delivery, installation, testing, commissioning and leaving in servicing condition ***CCTV Surveillance, Access Control, and Structured Cabling System*** as herein described in this specification. The works shall include, but not limited to the supply and installation of the following:

1. *IP CCTV Camera*. The cameras specified should be able to cover the distance with clear pictures.
2. *LED Monitors*. The color monitors must be of high resolution and preferably of plasma screen.
3. *IP Network Video Recording*. The recording multiplexer resolution has to be equally high for the monitor to display the with a high resolution.
4. *Access control system*: Readers, Magnetic locks, proximity cards etc. as specified in this document
5. *Structured Cabling System*. All associated equipment as specified in this document.

2.00 REGULATIONS AND STANDARD

The contractor shall, in execution and completion of the works in the detailed design for which he is responsible, comply with the provisions of the following as necessary and relevant;

- a) The ICT Authority Regulations
- b) The current edition of the “Regulations for the Electric Equipment of Buildings” issued by the Institution of Electrical Engineers.
- c) Kenya Bureau of Standards (KBS) Standard Specifications and Codes of Practice.

- d) Any other regulations applicable to Electric and Electronic Installations or Communications systems in Kenya.

TELECOMMUNICATIONS DISTRIBUTION SYSTEM – STRUCTURED CABLING

PART 1/1

A. GENERAL TECHNICAL SPECIFICATIONS.

- a. Section Includes: Equipment, materials, labor, and services to provide data distribution system including but not limited to:
 - 1) *Optical fiber and terminations*
 - 2) *Data/voice outlets*
 - 3) *Terminal blocks/cross-connect systems*
 - 4) *Equipment racks and cabinets*
 - 5) *System testing*
 - 6) *Documentation and submissions*
 - 8) *Surface trunking, cable ladder,*
 - 9) *Core switch, edge switches*
- b. Provide all equipment, materials, labor, and services, not specifically mentioned or shown, which may be necessary to complete or perfect all parts of the installation. Ensure that they are in compliance with requirements stated or reasonably inferred by the contract documents.

1. REFERENCES

- a. Design, manufacture, test, and install telecommunications cabling networks per manufacturer's requirements and in accordance with NFPA-70 (*National Electrical Code®*)/IEEE Regulations, state codes, local codes, requirements of authorities having jurisdiction, and particularly the following standards: ANSI/NECA/BICSI-568 -- Standard for Installing Commercial Building Telecommunications Cabling ANSI/TIA/EIA Standards.
 - 1) **ANSI/TIA/EIA-568-B.1 -- Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements**
 - 2) **ANSI/TIA/EIA-568-B.2 -- Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components**
 - 3) **ANSI/TIA/EIA-568-B.3 -- Optical Fiber Cabling Components Standard**
 - 4) **ANSI/TIA/EIA-569-A -- Commercial Building Standard for Telecommunications Pathways and Spaces**
 - 5) **ANSI/TIA/EIA-606(A) -- The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings**
 - 6) **ANSI/TIA/EIA-607(A) -- Commercial Building Grounding and Bonding Requirements for Telecommunications**
 - 7) **ANSI/TIA/EIA-526-7 -- Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant**
 - 8) **ANSI/TIA/EIA-526-14A -- Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant**
 - 9) **ANSI/TIA/EIA-758(A) -- Customer-Owned Outside Plant Telecommunications Cabling Standard**
 - 10) **ISO/IEC 1101 Amendment 2**
- b. Local codes, rules, regulations, and ordinances governing the work, are as fully part of the specifications as if herein repeated or hereto attached. If the contractor should note items in the drawings or the specifications, construction of which would be code violations, promptly call them to the attention of the Project Manager in writing. Where the requirements of other sections of the specifications are more stringent than applicable codes, rules, regulations, and ordinances, the specifications shall apply.

2. PERMITS, FEES, AND CERTIFICATES OF APPROVAL

- a. The Contractor to include the cost of application and pay for building permit.
- b. As prerequisite to final acceptance, supply to the client certificates of inspection from an inspection agency acceptable to the owner and approved by local municipality and utility company serving the Project Manager.

3. SYSTEM DESCRIPTION

- a. A telecommunications cabling system generally consists of one telecommunications outlet in each workstation, wall telephones in common and power socket outlet.
- b. The typical work area consists of a single-gang plate with two standards compliant work area outlets.
- c. *One work area outlet consists of one (1) four-pair data Category 6 cable or above, installed from work area outlet to the data cabinet. Terminate data cables on modular patch panels located in the appropriate data cabinet.*
- d. *One work area outlet consists of one (1) four-pair screened (ScTP) cable installed from work area outlet to the data termination rack in the cabinet. Terminate data cables on rack mounted modular patch panels.*
- e. Vertical/horizontal copper backbone cabling consists of multiple pair unshielded twisted-pair installed from the main cross-connect (MC) to the horizontal cross-connect (HC) and/or from the MC to the intermediate cross-connect (IC) to the HC.
- f. Vertical/horizontal backbone cabling consists of 62.5/125 μm multimode optical fiber cable installed from the MC to the HC and/or from the MC to the IC to the HC. *Specification Note: State what this backbone will be utilized for. Examples are voice telecommunications service, premises switching equipment, data communications, etc.*

4. SUBMITTALS

a Submit to the P.M shop drawings, product data (including cut sheets and catalog information), and samples required by the contract documents. Submit shop drawings, product data, and samples with such promptness and in such sequence as to cause no delay in the work or in the activities of separate contracts. The engineer will indicate approval of shop drawings, product data, and samples submitted to the engineer by stamping such submittals "APPROVED" with a stamp. Submitted shop drawings shall be initialed or signed by the contractor, showing the date and the contractor's legitimate firm name.

1) By submitting shop drawings, product data, and samples, the contractor represents that he or she has carefully reviewed and verified materials, quantities, field measurements, and field construction criteria related thereto. It also represents that the contractor has checked, coordinated, and verified that information contained within shop drawings, product data, and samples conform to the requirements of the work and of the contract documents. The engineer/designer remains responsible for the design concept expressed in the contract documents as defined herein.

2) The P.M approval of shop drawings, product data, and samples submitted by the contractor shall not relieve the contractor of responsibility for deviations from requirements of the contract documents, unless the contractor has specifically informed the engineer/designer in writing of such deviation at time of submittal, and the engineer/designer has given written approval of the specific deviation. The contractor shall continue to be responsible for deviations from requirements of the contract documents not specifically noted by the contractor in writing, and specifically approved by the engineer in writing.

3) The P.M approval of shop drawings, product data, and samples shall not relieve the contractor of responsibility for errors or omissions in such shop drawings, product data, and samples.

4) The P.M review and approval, or other appropriate action upon shop drawings, product data, and samples, is for the limited purpose of checking for conformance with information given and design concept expressed in the contract documents. The engineer's review of such submittals is not conducted for the purpose of determining accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the contractor as required by the contract documents.

The review shall not constitute approval of safety precautions or of construction means, methods, techniques, sequences, or procedures. The P.M approval of a specific item shall not indicate approval of an assembly of which the item is a component.

b. Shop drawings: Submit the following:

Coordinate with Part 2.

- 1) Backbone (riser) diagrams
 - 2) System block diagram, indicating interconnection between system components and subsystems
 - 3) Interface requirements, including connector types and pin-outs, to external systems and systems or components not supplied by the contractor
- 4) Fabrication drawings for custom-built equipment

c. Product Data -- Provide catalog cut sheets and information for the following:

Coordinate with Part 2..

- 1) Wire, cable, and optical fiber
- 2) Outlets, jacks, faceplates, and connectors
- 3) All metallic and nonmetallic raceways, including surface raceways, outlet boxes, and fittings
- 4) Terminal blocks and patch panels
- 5) Enclosures, racks, and equipment housings
- 6) Over-voltage protectors
- 7) Splice housings

d. Samples-- Submit samples as required by the engineer .

e. Project record drawings:

- 1) Submit project record drawings at conclusion of the project and include:
 - (a) *Approved shop drawings*
 - (b) *Plan drawings indicating locations and identification of work area outlets, nodes, data cabinet rooms, and backbone (riser) cable runs*
 - (c) *Cross-connect schedules including entrance point, main cross-connects, intermediate cross-connects, and horizontal cross-connects.*
 - (d) *Labeling and administration documentation.*
 - (e) *Warranty documents for equipment.*
 - (f) *Copper certification test result printouts and diskettes.*
 - (g) *Optical fiber power meter/light source test results.*
 - (h) *Operation and maintenance manuals:*

5. QUALITY ASSURANCE

- a. The contractor shall have worked satisfactorily for a minimum of Two (2) years on ICT Networks
- b. Upon request by the P.M, furnish a list of references with specific information regarding type of project and involvement in providing of equipment and systems.
- c. Equipment and materials of the type for which there are independent standard testing requirements, listings, and labels, shall be listed and labeled by the independent testing laboratory.
- d. Where equipment and materials have industry certification, labels, or standards (i.e., NEMA - National Electrical Manufacturers Association), this equipment shall be labeled as certified or complying with standards.
- e. Material and equipment shall be new, and conform to grade, quality, and standards specified. Equipment and materials of the same type shall be a product of the same manufacturer throughout.

6. WARRANTY

Unless otherwise specified, unconditionally guarantee in writing the materials, equipment, and workmanship for a period of not less than Two (2) years from date of commissioning of the project for active components.

Transfer manufacturer's warranties to the owner in addition to the General System Guarantee.

Submit these warranties on each item in list form with shop drawings. Detail specific parts within equipment that are subject to separate conditional warranty. Warranty proprietary equipment and systems involved in this contract during the guarantee period. Final payment shall not relieve you of these obligations.

7. DELIVERY, STORAGE, AND HANDLING

Protect equipment during transit, storage, and handling to prevent damage, theft, soiling, and misalignment. Coordinate with the client for secure storage of equipment and materials. Do not store equipment where conditions fall outside manufacturer's recommendations for environmental conditions. Do not install damaged equipment; remove from site and replace damaged equipment with new equipment.

8. SEQUENCE AND SCHEDULING

Submit schedule for installation of equipment and cabling. Indicate delivery, installation, and testing for conformance to specific job completion dates. As a minimum, dates are to be provided for bid award, installation start date, completion of station cabling, completion of riser cabling, completion of testing and labeling, cutover, completion of the final punch list, start of demolition, owner acceptance, and demolition completion.

9. USE OF THE SITE

Access to building wherein the work is performed shall be as directed by the P.M.

The client will occupy the premises during the entire period of construction for conducting his or her normal business operations. Cooperate with the client to minimize conflict and to facilitate the owner's operations.

Schedule necessary shutdowns of plant services with the contractor, and obtain written permission from the client.

Proceed with the work without interfering with ordinary use of streets, aisles, passages, exits, and operations of the client.

PART 2/1 - PRODUCTS

1. MANUFACTURERS

Provide products of manufacturers as named in individual articles. Where no manufacturer is specified, provide products of manufacturers in compliance with requirements.

2. FABRICATION

Fabricate custom-made equipment with careful consideration given to aesthetic, technical, and functional aspects of equipment and its installation.

3. SUITABILITY

Provide products that are suitable for intended use, including, but not limited to environmental, regulatory, and electrical.

4. VOICE/DATA TELECOMMUNICATIONS SERVICE BACKBONE CABLE

a. Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP) backbone cable, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.2

b. Multimode 62.5/125 μm diameter tight-buffered optical fiber, with fiber counts as indicated on drawings, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.3

5. VOICE TELECOMMUNICATIONS STATION CABLE

a. Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP) Category 6e cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 up to 100 MHz.

6. DATA STATION CABLE (Copper)

a. Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP) Category 6e cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 up to 100 MHz.

b. Solid copper, 24 AWG, 100 Ω balanced twisted-pair, screened (ScTP) cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 (Annex K) up to 100 MHz.

7. DATA STATION CABLE (Optical Fiber)

a. Multimode 62.5/125 μm diameter tight-buffered optical fiber, with the required number of fiber counts, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA/EIA-568-B.3

8. UNDERGROUND TELECOMMUNICATIONS CABLE (Copper)

If you have copper cables installed outside between buildings, be certain to specify overvoltage protectors on both ends of the cable. See article, OVERVOLTAGE PROTECTORS.

Solid copper, 24 AWG 100 Ω balanced twisted-pair, gel-filled duct cable, in sizes as indicated on the drawings, which meet or exceed the mechanical and transmission performance specifications listed in ANSI/TIA/EIA-568-B.2 and ANSI/TIA/EIA-758(A).

9. UNDERGROUND TELECOMMUNICATIONS CABLE (Optical Fiber)

Singlemode 8.7 µm to 10 µm diameter, armored, gel-filled optical fiber, with number of usable fibers as shown on drawings, which meet or exceed the mechanical and transmission performance specifications listed in ANSI/TIA/EIA-568-B.3 and ANSI/TIA/EIA-758(A).

10. VOICE/DATA – COPPER & OPTICAL FIBER WORK AREA OUTLETS

Edit for items that will actually be used on the project.

Pick a color for the faceplate and each type of jack, or make them all one color.

Determine which pinning standard is to be used, T568A, T568B, or USOC. If not otherwise specified, specify T568A. Use either 10c with SC connectors or 10d (1) for ST connectors. SC connectors are preferred. Use ST connectors to match existing cable plant if required.

Single-gang mounting plate with two (2) openings containing the following devices:

a. Data Outlet - 8-pin modular, category 6e, unkeyed, black, pinned to either T568 (A or B) standards.

b. Optical Fiber Connectors – simplex ST - ST adapter.

Provide two optical fiber adapters for each faceplate

11. VOICE/DATA WORK AREA OUTLETS (Copper only)

Single-gang mounting plate with four (4) openings containing the following devices:

Data Outlet - 8-pin modular, Category 6e, unkeyed, black, pinned to either T568 (A or B) standards.

12. VOICE ONLY WORK AREA OUTLET

Single-gang faceplate with 8-pin modular, category 6e, unkeyed, ivory telephone jack, pinned to either T568 (A or B) standards

13. TERMINATION BLOCKS

For items that will actually be used on the project: Coordinate with MC, IC and HC layout drawing.

a. Product(s) as approved by the P.M: Wiring blocks are to be in following configurations:

1) List dimensional configurations

2) ER – List pairs categorized for PBX portion of ER and pairs field terminated for backbone and CO portion of ER

Provide wiring troughs between ER frame sections.

14. PATCH PANELS

Specification Note: Alter quantities to match job requirements.

19 in. rack mountable, 24-port 8-pin modular to insulation displacement connector (IDC) meeting Category 6e performance standards, and pinned to either T568 (A or B) standards. Typical examples of IDC connections are the 110, BIX, and Krone.

15. WALL MOUNTED OPTICAL FIBER PATCH PANELS

Specification Note: Alter quantities to match job requirements

Wall-mounted optical fiber termination panel with 12-fiber capacity, hinged door, cable strain relief, slack storage, and two 6-port SC or approved alternative connector panels with adapters and provisions for two splice trays.

16. RACK MOUNTED OPTICAL FIBER TERMINATION PANEL

Specification Note: Alter size to match job requirements. Coordinate with connector type.
19 in. rack mounted 72-port rack-mounted optical fiber termination panel with cable strain relief, grounding lugs, slack storage and three 12-port duplex SC or approved alternative connector panels with adapters and provisions for six (6) splice trays.

17. SPLICE TRAYS *Sized for single mode and multimode fibers, nonmetallic with clear plastic cover, 12-fiber splice capacity, compatible with splice enclosure and splicing method.*

18. OPTICAL FIBER CONNECTORS

Ceramic tipped field installed 568SC connectors, which meet or exceed the performance specifications in ANSI/TIA/EIA-568-B.3. Various alternative field installed connector designs, which meet or exceed the performance specifications in ANSI/TIA/EIA-568-B.3 (Annex A).

19. OPTICAL FIBER JUMPERS

Dual 62.5/125- μm (*and/or single mode*) optical fiber jumper cable, 1 m long with 3.0 mm Duplex 568SC optical fiber connectors on each end.

Dual 62.5/125- μm (*and/or single mode*) optical fiber jumper cable, 1 m long with approved alternative duplex optical fiber connectors on each end.

20. OPTICAL FIBER PIGTAILS

62.5/125 μm (*and/or single mode*) optical fiber pigtail 1 m long with 3.0 mm single 568 SC optical fiber connectors on one end

21. OPEN FRAME EQUIPMENT RACK

Open frame, 19 in. equipment rack, 7 foot 6 in. overall height with flange base, mounting rails drilled front and back and tapped to EIA standards, and a front-rack mountable 10 outlet multiple outlet electrical strip or 42u enclosed glazed.

22. EQUIPMENT RACKS/CABINETS

Specification Note: Use 19 in. or change to 23 in. as required. If using wall-mounted racks or cabinets, add required specifications here. Add and delete features as required.

a. The 19 in. equipment rack shall have the following minimum requirements:

- 77 in. (44 rack spaces) of panel space
- Welded frame construction
- Locking front and rear doors
- Adjustable front and back equipment mounting rails drilled and tapped to EIA standards
- 10 position electrical outlet strip
- Removable side panels
- Top mounted, thermostatically controlled exhaust fan
- Smoked acrylic front door.

23. LISTED BUILDING ENTRANCE PROTECTORS

Use when copper cables are run outside of building.

Use appropriate protector modules.

Building entrance terminal utilizing a two (2) foot fuse link between the outside cable plant splice and the protector module with IDC type input and output terminals, 100-pair capacity and female mounting base, equipped with 230 volt solid state protector modules. Provide sufficient protector modules to completely populate all building entrance terminals.

24. SPLICE HOUSING

Use this or something else. Delete splice modules if used for optical fiber cables.

- a. Encapsulated, re-enterable splice housing, sized as required with bonding straps, accessories, end caps and encapsulant as required
- b. Splice modules (such as 710 series or MS²) for use within splice housing

25. SPARES

Change quantities to suit job size. Edit to match that which is actually specified.

- a. Furnish the following spare equipment and parts:

Terminal block connectors, if required

Test set cords, if required

Install one test cord set in each telecommunications closet

Five (5) percent of base bid quantity of each type of jack shall be provided

Five (5) percent of base bid quantity of each type of outlet

Five thousand (5000) ft of each type of station cable

One thousand (1000) ft of one-pair cross-connect wire for each telecommunications closet

One thousand (1000) ft of two-pair cross-connect wire for each telecommunications closet

Five (5) percent of base bid quantity of protector modules

EXECUTION

1. PRE-INSTALLATION SITE SURVEY

- a. Prior to start of systems installation, meet at the project site with the P.M and representatives of trades performing related work to coordinate efforts. Review areas of potential interference and resolve conflicts before proceeding with the work. Facilitation with the Client will be necessary to plan the crucial scheduled completions of the equipment room and telecommunications closets.
- b. Examine areas and conditions under which the system is to be installed. Do not proceed with the work until satisfactory conditions have been achieved.

2. HANDLING AND PROTECTION OF EQUIPMENT AND MATERIALS

- a. Be responsible for safekeeping of your own, such as equipment and materials, on the job site. The client assumes no responsibility for protection of above named property against fire, theft, and environmental conditions.

3. PROTECTION OF OWNER'S FACILITIES

- a. Effectively protect the client's facilities, equipment, and materials from dust, dirt, and damage during construction.
- b. Remove protection at completion of the work.

4. INSTALLATION

Receive, check, unload, handle, store, and adequately protect equipment and materials to be installed as part of the contract. Store in areas as directed by the owner's representative. Include delivery, unloading, setting in place, fastening to walls, floors, ceilings, or other structures where required, interconnecting wiring of system components, equipment alignment and adjustment, and other related work whether or not expressly defined herein.

Install materials and equipment in accordance with applicable standards, codes, requirements, and recommendations of national, state, and local authorities having jurisdiction, and *National Electrical Code*® (NEC) and with manufacturer's printed instructions.

Adhere to manufacturer's published specifications for pulling tension, minimum bend radii, and sidewall pressure when installing cables.

- 1) Where manufacturer does not provide bending radii information, minimum-bending radius shall be 15 times cable diameter. Arrange and mount equipment and materials in a manner acceptable to the P.M and the client.

e. Penetrations through floor and fire-rated walls shall utilize intermediate metallic conduit (IMC) or galvanized rigid conduit (GRC) sleeves and shall be fire stopped after installation and testing, utilizing a fire stopping assembly approved for that application.

f. Install station cabling to the nearest telecommunications room (TR), unless otherwise noted.

g. Installation shall conform to the following basic guidelines:

- 1) Use of approved wire, cable, and wiring devices
- 2) Neat and uncluttered wire termination

h. Attach cables to permanent structure with suitable attachments at intervals of 1200-1500mm. Support cables installed above removable ceilings.

i. Install adequate support structures for 10 foot of service slack at each TR.

j. Support riser cables every floor and at top of run with cable grips.

- 1) Limit number of four-pair data riser cables per grip to fifty (50)

k. Install cables in one continuous piece. Splices shall not be allowed except as indicated on the drawings or noted below:

l. Provide over voltage protection on both ends of cabling exposed to lightning or accidental contact with power conductors.

Specification Note: Insert any other specific installation requirements here, such as hook and latch fasteners instead of cable ties, etc.

5. GROUNDING

Edit as required.

a. Grounding shall conform to ANSI/TIA/EIA 607(A) - *Commercial Building Grounding and Bonding Requirements for Telecommunications, National Electrical Code®*, ANSI/NECA/BICSI-568 and manufacturer's grounding requirements as minimum.

b. Bond and ground equipment racks, housings, messenger cables, and raceways.

c. Connect cabinets, racks, and frames to single-point ground which is connected to building ground system via #6 AWG green insulated copper grounding conductor.

6. LABELING

Use 6d if the type of termination block permits labels. Otherwise use 6e.

Use 6g if the owner does not have a standard for outlet numbering.

Use 6h if required. Alter time as requested.

Labeling shall conform to ANSI/TIA/EIA-606(A) standards. In addition, provide the following:

a. Label each outlet with permanent self-adhesive label with minimum 3/16 in. high characters.

b. Label each cable with permanent self-adhesive label with minimum, 1/8 in. high characters, in the following locations:

1) Inside receptacle box at the work area.

2) Behind the communication closet patch panel or punch block.

c. Use labels on face of data patch panels. Provide facility assignment records in a protective cover at each telecommunications closet location that is specific to the facilities terminated therein.

d. Use color-coded labels for each termination field that conforms to ANSI/TIA/EIA-606(A) standard color codes for termination blocks.

e. Mount termination blocks on color-coded backboards.

f. Labels shall be machine-printed. Hand-lettered labels shall not be acceptable.

g. Label cables, outlets, patch panels, and punch blocks with room number in which outlet is located, followed by a single letter suffix to indicate particular outlet within room, i.e., S2107A, S2107B. Indicate riser cables by an R then pair or cable number.

h. Mark up floor plans showing outlet locations, type, and cable marking of cables. Turn these drawings over to the owner two (2) weeks prior to move in to allow the owner's personnel to connect and test owner-provided equipment in a timely fashion.

i. Three (3) sets of as-built drawing shall be delivered to the owner within four (4) weeks of acceptance of project by the owner. A set of as-built drawings shall be provided to the owner in magnetic media form (3.5" floppy disks) and utilizing CAD software that is acceptable to the owner. The magnetic media shall be delivered to the owner within six (6) weeks of acceptance of project by owner.

7. TESTING

Testing shall conform to ANSI/TIA/EIA-568-B.1 standard. Testing shall be accomplished using level IIe or higher field testers.

Test each pair and shield of each cable for opens, shorts, grounds, and pair reversal. Correct grounded, and reversed pairs. Examine open and shorted pairs to determine if problem is caused by

improper termination. If termination is proper, tag bad pairs at both ends and note on termination sheets.

- 1) Perform testing of copper cables with tester meeting ANSI/TIA/EIA-568-B.1 requirements.
- 2) If copper backbone cable contains more than one (1) percent bad pairs, remove and replace entire cable.

Use 2 or 3 as required.

- 3) If copper cables contain more than the following quantity of bad pairs, or if outer sheath damage is cause of bad pairs, remove and replace the entire cable:

CABLE SIZE	MAXIMUM BAD PAIRS
<100	1
101 to 300	1 – 3
301 to 600	3 – 6
>601	6

- 4) If horizontal cable contains bad conductors or shield, remove and replace cable. Initially test optical cable with a light source and power meter utilizing procedures as stated in ANSI/TIA/EIA-526-14A: *OFSTP-14A Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant* and ANSI/TIA/EIA-526-7 *Measurement of Optical Power Loss of Installed Single mode Fiber Cable Plant*. Measured results shall be plus/minus 1 dB of submitted loss budget calculations. If loss figures are outside this range, test cable with optical time domain reflectometer to determine cause of variation. Correct improper splices and replace damaged cables at no charge to the owner.

- 1) Cables shall be tested at 850 and 1300 nm for multimode optical fiber cables. Cables shall be tested at 1310 and 1550 nm for single mode optical fibers.
- 2) Testing procedures shall utilize “Method B” – One jumper reference.
- 3) Bi-directional testing of optical fibers is required.

- d. Perform optical time domain reflectometer (OTDR) testing on each fiber optic conductor. Measured results shall be plus/minus 1 dB of submitted loss budget calculations.

- 1) Submit printout for each cable tested.

- 2) Submit 3.5 in. disks with test results and program to view results.

e. Where any portion of system does not meet the specifications, correct deviation and repeat applicable testing at no additional cost.

FIELD QUALITY CONTROL

a. Employ job superintendent during the course of the installation to provide coordination of work of this specification and of other trades, and provide technical information when requested by other trades. This person shall maintain current RCDD® (Registered Communications Distribution Designer) registration and shall be responsible for quality control during installation, equipment set-up, and testing.

b. At least 30 percent of installation personnel shall be *BICSI Registered Telecommunications Installers*. Of that number, at least 15 percent shall be registered at the *Technician Level*, at least 40 percent shall be registered at the *Installer Level 2*, and the balance shall be registered at the *Installer Level 1*.

Specification Note: Use this or insert manufacturer's requirements for installer qualifications to meet extended warranty program requirements.

c. Installation personnel shall meet manufacturer's training and education requirements for implementation of extended warranty program.

B. PARTICULAR SPECIFICATIONS FOR STRUCTURED CABLING

1.0 SITE LOCATION

The site of the proposed works is located at **KIST, KIAMBU County,**

2.0 DESCRIPTION OF THE PROJECT

The works to be carried out comprise the following;

- i) Configure and set up the structured cabling system to be used on LAN,
- ii) Produce test result, warranty certification, reports and as installed drawings.
The Network will be capable of supporting approximately 400 data/voice points.

3.0 REGULATIONS

The contractor shall, in execution and completion of the works in the detailed design for which he is responsible, comply with the provisions of the following as necessary and relevant;

- a) ISO/IEC, CAK, ATM CENELEC 11801
- b) ANSI/EIA/TIA 56
- c) Latest Edition of IEE Regulation
- d) Kenya Bureau of Standards
- e) Electric Power Act and Rules made there under.

4.0 WORKING DRAWINGS

The Contractor shall submit to the Project Manager working drawings for the proposed system for approval. The drawings will show the locations of and identifiers for all cable routing and terminations, telecommunication outlets/connectors. Location of core switch and Edge switches.

5.0 NETWORK CABINETS

- a) To be located on floor in designated room(s) as indicated in the electrical drawings.
- b) Must be metallic (appropriately sized as specified in the BQ) with a front clear glass, free standing, complete with lock and key and the following accessories;
 - Cable Management channel rack
 - Cable support hooks
 - Cable support rings and straps
 - Cable duct cover
 - Feed through cable panels
 - Vented equipment shelving

- Blank filler panels
- Hinged wall mounted brackets
- Glass viewing window
- Colored Designation strips
- Management lock and key
- Cooling extractor fans
- Caster wheels
- Inbuilt 2-gang power socket outlet

6.0 ACTIVE CONTROL EQUIPMENTS AT THE NETWORK CORE

The active control equipment at the core should have the following features:

- a. Backplane/switch fabric Bandwidth Capacity of 150 GBPS or more
- b. IEEE 802.3 compliant for power over Ethernet
- c. IEEE 802.1 based security compliant
- d. SNMP compliant for security
- e. Layer 2/3/4 switch
- f. Should support Gigabit Ethernet to the desktop
- g. Should have at least 10-slots or higher chassis
- h. At least 2 No. Long Range X2 Modules
- i. At least 1 No. 12 Port SFP Module
- j. At least 1 No. 48 Port 10/100/1000 Module
- k. At least 1 No. 24 Port 10/100/1000 Module for CCTV
- l. The core switches should have two links to each floor configured in active/active configuration. The links should deliver 2GBPS throughput when all ports are active.
- m. The core switch should have redundant power supply, redundant fan tray and redundant CPU/ supervisor engine installed
- n. Fiber cable linking stacks on each floor to the core should be connected to 1000Base X(GBIC) port on the core switch.
- o. Should be installed with the latest version of system software at the time of delivery.
- p. Should support Quality of service for various applications.

7.0 ACTIVE CONTROL EQUIPMENTS AT THE LAN EDGE

Active control equipments at the LAN Edge should have the following features

- a) Active control equipments at the LAN Edge should support 10/100/1000 MBPS on all ports (RJ45) and Gigabit to the desktop connectivity
- b) The equipments should have at least two 1000BaseXGigabit uplink ports for terminating backbone Fiber.
- c) The equipments should support layer 3 routing.
- d) Should support IEEE 802.1, SSH, SNMP.
- e) More than 12,000MAC addresses should be available on each switch.
- f) Switch Fabric forwarding Bandwidth of 64GBPS or more.
- g) The switches should have 24/48 ports of 10/100/1000 MBPS.

- h) Each stack on the edge will have two links of Fiber to the core switch, totaling two fiber terminations from the core switch to the stack.
- i) Should support Jumbo frames.
- j) Total stack throughput bandwidth of 64 GBPS or more
- k) Active Equipments at the LAN Edge should be quoted with a minimum of **One years of warranty** covering free replacement of parts and units.
- l) Integrated wireless access points controller
- m) Active equipment must be stackable
- n) All ports must support power over Ethernet

8.0 NTU Specifications

Type	: HDSL
Max Data Transfer Rate	: 2Mbps
Mode of Operation	: DCE
Connector	: DB37
Interface Cable	: DB37-DB15

9.0 ROUTER Specifications

The router shall have the following as the minimum specifications

Memory:	1GB expandable to 4GB
Flash Memory:	512MB
Interfaces:	5 x Fast Ethernet LAN Ports 1 x Serial WAN Port Auxiliary Port Console Port
Expansion Slots:	1 Network Module Slot
Software:	Latest Software release
Installation:	Standard 19" Rack Mount Kit

10.0 NETWORK MANAGEMENT SYSTEM

Bidders must propose the manufacturers Network Management system for centralized configuration, maintenance and troubleshooting of active equipments. Third party stand alone systems should not be offered as part of the solution.

Features and functionalities of the system should include the following:

- a) Should be compatible with Microsoft windows/Linux operating systems
- b) Graphical User Interface for central Management and network viewing
- c) Network discovery and inventory management
- d) VLAN, multicast, security and load-balancing/fail over configuration
- e) Downloading and saving of log file from the device flash memory
- f) Centralized upgrade/backup and archiving of active devices
- g) Export of network topology to JPEG or other standard formats.

11.0 CABLE

i) UTP CABLE

The UTP cable must be category 6 compliant UTP cable, with the following specifications;

- a) 4-pair cables with 100 ohm impedance.
- b) Compliant to standards such as TIA/EIA – 268-B. 2-1 and IEC 61156-5

- c) Made of polyethylene insulation
- d) Pulling force should support up to 50N/mm²
- e) Low Smoke Zero Halogen outer sheath

ii) **OPTICAL FIBRE CABLE**

The fibre cable must be 8 core multimode fibre with the following specifications:-

- a) Cable size: 8 core.
- b) Termination: SC Duplex connectors.
- c) Graded Index: Nominal 62.5/125 micro. m

12.0 CAT 6A PATCH PANELS

The Contractor shall provide factory made patch panels, cat 6 complete with cable management and front designation strips, 110 PCB mounted connectors and integral RJ mounted jack sockets.

13.0 FIBER PATCH PANELS

All Backbone Fiber links to individual floors should be terminated on Fiber Patch Panels. Connector interfaces should support ST, Sc simplex, Sc duplex, FC, LC or MT-RJ.

14.0 ..BACK BONE

Backbone cabling inclusive of switches and all necessary accessories shall be carried out in readiness for the termination of edge switches.

The Backbone cabling shall be flexible and allow for easy ‘add on’s’ for future expansions. Hence enough capacity shall be allowed for future expansion.

15.0 EDGE/FLOOR SWITCHES

These shall be per floor/wing and have enough capacity for expansion

16.0 COMPLETION COMMISSIONING OF STRUCTURED CABLING WORKS

16.1 Upon completion of the installation, all cabling links must be tested for the following parameters, using Level Three testers:-

- a) Category 6A Cable Tests
 - 1. Wire Map
 - 2. Length
 - 3. Insertion Loss (Attenuation)
 - 4. NEXT Loss
 - 5. PSNEXT Loss
 - 6. ELFEXT Loss, pair-to-pair
 - 7. PSELFEXT Loss
 - 8. Return Loss
 - 9. ACR (Attenuation to crosstalk ratio)
 - 10. PSACR
 - 11. Propagation Delay
 - 12. Delay Skew
- b) Fibre Optic Cable Tests

1. Link attenuation (insertion loss)
2. Length

Any failing link must be diagnosed and corrected. The corrective action shall be followed with a new test to prove that the corrected link meets the performance requirements.

The results should be recorded in one or several measure books showing test results of the cable components. In addition, the measurements must be recorded on two soft copies (CD-ROM).

16.2 All components must be tested and a Completion Certificate issued stating the following:

- a. Number of outlets
- b. Type of cable
- c. Date completed
- d. Type of Warranty

In addition, an "as-built" package must be submitted with the following information

- a. Updated floor plans
- b. Wire/cable routing schematic
- c. Facility assignment records
- d. Horizontal cable test results
- e. Fibre Backbone test results

17.0 Documentation

The contractor shall avail documentation (2 copies) detailing the layout and devices or components of the system and must include all information for maintenance technicians to run, service, extend or maintain the network. In particular, the documentation must be structured and contain the following:

- a. Synopsis of the cabling (primary and secondary)
- b. Charts of the distribution highlighting the details of the elements that have been installed
- c. Detailed map of socket layout (2 Soft copies on CD-ROM should be availed)
- d. Reports on measurements (2 Soft copies on CD-ROM should be availed)

The CD-ROMs provided shall include the software tools required to view, inspect and print any selection of test reports.

18.0 Warranty and Support

- 3.1 The Contractor will be required to give a per link warranty of at least two (2) years for the structured cabling infrastructure and must provide a site certification certificate from the manufacturer of the cabling infrastructure not more than 30 days after completion of tests.
- 3.2 In the event of failure of the core switch, the contractor will be required to deliver any necessary parts on the next business day after determining that parts replacement is required, during the standard work week (8 hours a day, 5 days a week). This support will be carried out by a field engineer and will run for a period of Twenty-Four months from the date of commissioning of the LAN.
- 3.3 The contractor will be required to provide a sixty months warranty on the edge switches from the date of commissioning of the LAN.

19.0 ADDITIONAL NOTES

Tenderers should take note of the following

- a) The network should be capable of carrying data, voice and video. QOS should be considered as part of installation and configuration of the network.
- b) All active LAN equipments should be from the same manufacturer for seamless integration, management and maintenance.
- c) Each floor should have a telecommunication Closet to house the necessary structured cabling components and active equipments.

1.00 MINIMUM REQUIREMENTS FOR THE PROPOSED IP CCTV SYSTEM

The cameras shall have the following minimum specifications but cameras with higher specifications shall be accepted:

- a) IP Dome CCTV Cameras-4MP
 - 1/2.9” progressive scan RGB CMOS
 - Built in Infrared 20 meters minimum
 - Progressive scan RGB CMOS 1/2.5”Wide Dynamic Range – 120dB
 - 3.1 mm, F2.0 Horizontal field of view: 100° Vertical field of view: 54° Fixed iris, IR corrected
 - Forensic WDR, Lightfinder and OptimizedIR
 - Motorized Varifocal Auto Iris lens
 - long-life 850 nm IR LEDs
 - Day and night vision; Minimum illumination 0.1lux (colour), 0lux (B/W) IR on
 - Multi-view streaming 2 individually cropped out view areas
 - IP network capable
 - True day and night vision capability (ICR)
 - Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3 Max 12.0 W, typical 3.7 W
 - HDMI output
 - H.265 video compression
 - Accessible edge storage with 128GB internal MicroSD card slot
 - True day and night vision capability
 - Tampering detection, Face detection, Audio Detection, Motion detection and event triggered alarm processing
 - Masking Capability,
 - IP66- and NEMA 4X-rated, IK10 impact-resistant
 - ONVIF Compliant
 - Network NIST SP500-267 Compliant

(State make and type, and enclose brochures/catalogues)

b) IP PTZ CCTV Camera-4MP

- 3 Mega Pixel Full HD IP Dome Camera with Infrared
- Built in Infrared 100 meters minimum
- imaging sensor with Wide Dynamic Range
- Varifocal Auto Iris lens
- Minimum Adjustable zoom 16
- Minimum illumination 0.01lux (colour)
- IP network capable
- PoE capability
- H.265 video compression
- 20X Optical zoom
- Accessible edge storage with internal Micro SD/SDHC/SDXC card slot
- Endless 360-degree pan rotation
- 180 Degree continuous tilt with auto flip
- 256 preset positions
- I/O - 1 Alarm in / 1 Alarm out
- True day and night vision capability
- Tampering detection, Face detection, Audio Detection, Motion detection and event triggered alarm processing
- Vandal proof IK-10 rating housing
- Weather proof IP66 rating
- ONVIF Compliant

(State make and type, and enclose brochures/catalogues)

c) IP Bullet camera – 3MP

- 3 Mega Pixel Full HD Outdoor IP Bullet Camera with Infrared
- Built in Infrared 30 meters minimum
- imaging sensor with Wide Dynamic Range of 120 db
- 3.6mm Lens
- Minimum illumination 0.01lux (colour)
- IP network capable
- PoE capability

- H.265 video compression
- Accessible edge storage with internal MicroSD card slot
- True day and night vision capability
- I/O - 1 Alarm in / 1 Alarm out
- 1 Way Audio
- Tampering detection, Face detection, Audio Detection, Motion detection & Privacy Masking and event triggered alarm processing
- Vandal proof IK-10 rating housing
- Weather proof IP66 rating
- ONVIF Compliant

(State make and type, and enclose brochures/catalogues)

2.05 MOUNTING BRACKETS

The Brackets shall:

Be suitable for wall or ceiling mounting of a single camera.

Be at least 5.5"length

Have an auto lock facility.

2.06 CAMERA HOUSING

The camera housing shall:

Be IP66 rated with integral cable management.

Be Weatherproof and constructed from aluminium with epoxy coating.

2.07 COLOR VIDEO MONITORS

The monitor should be capable of providing high levels of picture quality 10MHz bars visible at low brightness and reliability stable synchronization, black level clamping, low sensitivity and high stability.

The monitors shall be high performance color video monitors for monitoring scenes from the above cameras and viewing playback scenes from the video cassette recorders. The monitors shall be located at places to be shown on site by the project manager.

The monitor shall give stable and interference free pictures of scenes being viewed. It shall also conform to the following specifications:

Type	: LED; 50,000hours panel life
System	: NTSC/PAL
Screen size	: 48/55"
Resolution	: 1,920 x 1,080
Display Colour	: 16.0 million
Brightness	: 350cd/m ²
Contrast Ratio	: 5,000:1
Video input signal	: 1.0 V pk-pk
Power consumption	: Not more than 200W
Power input	: 240V 50HZ
Interface	: VGA, DVI, HDMI, RGB, Audio, Video

(State make and type, and enclose catalogues)

2.08 **NETWORK VIDEO RECORDER**

The network video recorder shall have the following minimum requirements:

- 4K NVR,
- 256CH,
- Microsoft® Windows® 10 Enterprise
- Storage conditions -40 °C to 65 °C (-40 °F to 149 °F)
- Gigabit Ethernet connection
- external storage support capability
- 2xVGA local monitor
- Redundant hot swap power supply
- Network management/viewer software
- In built intelligent video analysis
- 32TB RAW,
- H.265, MPEG, MJPEG Compression
- ARB (Automatic Recovery Backup) & Failover (N+1),
- 256Mbps recording/ 32Mbps playback throughput,
- 12 Hot Swap HDD bays,
- iSCSI, redundant power,
- HDMI/D-Sub VGA dual display,
- DI/O, 2-way audio,
- ONVIF compatibility,
- maximum camera resolution of 12MP recording/display and fisheye dewarping on WEB and CMS,
- Support RAID 5/6,
- IP address filtering, user access log, authentication and encryption
- LED status indicator
- Approvals EN/IEC/UL 60950-1, FCC part 15 class A

(State make and type, and enclose catalogues)

2.09 CCTV MANAGEMENT SOFTWARE

CCTV management software with the following minimum specifications:-

GUI Function	Camera Control	Pan/Tilt, Zoom, Focus, Brightness, Preset position call and program (up to 256), Auto mode (SEQ, SORT, AUTO PAN, PATROL, AUTO TRACK), AUX 1 - 3, Click centering, Wheel zoom, Drag and zoom
	Recorder Control	REC, PLAY, Rev PLAY, Pause, Stop, FF (up to 96x), REW (up to 96x), Prev Record, Next Record, Prev Image, Next Image, Skip (up to 60 min.), Rev Skip, (up to 60 min.) Text
	Event Search	Target : Recorder (Camera) / Group / Map, Search criteria : Time date, Event type, Text
	VMD Search	Target : Recorder (Camera), Search criteria : Time date, Area In case with WJ-ND400 series, WJ-HD716/616, WJ-NV200
	Thumbnail Search	Target : Camera, Search criteria : Time date, Stream, Interval
	Multiscreen Mode	1, 2, 3, 4, 5, 6, 7, 10, 13, 16 split
	Sequence Display	20 programs, 64 steps/pattern, 1, 2, 3, 4, 5, 6, 7, 10, 13, 16 split Dwell time : 3 s / 5 s / 10 s / 15 s / 20 s / 25 s / 30 s / 35 s / 40 s / 45 s / 50 s / 55 s / 1 min
	Display Performance	30 ips x 16 screens at H.264 1.5 Mbps, 30 ips x 16 screens at MPEG-4 2 Mbps, 30 ips x 16 screens at H.265 768Kbps (VGA)
	Multi-Monitor	Up to 3 monitors (Operation / Live / Map), Up to 20 cameras can be displayed (Operation-4, Live-16)
	Camera Group Display	Up to 400 groups with 16 alphanumeric titles
	Number of Maps	Up to 100 maps (JPEG or Bitmap), Link : 128 cameras and 20 maps / map
	Image Download	Recorded images of up to 64 cameras (in case with WJ-ND400) can be downloaded Manual download only. Viewer software can be extracted from the main software.
	Quick download	Quick download the operation monitor image.
	SD memory Download	H.264 / H.265 video files (mp4 files) saved on the SD memory card equipped with the camera to a PC using the FTP function.
	Recorder/Camera Access	The access to the Recorder and Camera Web pages when logged in as admin
	File Conversion	Convert a n3r file to the standard format (mp4)
	Camera Title Display	On the GUI, Up to 16 characters
Clock Display	On the GUI. Time : 12H/24H, Date : 5 formats (When the image comes from the recorder)	
Alarm Source	alarm protocol	

	Alarm Control	Reset, Auto reset (OFF / 10 s / 20 s / 30 s / 1 min / 5 min)
	Alarm Action	Up to 16 alarm images can be displayed on the live monitor. Corresponding camera icon on the map lights up. Alarm message on the GUI and buzzer.
	Digital Zoom	Up to 4 times
	Text Attachment	Free comment can be attached for each record and reviewed at later time. Up to 200 characters
	System Log	Operation (100,000), System (1,000), Network error (1,000), Rec order error (1,000), Alarm (30,000)
	Recorder Log Download	Operator access, Network error, Error, Event
	User Management	Registration: 32 users + Administrator, ID: 4-32-digit, PW*: 8-32-digit, User level: 6 levels (Programmable), PW time limit: OFF / 31 / 92 / 184 / 366 days, Auto login: ON / OFF * Two or more must be mixed from alphabet (case sensitive), numbers, symbols
	Security Method	User authentication (ID and Password), Host authentication (IP address), Alteration detection, Activation Key Card
	System Setup	Setup page in English, French, Italian, Spanish, German, Russian, Chinese, Thai, Japanese
	GUI Language	English, French, Italian, Spanish, German, Russian, Chinese, Thai, Japanese
General	Supported OS ^{*1}	Microsoft® Windows® 10 Pro 32bit/64bit ^{*2} , Microsoft® Windows® 8.1 Pro 32bit/64bit ^{*2} , Microsoft® Windows® 7 Professional SP1 32bit/64bit ^{*2} The language of the OS must be same as selected GUI language. *4K cameras (WV-SFV781L / WV-SPV781L) are available only on Microsoft® Windows® 10 Pro 64bit, Microsoft® Windows® 8.1 Pro 64bit.
Network	Proxy	HTTP proxy supported (IP address and port No.)
	FTP	Passive/Active
Viewer Software	Playback Control	Play, Rev Play, Pause, FF, REW, Prev Record, Next Record, Prev Image, Next Image
	Additional Functions	Alteration detection, Save as JPEG, Two times zoom, Print

(State make and type, and enclose catalogues)

2.10 UNINTERRUPTIBLE POWER SUPPLY (UPS)

This shall be an on-line Un-interruptible power supply with output rating able to provide power to the security surveillance system a minimum of 8 hours incase of power failure.

It shall be microprocessor- based so that both output voltage and frequency are closely regulated and continuously monitored and also provide system diagnostic and shut down protection functions. It shall feature a maintenance by-pass to enable normal routine maintenance operations to be performed without interruptions to the system.

It shall be fitted with both visual and audible alarms to indicate any change in equipment status such as:

input power problems

ups faults

ups overload

battery discharging

1.00 UNINTERRUPTABLE POWER SYSTEM

The UPS shall have the following characteristics:

- Lightning and Surge Protection: In accordance with ANSI/IEEE C62.41categories A and B;
- Spike Attenuation: 2000 to 1;

- Galvanic Isolation: Complete from line. Output neutral bonded to ground;
- Noise (RF) Isolation: 120 dB common-mode, 60 dB normal-mode;
- Input Voltage: 240 VAC ($\pm 20\%$), 47-63 Hz;
- Output Voltage: 240 VAC;
- Regulation: Better than +3%;
- Output Waveform: Pure sine-wave, less than 5% THD;
- Efficiency: 85% to 92% on line;
- Operating Environment:
 - Temperature Range -30°C to $+60^{\circ}\text{C}$; and
 - Humidity EIA: 90% @ 50°C .
- 2000VA, 5000VA Rack mountable/free standing depending on adopted configuration with $\frac{1}{2}$ hour back up time

(State make and type, and enclose catalogues)

2.11 CABLING

- a) All cables must pass through conduits or trunking.
- b) All cables and connectors shall be labeled.
- c) No distortion due to kinks, sharp bends or excessive hauling tension shall be allowed.
- d) Cables shall be run in a manner eliminating any possibility of strain on the cable itself or on the terminations.
- e) Cables shall have no joints or splices.
- f) Cables shall be kept at a minimum distance of 150mm from items liable to become hot or cold.
- g) Bending radii shall be not less than eight times the overall cable diameter.
- h) The manufacturers hauling tension shall not be exceeded.
- i) All cable ties and fixings shall be tightened to support the cable loom without distortion of the cable sheath.
- j) The STP 4 pair shall be of cat 6A grade and exceed ANSI/TIA/EIA-568-Aj and ISO/IEC 11001 standards. Cat 6A structured cabling shall be used throughout the entire installation.

(State make and type, and enclose catalogues)

2.12 PATCH PANELS

- a) Shall conform to ANSI/TIA/EIA-568A and rack mounted.
- b) Shall be equipped with RJ45 contacts of Cat 6A sockets with capacity of 12, 24 or 48 ports.
- c) Shall be earthed.
- d) Except for patch cords used to connect NICs to the RJ45 sockets, all patch cords shall be labeled at each extremity with PVC support and intelligible marking. For other components the label shall be of stiff plastic PVC type.

(State make and type, and enclose catalogues)

2.13 NETWORK CONTROL EQUIPMENT AT THE NETWORK CORE

- The active control equipment at the core should have the following features:
- a) Backplane/switch fabric Bandwidth Capacity of 150 GBPS or more.
 - b) IEEE 802.3 compliant for power over Ethernet
 - c) IEEE 802.1 based security compliant
 - d) SNMP compliant for security
 - e) Layer 2/3/4 switch
 - f) Should support Gigabit Ethernet to the desktop
 - g) Should have at least 12-slots
 - h) The core switches should have two links to each edge switch configured in active/active configuration. The links should deliver 2GBPS throughput when all ports are active.
 - i) The core switch should have redundant power supply, redundant fan tray and redundant CPU/ supervisor engine installed
 - j) Fiber cable linking stacks on each edge switch to the core should be connected to 1000Base X(GBIC) port on the core switch using star topology
 - k) Should be installed with the latest version of system software at the time of delivery.
 - l) Should support Quality of service for various applications.
 - m) Active devices shall be rack mounted.
 - n) Active devices used at the LAN edge must be stackable and shall attach to the backbone cabling at 1000mbps.
 - o) Where more than one active device is required to satisfactorily serve the floor data outlet distribution requirements they shall be stacked using interface operating at the backbone speed.

(State make and type, and enclose catalogues)

2.14 LABELING

- a) Horizontal and backbone cables shall be labeled at each end. The cable or its label shall be marked with its identifier.
- b) A unique identifier shall be marked on each faceplate to identify it as connecting hardware.
- c) Each port on the face plate shall be labeled with its identifier.
- d) A unique identifier shall be marked on each piece of connecting hardware to identify it as a connecting hardware.
- e) Each port on the connecting hardware shall be labeled with its identifier.
- f) A unique identifier shall be marked on each **port** on the connecting faceplate to identify it as a connecting hardware.

2.15 NETWORK CABINET

- a) The cabinet shall be metallic with front clear glass and of good finish and conveniently accessible by technical personnel for maintenance. The main cabinet shall be at least 42U and other cabinets housing edge switch should be at least 9U
- b) Power to the cabinet shall be switched off from within the cabinets. Proper power socket cables to be supplied with the cabinet.
- c) The cabinet for active devices shall conform to ANSI/TIA/EIA-568A specifications with forced cooling.
- e) Support small factor pluggable (SFP) and industry leading density up to 240 of IEEE 8033 for 1000 Base-SX ports per system.

- c) Cabinets shall have adequate room for additional components typically 3U free space.

(State make and type, and enclose catalogues)

2.16 ETHERNET FLOOR EDGE SWITCHES

Active control equipments at the LAN Edge should have the following features

- a) Active control equipments at the LAN Edge should support 10/100/1000 MBPS on all ports (RJ45) and Gigabit to the desktop connectivity
- b) The equipments should have at least two 1000BaseXGigabit uplink ports for terminating backbone Fiber.
- c) The equipments should support layer 3 routing.
- d) Should support IEEE 802.1, SSH, SNMP.
- e) Switch Fabric forwarding Bandwidth of 64GBPS or more.
- f) More than 12,000MAC addresses should be available on each switch .
- g) The switches should have 8/12/24/48 ports of 10/100/1000 MBPS.
- h) Each stack on the edge will have two links of Fiber to the core switch, totaling two fiber terminations from the core switch to the stack.
- i) Should support Jumbo frames.
- j) Total stack throughput bandwidth of 64 GBPS or more.
- k) Active Edge switches should be quoted with a minimum of **One year of warranty** covering free replacement of parts and units.
- l) The switches to be PoE plus

(State make and type, and enclose catalogues)

2.17 OPTICAL FIBRE CABLE

The fibre cable must be 8 core single mode fibre with the following specifications:-

- a) Cable size: 8 cores.
- b) Termination: SC Duplex connectors.
- c) Graded Index: Nominal 62.5/125 micron

(State make and type, and enclose catalogues)

2.18 FIBER PATCH PANELS

All Backbone Fiber links should be terminated on Fiber Patch Panels. Connector interfaces should support ST, Sc simplex, Sc duplex, FC, LC or MT-RJ.

(State make and type, and enclose catalogues)

2.19 BACK BONE

Backbone cabling inclusive of switches and all necessary accessories shall be carried out in readiness for the termination of edge switches.

The Backbone cabling shall be flexible and allow for easy 'add ons' for future expansions. Hence enough capacity shall be allowed for future expansion. It shall be done using the star topology.

32.0 TECHNICAL SPECIFICATIOS FOR COMPUTER AND ACCESSORIES

32.1 SPECIFICATIONS FOR DESKTOP COMPUTERS

ITEM	DESCRIPTION	MINIMUM REQUIREMENTS	BIDDER'S SPECIFICATIONS
A	GENERAL SPECIFICATIONS		
1	Make	BRANDED	
2	Model		
3	Country of Origin		
4	Manufacturer's brochure and specifications	Must be supplied	
B	TECHNICAL SPECIFICATIONS		
5	Processor	Core i7	
6	System Memory	8GB	
7	Disk cache	64Bit	
8	Storage sub system	1000 TB HDD	
		48XCD –ROM and CD-Writer	
		1.44MB 3.5" FDD	
9	Display/Graphics	17" colour LCD	
10	Keyboard	PS/2 Enhanced keyboard	
11	Pointing device	PS/2 compatible optical mouse	
12	I/O interface	<ul style="list-style-type: none"> ❖ 1xPS/2 – compatible keyboard ❖ 1xPS/2 – compatible mouse port ❖ 2x9 Pin Serial Ports ❖ 1x25 Pin parallel port ❖ 4xUSB Ports ❖ 1xRJ45 jack for ethernet ❖ 1xexternal VGA port ❖ HDMI 	
13	Audio System	<ul style="list-style-type: none"> ❖ PCI 3D audio/video cards ❖ TV/FM cards ❖ External Amplified speakers 	
14	Communication Interface	<ul style="list-style-type: none"> ❖ 10/100Mbs fast ethernet, RJ 45 jack ❖ 56K ITU V.90 data/fax modern, wake-on-ring ready 	
15	Operating System Pre-load	Ms Windows XP Pro 2003 (or latest version)	
16	Application Software, pre-installed, registered and CDs supplied	Ms Windows Vista or Ms Windows XP Pro (Service Pack 2)	
17	Power sub- system	220-240V ac, 50HZ	
18	Power connectivity	Power cable compatible with CPU and UPS	
C	WARRANTY	One year parts replacement warranty	

31.2 10KVA THREE PHASE ONLINE UPS SPECIFICATIONS

Output	
Output power capacity	3 kWatts / 3 kVA
Max Configurable Power (Watts)	3 kWatts / 3 kVA
Nominal Output Voltage	230V
Output Voltage Distortion	Less than 2 %
Output Frequency (sync to mains)	50/60 Hz +/- 3 Hz Sync to mains
Other Output Voltages	220, 240
Load Crest Factor	3 : 1
Topology	Double conversion online
Waveform type	Sine wave
Output Connections	(6) IEC 60320 C13 (6) IEC 320 C13 (4) IEC 320 C19 (1) Hard Wire 3-wire (H N + G) (4) IEC 60320 C19 (3) IEC Jumpers
Bypass	Internal bypass (automatic and manual)
Input	
Nominal Input Voltage	230V, 400V 3PH
Input frequency	40 - 70 Hz Auto-sensing
Input Connections	Hard wire 3-wire (1P + N + E), Hard wire 5-wire (3P + N + E)
Input voltage range for main operations	100 - 275 Adjustable (half load), 160 - 275, 173 - 476 Adjustable (half load)V
Other Input Voltages	220, 240, 380, 415
Batteries & Runtime	
Battery type	Lead-acid battery
Typical recharge time	1.5hour(s)
Batteries & Runtime	
Nominal Battery Voltage	+/- 192 V (split battery referenced to neutral)
Replacement Battery	Replaceable
Expected Battery Life (years)	3 – 5
RBC Quantity	2
Battery Charge Power (Watts)	1.195kWatts
Extendable Run Time	1

Extended Run Options	APC-Smart-UPS-SRT-10000VA-230V (Available in Technical Tab on site)
Runtime	View Runtime Graph (Available in Technical Tab on site) View Runtime Chart (Available in Technical Tab on site)
Efficiency	View Efficiency Graph (Available in Technical Tab on site)
Communications & Management	
Interface Port(s)	RJ-45 10/100 Base-T, RJ-45 Serial, Smart-Slot, USB
Control panel	Multifunction LCD status and control console
Audible Alarm	Audible and visible alarms prioritized by severity
Emergency Power Off (EPO)	Yes
Available SmartSlot™ Interface Quantity	1
Surge Protection and Filtering	
Surge energy rating	480Joules
Physical	
Maximum Height	432MM, 43.2CM
Maximum Width	263MM, 26.3CM
Maximum Depth	715MM, 71.5CM
Net Weight	111.82KG
Shipping weight	126.82KG
Shipping Height	461MM, 46.1CM
Shipping Width	600MM, 60.0CM
Shipping Depth	1000MM, 100.0CM
Color	Black
Environmental	
Operating Temperature	0 - 40 °C
Operating Relative Humidity	0 - 95 %
Operating Elevation	0 - 3048meters
Storage Temperature	-15 - 45 °C
Storage Elevation	0 - 15240meters
Audible noise at 1 meter from surface of unit	55.0dBA
Online thermal dissipation	1947.0BTU/hr
Protection Class	IP20

Conformance

Approvals CE, CE Mark, EAC, EN/IEC 62040-1, EN/IEC 62040-2, IRAM, RCM, VDE

Standard warranty 3 years repair or replace (excluding battery) and 2 years for battery

Sustainable Offer Status

RoHS Compliant

Proposition 65 Warning Available in Documentation tab

**PARTICULAR SPECIFICATIONS
FOR
AIR CONDITIONING INSTALLATIONS**

PARTICULAR SPECIFICATIONS FOR AIR CONDITIONING SYSTEMS

SCOPE OF WORKS

The works to be carried out comprises of the supply, delivery, installation, setting to work, testing and commissioning of all materials and equipment called for in this specification and/or shown in the contract drawings.

The tenderer shall include for all appurtenances and appliances not particularly called for in this specification or on the contract drawings but which are necessary for the completion and satisfactory functioning of the system.

No claim for extra payment shall be accepted from the contractor for non-compliance with the above requirements.

If in the opinion of the tenderer there exists difference between the specification and the contract drawings, the tenderer shall clarify the difference with the engineer before tendering.

The Works to be installed under the contract shall comply with the Ministry of Public Works requirements for contract works under “GENERAL MECHANICAL SPECIFICATION”.

CLIMATIC CONDITIONS

The following climatic conditions apply at the sites of the works and all materials and equipment used shall be suitable for these conditions: -

PARAMETERS	(CONDITIONS) NAIROBI TOWN
Maximum mean outdoor dry bulb Temperature, t_o	28°C
Minimum Temperature	11.5°C
Relative Humidity	42% - 94%
Altitude	1795m
Longitude	36° 8219' E
Latitude	1. ° 2921' S
Max. solar radiation occurs during the month of February	

SYSTEMS DESIGN DATA

The air-conditioning systems are designed to maintain the following internal conditions with ambient conditions of 28°C DB and 55% RH

Internal Temperature $23 \pm 1^{\circ}\text{C}$

Relative Humidity $50 \pm 10\%$

The equipment described here under covers the specific requirements of equipment to be used for this contractor work and shall be used in conjunction with the accompanying contract drawings.

It shall be deemed that the tenderer has based his tender on plant and equipment which is equal in performance to that stated within the specification.

SPLIT AIR CONDITIONING SYSTEM/ VRF SYSTEMS

This shall be installed in the

The system shall be complete with;

Indoor wall mounted cooling unit (Evaporator)

Each coil unit shall consist of a cooling coil, air circulating fan, fan-guard and a thermostatic expansion valve. A timer unit shall be mounted in the control panel to both the de-frosting intervals and defrosting periods, both of which shall be variable.

The evaporator unit shall be of capacity as specified under the specified conditions, and shall be of the dry expansion type, and preferably of similar make as that of the condensing units. The unit shall be cassette type, high wall mounted or ceiling mounted as will be specified by the Engineer.

The coil shall be manufactured from seamless copper tubing with aluminium fins mechanically bonded to the tubes.

The panel shall be interlocked such, that on energizing the heater, the compressor, condenser and evaporator fan shall be de-energized and only re-energized when the heater is switched off by a evaporator mounted thermostat. A manual overriding switch shall by-pass the timer switch.

The air-circulating fan shall be manufactured from rigid aluminum sheet and finished in white casing. A drip tray with 25mm diameter connections shall be incorporated in the base of the casing.

The Unit shall be complete with the following:

- 1 No. air purifying filter.
- Built in drain pump to automatically drain water.
- Refrigeration pipe work with flared connections
- Fixing brackets/wall mounting kit/ground mounting kit
- Thermostat to control room temperature
- High and low pressure units
- Condensate discharge pipe work in Black PVC, 15mm diameter
- Service access valves

- Voltage Surge Protector

The system shall be suitable for 240V, 1 – Phase, 50Hz power supply

The split air-conditioning system shall be designed to maintain room inside temperature of $23\pm 1^{\circ}$ C and relative humidity of $50\pm 10\%$.

Outdoor Units.

The outdoor units shall be installed and mounted on the wall using appropriate and approved mounting brackets. They shall be complete with hermetically sealed compressors. Safety devices shall include overload/surge protection among others.

The unit shall be connected to power provided by others. It shall also be connected to refrigerant piping and control wiring. It shall have adequate charge of refrigerator oil and R 407 refrigerant.

The air conditioning units shall be as York or approved equivalent and shall be provided with approved mounting brackets.

The Unit shall be complete with the following:

- Casing constructed of 18-gauge zinc coated mild steel, zinc phosphate bonderized, coated with oven baked polyester paint and weatherized for outdoor installation. It shall have weep holes on base to allow ease of drainage.
- Hermetically sealed compressor mounted to unit base with rubber isolated hold down bolts, uniform in oil & pressures and shall have internal overload protection.
- Refrigeration pipe work with flared connections
- Distributor with refrigeration control
- Fixing brackets/wall mounting kit/ceiling mounting kit
- Heat exchanger capacity controls
- Precise inverter frequency controls
- New oil returning system (refrigerant oil control system)
- High and low pressure units
- An innovation of installation with automatic address settings for indoor units with twin multiplex transmission system of no polarity.
- Condensate discharge pipe work
- Service access valves
- Voltage Surge Protector

Refrigeration Piping

Refrigerant pipe work shall be approved copper tubing and fittings, and shall be properly sized in conformity with the system manufacturer specifications. Pipework shall be joined together by soldering/brazing and shall be complete with all necessary joints, reducers and accessories.

The Ozone friendly refrigerant flow shall be controlled with either a capillary tube or thermostatic expansion valve. Installation shall be carried out by competent and qualified craftsmen. The Engineer may demand proof of qualifications and experience in installation of refrigeration systems.

Pipe work shall be tested for leaks after installation to the Engineers satisfaction. It shall be properly anchored, insulated and no vibration of pipes shall be allowed during the running of the systems. An electronic leak detector shall be used to test for leaks.

Testing and Commissioning Standards

The system shall be balanced to the satisfaction of the project engineer. It shall be run under complete automatic controls 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 a further test or tests of 72 hours' duration shall be carried out to ensure satisfactory operation, all at the expenses of the contractor.

All accessories/equipment have to tested for capacity, efficiency, leakages and other human errors and shall meet standards and specifications.

As-Built-Drawings and maintenance manuals

Once the air conditioning system has been tested and commissioned, drawings and maintenance manuals shall be provided. They shall be a true and accurate representation of what has been commissioned.

Training

Adequate personnel shall be trained to perform normal operations and routine maintenance of the air conditioning system. The number of personnel to be trained shall be specified for particular pool.

TESTING & COMMISSIONING

All the pipe work and connections herein described shall be tested in the presence of the Engineer and to the hydraulic pressure the Engineer deems satisfactory and for a minimum period of 1 hour.

These tests must be before any insulation work is undertaken or any pipe work is finally enclosed in any ducts, etc. and due allowance is to be made in the tender for these tests.

The tenderer is to include for providing for all the testing equipment, temporary plugging and refilling etc.

ELECTRICAL WORKS

The tenderer shall include for supply, installation and commissioning of all starters, control apparatus, control panels and interconnecting wiring and conduits for equipment that the tenderer is supplying. Power points shall be provided within 5 metres of the equipment installation point and the tenderer shall connect his equipment from this point.

BUILDERS WORKS

The tenderers shall allow for perforation of holes, hacking of walls etc. All disturbed surfaces shall thereafter be made good by the tenderer upon satisfactory completion of the works

SECTION G
SCHEDULE OF UNIT RATES

SCHEDULE OF UNIT RATES

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

A. SCHEDULE OF UNIT RATES: (MUST be completed by the Tenderer IN Kshs)

Item	Description	Unit	Qty	Rate (KShs)
	<p>The rates entered in the schedule unless otherwise stated shall be the complete cost of supply, transportation, Insurance, installation etc, to be added or deducted from the contract Price in respect to variations ordered during the course of the work.</p>			
	<p>The rates entered below shall be used in conjunction with and not in place of the rates entered within the BoQ. The rates below are intended to complement the BoQ where sections have been priced on lump sum basis Where any conflict occurs between the rates entered below and the rates entered in the BoQ the lowest rate shall be applied throughout. Certain items entered below may not be applicable to the Contract requirements as at present designed. However, the contract shall enter a rate against these items as future designed/alterations may include Some or all of the items scheduled</p>			
	<p><u>Core Switch with PoE as Cisco</u></p>			
	<p>5 Fibre Port as 4500 series</p>	No	1	
	<p>5 Fibre Port as 800 series</p>	No	1	
	<p><u>Router with PoE as Cisco</u></p>			
	<p>3 Fibre Port as 9300 series</p>	No	1	
	<p><u>Edge Switch with PoE as Cisco as Catalyst 9200 Series</u></p>			
	<p>8 Port</p>	No	1	
	<p>16 Port</p>	No	1	
	<p><u>Telecoms Cabinet c/w all necessary accessories</u></p>			
	<p>36HU Cabinet</p>	No	1	
	<p>12U Cabinet</p>	No	1	
	<p>SFP module</p>	No	1	
	<p>LC Connector</p>	No	1	
	<p>55" LED monitors/display</p>	No	1	
	<p>32" LED monitors/display</p>	No	1	
	<p><u>Network Video Recorder</u></p>			
	<p>8 Channel, 10TB</p>	No	1	
	<p>24 Channel, 20TB</p>	No	1	
	<p>32 Channel, 30TB</p>	No	1	
	<p><u>IP – POE, outdoor, CCTV Cameras</u></p>			
	<p>Bullet camera as per specification in this document but 2MP</p>	No	1	
	<p>Dome camera as per specification in this document but 2MP</p>	No	1	

(MUST be completed by the Tenderer in Kshs)

Item	Description	Unit	Qty	Rate (KShs)
	13A High voltage surge protector as Sollateck	No	1	
	Digital Executive	No	1	
	Digital Standard	No	1	
	Digital Secretarial	No	1	
	Cat 6E (or latest) STP 4-pair cable as Siemens	LM	1	
	LWITK interface module	No	1	
	HIPX common control module	No	1	
	RC I card	No	1	
	Amphenol connector	No	1	
	<u>Fiber optic cable</u>			
	Multi Mode	LM	1	

B. AIR CONDITIONING INSTALLATIONS

The tenderer shall fill in unit rates in Kenya Shillings for items called for in this specification as listed in this schedule.

The tenderer shall also fill in unit rates in Kenya Shillings for all other items listed in this schedule but not called for in this specification.

ITEM	DESCRIPTION	UNIT	RATE (KShs)
A	VRF Indoor Air conditioning unit capacity: 5.2kW (18,000 Btu) of High Static Concealed Ducted type complete with plenum boxes, ducting, diffusers and grilles	No.	
B	VRF Indoor Air conditioning unit capacity: 7.1kW (24,000 Btu) of High Static Concealed Ducted type complete with plenum boxes, ducting, diffusers and grilles	No.	
C	VRF Indoor Air conditioning unit capacity: 5.2kW (18,000 Btu) of High Wall mounted type complete with mounting and controller	No.	
D	VRF Indoor Air conditioning unit capacity: 7.1kW (24,000 Btu) of High Wall mounted type complete with mounting and controller	No.	
E	VRF Indoor Air conditioning unit capacity: 5.2kW (18,000 Btu) of 4-way ceiling cassette type complete with mounting and controller	No.	
F	VRF Indoor Air conditioning unit capacity: 7.1kW (24,000 Btu) of 4-way ceiling cassette type complete with mounting and controller	No.	
G	VRF Outdoor Air conditioning unit capacity: 50.4kW (180,000 Btu) of 4-way ceiling cassette type complete with mounting and controller	No.	
H	VRF Outdoor Air conditioning unit capacity: 50.4kW (180,000 Btu)	No.	
I	running on R410 refrigerant		
J	VRF Outdoor Air conditioning unit capacity: 28.0kW (120,000 Btu) running on R410 refrigerant	No.	
	Air Handling Unit(cooling) a capacity of 280 kW with an air flow of 30m ³ /s	No.	

SECTION H

BILLS OF QUANTITIES

B) 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 contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes **applicable at the time of tender**.
- 3 All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part thereof.
4. The brief description of the items given in the Bills of Quantities is for the purpose of establishing a standard to which the contract shall adhere. Otherwise alternative brands of **equal and approved** quality will be accepted.

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

5. The grand total of prices in the price summary page must be carried forward to the **Form of Tender for the tender to be deemed valid**.
6. Tenderers must enclose, together with their submitted tenders, manufacturer's brochures detailing technical literature and specifications of the following equipment and materials that they intend to offer:
 - Data switches
 - Cameras
 - Data Cabinet
 - Communication Cables
 - NVRs
 - UPSs
 - Network Video Recorder
 - LED monitors/display

The brochures are to be used to ascertain the suitability of the components offered by the bidders. Bidders not complying with this requirement may be considered technically non-responsive and may subsequently be disqualified.

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

.....

BILL NO.1: PRELIMINARIES & GENERAL ITEMS

ITEM NO	DESCRIPTION	UNIT	QTY	RATE	BQ AMOUNT
				KShs	KShs
	ALL RATES MUST INCLUDE ALLOWABLE GOVERNMENT TAXES				
A	Allow for insurance of the works in accordance with the Conditions of the Contract	Item	1		
B	Allow for the cost of performance bond in accordance with Conditions of the Contract	Item	1		
C	Allow for the preparation of all Working Drawings	Item	1		
D	Allow for the preparation of all "As Built" Drawings	Item	1		
E	Allow for provision of samples of CCTV and provision of Manufacturers data sheets for approval prior to installation.	Item	1		
F	Allow Fluke tests to be done, verified and signed off by the Engineer.	Item	1		
G	Allow for provision of warranty for equipment and workmanship in accordance with the conditions of the contract	Item	1		
H	Allow for KSH. Two hundred thousand for project management to be paid in part or whole as directed by Project manager/PEE	Item	1		
TOTAL FOR BILL No 1 - PRELIMINARIES AND CONDITIONS OF SUB-CONTRACT CARRIED FORWARD TO MAIN SUMMARY PAGE					

BILL NO 2 - IP VIDEO SURVEILLANCE AND RECORDING

ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
				KShs	KShs
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF THE CCTV SYSTEM					
2.1	ADMIN & TUITION BLOCK				
A	INDOOR STATIC DOME CAMERA: IP, 30m IR, 2.8mm fixed lens, 1/2.8" Progressive Scan CMOS, WDR 120dB, full HD (1080p) @25fps with H.264 compression technology, PoE. As Hikvision DS-2CD2122FWD-I or equal and approved.	No	54		
B	OUTDOOR 180° PANORAMIC STATIC BULLET CAMERA: IP, 20m IR, 1.68mm Fixed Lens, 1/2.7" Progressive Scan CMOS, WDR 120dB, H.265 compression technology, 4MP @25fps, PoE. As HikVision DS 2CD2T45GOP-I or equal and approved. The outdoor camera should be complete with connection boxes.	No	4		
C	INDOOR 180° PANORAMIC STATIC DOME CAMERA: IP, 10m IR, 1.68mm Fixed Lens, 1/2.7" Progressive Scan CMOS, WDR 120dB, H.265 compression technology, 4MP @25fps, PoE. As HikVision DS 2CD2345GOP-I or equal and approved.	No	69		
D	CCTV points hard wired using Siemon 4 pair UTP Cat 6 cables drawn in conduits and trunking from cabinets to the camera installation point.	No	127		
E	RJ 45 Connectors	No	127		
2.2	LIBRARY				
A	INDOOR STATIC DOME CAMERA: IP, 30m IR, 2.8mm fixed lens, 1/2.8" Progressive Scan CMOS, WDR 120dB, full HD (1080p) @25fps with H.264 compression technology, PoE. As Hikvision DS-2CD2122FWD-I or equal and approved.	No	40		
B	OUTDOOR 180° PANORAMIC STATIC BULLET CAMERA: IP, 20m IR, 1.68mm Fixed Lens, 1/2.7" Progressive Scan CMOS, WDR 120dB, H.265 compression technology, 4MP @25fps, PoE. As HikVision DS 2CD2T45GOP-I or equal and approved. The outdoor camera should be complete with connection boxes.	No	5		
C	INDOOR 180° PANORAMIC STATIC DOME CAMERA: IP, 10m IR, 1.68mm Fixed Lens, 1/2.7" Progressive Scan CMOS, WDR 120dB, H.265 compression technology, 4MP @25fps, PoE. As HikVision DS 2CD2345GOP-I or equal and approved.	No	21		
SUB TOTAL FOR BILL NO.2 CARRIED FORWARD TO THE NEXT PAGE					

ITEM	DESCRIPTION	UNIT	QTY.	RATE	KSHS	AMOUNT KSHS.
	SUB-TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE					-
D	CCTV points hard wired using Siemon 4 pair UTP Cat 6 cables drawn in conduits and trunking from cabinets to the camera installation point.	No	66			
E	RJ 45 Connectors	No	66			
2.3	RECORDING AND MONITORING					
A	256 Channel NVR: Up to 256 channel IP cameras can be connected. Up to 768 Mbps high incoming bandwidth to ensure IP cameras can be connected, 2 HDMI (different source) and 1 VGA interfaces, 16 HDD bays for continuous video recording, supports specialist cameras, including people counting camera/ANPR (automatic number plate recognition) camera/fisheye camera, Advanced streaming technology enables smooth live view in poor network conditions, supports RAID 0, 1, 5, 6, 10 and N+1 hot spare for even more reliable data storage, effectively avoids data loss risks. As Hikvision DS-96256NI-I16 or equal and approved	No	1			
B	8TB HDD as Seagate or equal and approved	No	10			
C	50 inch Full HD Monitor complete with wall mounting brackets and accessories.	No	7			
D	CLIENT WORK STATIONS: Core i7-8700, (1) 2.5" SFF Bays + (1) 3.5" LFF Bays, 16GB RAM, 1TB HDD, Windows 10 Pro, 256GB SSD, (2) 1GbE, DEDICATED NVIDIA GFX CARD > 4GB , 2 x HDMI PORTS, VGA AND USB	No	1			
E	6 channel Videowall controller	No.	1			
F	10m HDMI Cables	No	7			
G	1G/bit Ethernet link for the workstation in Cat 6 Cables c/w all accessories	No	1			
TOTAL FOR BILL No 2 - CCTV INSTALLATIONS CARRIED FORWARD TO MAIN SUMMARY PAGE						

BILL NO 3 - NETWORK & BACKBONE INSTALLATIONS

ITEM NO	DESCRIPTION	UNIT	QTY.	RATE	KSHS	AMOUNT	KSHS.
	Supply, install, test and commission the following items:-The cabling installations to be tested using Network scanner , documented and labelled						
A	NETWORK SWITCHES						
1	CORE switch as D-Link xStack DGS-3627G/E 20SFP Switch	No.	1				
2	24 Port PoE switch as D-Link DGS-F1210-26PS-E - 24 port Managed Gigabit Switch with 2 SFP Ports	No.	9				
3	24 Port L2 managed Access switch as Dlink DGS-1210-28MP switch.	No.	1				
4	Duplex LC Multimode (OM2) SFP modules	No.	10				
B	NETWORK CABINETS						
1	42U (800 x 1000)mm lockable wall mounted rack complete with PDUs, fan and installation accessories. As Gigaset or equal and approved	No.	2				
2	22U (600x 1000)mm lockable wall mounted rack complete with PDUs, fan and installation accessories. As Gigaset or equal and approved	No.	1				
C	PASSIVE EQUIPMENT						
1	24 Port Cat 6 Patch Panel	No.	9				
2	1m Cat 6 Patch Cords	No	216				
3	3m Cat 6 Patch Cords	No	1				
4	1U Cable Managers	No.	9				
5	OFC ODF with duplex SC adaptors (12 ports)	No.	3				
6	Fiber Optic Pigtails MM SC	No.	24				
7	1m SC - LC Multimode (OM2) fiber patch cords	No.	12				
8	2 core outdoor optic fibre cable (Multimode OM2) to link Cabinets to the Main Security Cabinet in the Security room in the Admin Block.	LM	650				
SUB TOTAL FOR BILL NO.4 CARRIED FORWARD TO THE NEXT PAGE							

BILL NO 3 - NETWORK & BACKBONE INSTALLATIONS

ITEM	DESCRIPTION	UNIT	QTY.	RATE KSHS	AMOUNT KSHS.
	<p>SUB-TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE</p>				
	<p>Supply, install, test, commission and hand over in proper working condition the following.</p>				
D	UNINTERRUPTIBLE POWER SUPPLIES				
1	1.5kVA 2U rack mount UPS for installation in the above cabinets	No.	3		
2	3kVA 2U rack mount UPS for installation in the above cabinets	No.	1		
TOTAL FOR BILL No 3 - NETWORK AND BACKBONE INSTALLATION CARRIED FORWARD TO MAIN SUMMARY PAGE					

BILL NO 4 - EXTERNAL CABLE WAYS

ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
				KShs	KShs
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF UNDER GROUND CABLE WAYS					
4.1	INTERNAL CABLE WAYS				
A	CCTV conduit outlets points comprising of 25mm HG conduits concealed in building fabric from riser ducts to camera points and complete with all necessary junction boxes	No.	193		
B	20mm x 20mm white PVC minitrunking for CCTV cable routes in exposed ceiling soffits to blend with ceiling paint work. These will be complete with fasteners and neatly done at corners.	LM	600		
4.2	EXTERNAL CABLE WAYS				
A	100mm HG PVC ducting	LM	300		
B	Trenching, sifting, backfilling and compacting of 600mm wide by 600mm Deep trenches for the above ducts	LM	300		
C	10mm Concrete surround the above ducts	LM	300		
D	Route Markers Labelled UG cables spaced 20m apart along the cable pathways	No	15		
E	600mm x 600mm Manholes complete with concrete covers spaced 50m apart and around corners of the proposed pathways	No	6		
TOTAL FOR BILL No 4 - CABLE WAYS CARRIED FORWARD TO MAIN SUMMARY PAGE					-

MAIN SUMMARY PAGE

ITEM NO	DESCRIPTION	AMOUNT KSHS.
A	TOTAL FOR BILL NO 1 - PRELIMINARIES AND GENERAL CONDITIONS BROUGHT FORWARD	
B	TOTAL FOR BILL NO 2 - CCTV SYSTEM INSTALLATIONS BROUGHT FORWARD	
C	TOTAL FOR BILL NO 3 - NETWORK & BACKBONE BROUGHT FORWARD	
D	TOTAL FOR BILL NO 4 - CABLE WAYS BROUGHT FORWARD	
E	PROVISIONAL SUMS	
F	ALLOW CONTINGENCY SUM OF FIVE HUNDRED THOUSAND ONLY TO BE USED AS DIRECTED BY PEE	
TOTAL CARRIED TO FORM OF TENDER INCLUSIVE OF DUTIES AND TAXES		

Total Amount in Words.....

Name of Tenderer.....

Address.....

Signature.....

Official Stamp.....

Date.....

BILL No. 5: PROVISIONAL SUMS

Item	Description	Amount (KShs)
1.0	Allow for 350,000 for Project Management	350,000.00
2.0	Registration with Communications Authority of Kenya (CA) to offer ISP services	800,000.00
3.00	Registration for Web hosting services	100,000.00
Total for Bill No. 5 C/F to Summary Page		1,250,000.00

SECTION I
TECHNICAL SCHEDULE
OF
ITEMS TO BE SUPPLIED

TECHNICAL SCHEDULE

- 1.0 The technical schedule shall be submitted by tenderers to facilitate and enable the Project Manager to evaluate the tenders
- 2.0 The filling of this schedule forms part of Technical Evaluation of the tenders, and bidders shall therefore be required to indicate the type/make and country of origin of all the materials and equipments they intend to offer to the employer as listed in the technical schedule.
- 3.0 **Any bid returned with unfilled Technical Schedule shall be considered technically non-responsive, and the bidder shall automatically be disqualified.**

A. TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED
(To be Completed by the Tenderer as a Mandatory Requirement)

ITEM	DESCRIPTION	TYPE/MAKE	COUNTRY OF ORIGIN
1.0	Cameras a) Dome b) PTZ c) Bullet d) Face Capture Camera e) Mini spy camera		
2.0	Network Video Recorder		
3.0	LED monitors/display		
4.0	Network Switches a) Router b) Edge Switch c) Router		
5.0	Patch panels/patch cords		
6.0	Cable Accessories		
7.0	CAT 6A cables		
8.0	Fiber Cable		
9.0	UPS		
10.0	Network Management System		
11.0	Network cabinet		
12.0	Proximity cards		
13.0	Emergency Break glasses		
14.0	Access control Readers		
15.0	Wireless Alert doorbells		
16.0	Access controller		

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.	Four Way Ceiling Cassette Air Unit			
2.	Copper Pipe			
3.	PVC Drainage Pipe			
4.	Simple Central Unit Controller			
5.	Surge Protector			
6.	High Wall Split Air Conditioning			
7.	Floor Grille			
8	Gate Valve			
9	Fire Suppression Cylinder			
10	Fire Suppression Nozzle			
11	Schedule 40 pipe			
12	Thermal Sensors			
13	Audible Alarm			
14	Reducing Pressure Valve			

No	Item	Type/Make	Place of origin
1	Combination screwdriver		
2	CLAUSS fiber stripper		
3	MILLER fiber stripper		
4	Wire cutting pliers		
5	Diagonal pliers		
6	Long flat nose pliers		
7	Pliers		
8	Cable cutter		
9	Alcohol pump bottle		
10	Kevlar Scissors		
11	Tape measure		
12	Paper knife		
13	Inner-six angle wrench		
14	Emergency lamp		
15	Longitudinal cable open knife		
16	Monkey wrench		
17	Nipper		
18	Electroprobe		
19	Loose tube cutter		
20	Hot shrink tube		
21	Marker		
22	Blow sphere		
23	Tape		
24	Multihole pliers		
25	aluminium alloy case		

SECTION J

STANDARD FORM

CONTENTS OF SECTION J

TITLE	PAGE
1. Performance Bank Guarantee	J/1
2. Tender Questionnaire.....	J/2
3. Confidential Business Questionnaire	J/3–J/4
4. Key Personnel.	J/5
5. Schedule of Contracts completed in the last five (5) years.....	J/6
6. Schedule of on-going projects.....	J/7
7. Schedule of major items of contractor’s equipment	J/8
8. Audited Financial reports for the last three (3) years.....	J/9
9. Evidence of Financial Resources.	J/10
10. Bidders Bank Information.....	J/11
11. Details of Litigation or Arbitrations	J/12

NOTE:

1.0 Tenderers must duly fill these Standard Forms as a mandatory requirement.

2.0 Any tender returned with **unfilled Standard Forms** shall be considered **non-Responsive and shall automatically be disqualified.**

PERFORMANCE BANK GUARANTEE

To: The Principal,
Kiambu Institute of Science and Technology,
P.O Box 414-00900,
Kiambu, Kenya

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

aforsaid 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 thereunder 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

Make copy and deliver to: The Principal,
Kiambu Institute of Science and Technology,
P.O Box 414-00900,
Kiambu, Kenya

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:

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

Part 2(c) – Registered Company

Private or Public

State the nominal and issued capita of the company:

Nominal KShs.

Issued KShs.

Give details of all directors as follows:

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

Part 2(d) Interest in the Firm:

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

I certify that the above information is correct.

.....

Date

Title

Signature

* Attach proof of citizenship

KEY PERSONNEL

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

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

I certify that the above information is correct

.....

Title

.....

Signature

.....

Date

CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

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

<i>PROJECT NAME</i>	<i>NAME OF CLIENT</i>	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.

<i>PROJECT NAME</i>	<i>NAME OF CLIENT</i>	<i>CONTRACT SUM</i>	<i>% COMPLETE</i>	<i>COMPLETION DATE</i>

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

.....

Title

.....

Signature

.....

Date

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

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

AUDITED FINANCIAL REPORTS FOR THE LAST THREE YEARS

BIDDER'S BANK INFORMATION

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

NAME OF BANK	BANK BRANCH	ACCOUNT NAME	ADDRESS	TELEPHONE

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

1. _____.

2. _____.

3. _____.

4. _____.

5. _____.

6. _____.

7. _____.

8. _____.

9. _____.

10. _____.

PRE-TENDER SITE VIST FORM

(ATTACH THE FORM DULY SIGNED BY THE CLIENT'S TEAM)