TEACHERS SERVICE COMMISSION

OPEN NATIONAL TENDER

THE PROPOSED COMPLETION OF DOUBLE STOREY OFFICE BLOCK AT BOMET FOR TEACHERS SERVICE COMMISSION
TENDER NO. TSC/T/49/2019-2020

TENDER DOCUMENTS

CLOSING DATE: WEDNESDAY, 20TH NOVEMBER 2019 AT 9.00 AM

Teachers Service Commission
Upper Hill, Kilimanjaro Road,
Private Bag, 00100
Nairobi Email:
info@tsc.co.ke
Website: http//www.tsc.go.ke

Project Manager
Works Secretary
M.o.T.I.PW.H.&U.D.
P.O. BOX 30743-00100
NAIROBI

Architect
Chief Architect
M.o.T.I.PW.H.&U.D.
P.O. BOX 30743-00100
NAIROBI

Quantity Surveyor
Chief Quantity Surveyor
M.o.T.I.PW.H.&U.D.
P.O. BOX 30743-00100
NAIROBI

Electrical Engineer
Chief Engineer(ElectricalB.S.)
M.o.T.I.PW.H.&U.D.
P.O. BOX 30743-00100
NAIROBI

Structural/Civil Engineer
Chief Engineer (Structural)
M.o.T.I.PW.H.&U.D.
P.O. BOX 30743-00100
NAIROBI.

Mechanical Engineer
Chief Engineer(MechanicalB.S.)
M.o.T.I.PW.H.&U.D.
P.O. BOX 30743-00100
NAIROBI

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INTRODUCTION

1.1 This standard tender document for procurement of works has been prepared for use by procuring entities in Kenya in the procurement of works (i.e. Buildings and associated Civil Engineering Works).

1.2 The following guidelines should be observed when using the document: -

(a) Specific details should be furnished in the Invitation to tender and in the special conditions of contract (where applicable). The tender document issued to tenderers should not have blank spaces or options.

(b) The instructions to tenderers and the General Conditions of Contract should remain unchanged. Any necessary amendments to these parts should be made through Appendix to instructions to tenderers and special conditions of contract respectively.

1.3

(b) Information contained in the invitation to tender shall conform to the data and information in the tender documents to enable prospective tenderers to decide whether or not to participate in the tender and shall indicate any important tender requirements

(c) The invitation to tender shall be as an advertisement in accordance with the regulations or a letter of invitation addressed to tenderers who have been prequalified following a request for prequalification.

1.4 The cover of the document shall be modified to include: -

I. Tender number.
II. Tender name.
III. Name of procuring entity.
IV. Delete name and address of PPRA.

SECTION I INVITATION FOR TENDERS

TENDER NO. TSC/OT/49/2019-2020

TENDER NAME: PROPOSED COMPLETION OF A DOUBLE STOREY OFFICE BLOCK AT BOMET FOR TEACHERS SERVICE COMMISSION

1.1 The Teachers Service Commission invites sealed tenders from eligible candidates for **Proposed Completion of Double Storey Office Block at Bomet for Teachers Service Commission.**

1.2 Interested eligible candidates may obtain further information and inspect the tender documents from **Supply Chain Management Section, 2nd Floor Podium Wing, Teachers Service Commission House, Kilimanjaro Road Upper Hill** during normal office working hours.

1.3 A complete set of tender documents may be obtained by interested candidates upon payment of a non-refundable fee of **Kshs.1, 000.00** in cash or bankers cheque payable to **The Secretary, Teachers Service Commission**. The Tender documents may also be downloaded from TSC website (www.tsc.go.ke) or Kenya supplier portal (www.ifmis.go.ke). Tender documents downloaded from the website are free of charge.

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

1.5 Completed tender documents are to be enclosed in plain sealed envelopes, marked with the tender number and name and be deposited in the Tender Box at **TSC House Podium Wing, Main Reception Ground Floor** or be addressed to **The Secretary, Teachers Service Commission, P.O Box -00100, Nairobi** so as to be received on or before **Wednesday, 20th November, 2019 at 9.00am.**

1.6 Tenders must be accompanied by a Tender Security of **Kshs 700,000.00** value in form of a guarantee from a reputable bank or from an insurance company approved by PPRA (formerly TSC), payable to the Commission Secretary Teachers Service Commission. The tender security should remain valid for 150 days after the date of tender opening.

1.7 Tenders will be opened immediately thereafter in the presence of the candidate's representatives who choose to attend at **Teachers Service Commission House, 3rd Floor Podium Wing.**

1.8 Interested bidders are requested to attend a site meeting on **Thursday, 14th November 2019 at 10.00 am** at TSC office Bomet.

SECTION II

INSTRUCTIONS TO TENDERERS

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INSTRUCTIONS TO TENDERERS.

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

1.1 The Employer as defined in the Appendix to Conditions of Contract invites tenders for Works Contract as described in the tender documents. The successful tenderer will be expected to complete the Works by the Intended Completion Date specified in the tender documents.

1.2 All tenderers shall provide the Qualification Information, a statement that the tenderer (including all members of a joint venture and subcontractors) is not associated, or has not been associated in the past, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications, and other documents for the project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the Works, and any of its affiliates, shall not be eligible to tender.

1.3 All tenderers shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.

1.4 In the event that pre-qualification of potential tenderers has been undertaken, only tenders from pre-qualified tenderers will be considered for award of Contract. These qualified tenderers should submit with their tenders any information updating their original pre-qualification applications or, alternatively, confirm in their tenders that the originally submitted pre-qualification information remains essentially correct as of the date of tender submission.

1.5 Where no pre-qualification of potential tenderers has been done, all tenderers shall include the following information and documents with their tenders, unless otherwise stated:

(a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the tender to commit the tenderer:

(b) total monetary value of construction work performed for each of the last five years:

(c) experience in works of a similar nature and size for each of the last five years, and details of work under way or contractually committed; and names and addresses of clients who may be contacted for further information on these contracts;

(d) major items of construction equipment proposed to carry out the Contract and an undertaking that they will be available for the Contract.

(e) qualifications and experience of key site management and technical personnel proposed for the Contract and an undertaking that they shall be available for the Contract.

(f) reports on the financial standing of the tenderer, such as profit and loss statements and auditor's reports for the past five years;

(g) evidence of adequacy of working capital for this Contract (access to line(s) of credit and availability of other financial resources);

(h) authority to seek references from the tenderer's bankers;

(i) information regarding any litigation, current or during the last five years, in which the tenderer is involved, the parties concerned and disputed amount; and

(j) proposals for subcontracting components of the Works amounting to more than 10 percent of the Contract Price.

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

(a) the tender shall include all the information listed in clause 1.5 above for each joint venture partner;

(b) the tender shall be signed so as to be legally binding on all partners;

(c) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;

(d) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of all partners of the joint venture; and

(e) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

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

(a) annual volume of construction work of at least 2.5 times the estimated annual cash flow for the Contract;

(b) experience as main contractor in the construction of at least two works of a nature and complexity equivalent to the Works over the last 10 years (to comply with this requirement, works cited should be at least 70 percent complete);

(c) proposals for the timely acquisition (own, lease, hire, etc.) of the essential equipment listed as required for the Works;

(d) a Contract manager with at least five years' experience in works of an equivalent nature and volume, including no less than three years as Manager; and

(e) liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than 4 months of the estimated payment flow under this Contract.

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

Subcontractors' experience and resources will not be taken into account in determining the tenderer's compliance with the qualifying criteria, unless otherwise stated.

1.9 Each tenderer shall submit only one tender, either individually or as a partner in a joint venture. A tenderer who submits or participates in more than one tender (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the tenderer's participation to be disqualified.

1.10 The tenderer shall bear all costs associated with the preparation and submission of his tender, and the Employer will in no case be responsible or liable for those costs.

1.11 The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the Works and its surroundings, and obtain all information that may be necessary for preparing the tender and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the tenderer's own expense.

1.12 The procuring entity's employees, committee members, board members and their relative (spouse and children) are not eligible to participate in the tender.

1.13 The price to be charged for the tender document shall not exceed Kshs. 1,000/=

1.14 The procuring entity shall allow the tenderer to review the tender document free of charge before purchase.

2. Tender Documents

2.1 The complete set of tender documents comprises the documents listed below and any addenda issued in accordance with Clause 2.4.

(a) These Instructions to Tenderers
(b) Form of Tender and Qualification Information
(c) Conditions of Contract
(d) Appendix to Conditions of Contract
(e) Specifications
(f) Drawings
(g) Bills of Quantities
(h) Forms of Securities

2.2 The tenderer shall examine all Instructions, Forms to be filled and Specifications in the tender documents. Failure to furnish all information required by the tender documents, or submission of a tender not substantially responsive to the tendering documents in every respect will be at the tenderer's risk and may result in rejection of his tender.

2.3 A prospective tenderer making an inquiry relating to the tender documents may notify the Employer in writing or by cable, telex or facsimile at the address indicated in the letter of invitation to tender. The Employer will only respond to requests for clarification received earlier than seven days prior to the deadline for submission of tenders. Copies of the Employer's response will be forwarded to all persons issued with tendering documents, including a description of the inquiry, but without identifying its source.

2.4 Before the deadline for submission of tenders, the Employer may modify the tendering documents by issuing addenda. Any addendum thus issued shall be part of the tendering documents and shall be communicated in writing or by cable, telex or facsimile to all tenderers. Prospective tenderers shall acknowledge receipt of each addendum in writing to the Employer.

2.5 To give prospective tenderers reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend, as necessary, the deadline for submission of tenders, in accordance with Clause 4.2 here below.

3. Preparation of Tenders

3.1 All documents relating to the tender and any correspondence shall be in English language.

3.2 The tender submitted by the tenderer shall comprise the following:

(a) These Instructions to Tenderers, Form of Tender, Conditions of Contract, Appendix to Conditions of Contract and Specifications;
(b) Tender Security;
(c) Priced Bill of Quantities;
(d) Qualification Information Form and Documents;
(e) Alternative offers where invited; and
(f) Any other materials required to be completed and submitted by the tenderers.

3.3 The tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items for which no rate or price is entered by the tenderer will not be paid for when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities. All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause relevant to the Contract, as of 30 days prior to the deadline for submission of tenders, shall be included in the tender price submitted by the tenderer.

3.4 The rates and prices quoted by the tenderer shall only be subject to adjustment during the performance of the Contract if provided for in the Appendix to Conditions of Contract and provisions made in the Conditions of Contract.

3.5 The unit rates and prices shall be in Kenya Shillings.

3.6 Tenders shall remain valid for a period of ONE TWENTY (120) days from the date of submission. However, in exceptional circumstances, the Employer may request that the tenderers extend the period of validity for a specified additional period. The request and the tenderers' responses shall be made in writing. A tenderer may refuse the request without forfeiting the Tender Security. A tenderer agreeing to the request will not be required or permitted to otherwise modify the tender, but will be required to extend the validity of Tender Security for the period of the extension, and in compliance with Clause 3.7 - 3.11 in all respects.

3.7 The tenderer shall furnish, as part of the tender, a Tender Security in the amount and form specified in the appendix to invitation to tenderers. This shall be in the amount not exceeding 2 percent of the tender price

3.8 The format of the Tender Security should be in accordance with the form of Tender Security included in Section G - Standard forms or any other form acceptable to the Employer. Tender Security shall be valid for 30 days beyond the validity of the tender.

3.9 Any tender not accompanied by an acceptable Tender Security shall be rejected. The Tender Security of a joint venture must define as "Tenderer" all joint venture partners and list them in the following manner: a joint venture consisting of" ……","…….", and "……".

3.10 The Tender Securities of unsuccessful tenderers will be returned within 28 days of the end of the tender validity period specified in Clause 3.6.

3.11 The Tender Security of the successful tenderer will be discharged when the tenderer has signed the Contract Agreement and furnished the required Performance Security.

3.12 The Tender Security may be forfeited

(a) if the tenderer withdraws the tender after tender opening during the period of tender validity;

(b) if the tenderer does not accept the correction of the tender price, pursuant to Clause 5.7;

(c) in the case of a successful tenderer, if the tenderer fails within the specified time limit to

(i) sign the Agreement, or
(ii) furnish the required Performance Security.

3.13 Tenderers shall submit offers that comply with the requirements of the tendering documents, including the basic technical design as indicated in the Drawings and Specifications. Alternatives will not be considered, unless specifically allowed in the invitation to tender. If so allowed, tenderers wishing to offer technical alternatives to the requirements of the tendering documents must also submit a tender that complies with the requirements of the tendering documents, including the basic technical design as indicated in the Drawings and Specifications. In addition to submitting the basic tender, the tenderer shall provide all information necessary for a complete evaluation of the alternative, including design calculations, technical specifications, breakdown of prices, proposed construction methods and other relevant details. Only the technical alternatives, if any, of the lowest evaluated tender conforming to the basic technical requirements shall be considered.

3.14 The tenderer shall prepare one original of the documents comprising the tender documents as described in Clause 3.2 of these Instructions to Tenderers, bound with the volume containing the Form of Tender, and clearly marked "ORIGINAL". In addition, the tenderer shall submit copies of the tender, in the number specified in the invitation to tender, and clearly marked as "COPIES". In the event of discrepancy between them, the original shall prevail.

3.15 The original and all copies of the tender shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the tenderer, pursuant to Clause 1.5 (a) or 1.6 (b), as the case may be. All pages of the tender where alterations or additions have been made shall be initialed by the person or persons signing the tender.

3.16 Clarification of tenders shall be requested by the tenderer to be received by the procuring entity not later than 7 days prior to the deadline for submission of tenders.

3.17 The procuring entity shall reply to any clarifications sought by the tenderer within 3 days of receiving the request to enable the tenderer to make timely submission of its tender.

3.18 The tender security shall be in the amount of 2 per cent of the tender price.

4. Submission of Tenders

4.1 The tenderer shall seal the original and all copies of the tender in two inner envelopes and one outer envelope, duly marking the inner envelopes as "**ORIGINAL**" and "**COPIES**" as appropriate. The inner and outer envelopes shall:

(a) be addressed to the Employer at the address provided in the invitation to tender;

(b) bear the name and identification number of the Contract as defined in the invitation to tender; and

(c) provide a warning not to open before the specified time and date for tender opening.

4.2 Tenders shall be delivered to the Employer at the address specified above not later than **20th November,2019 at 9.00 am**. However, the Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Sub-Clause 2.5 in which case all rights and obligations of the Employer and the tenderers previously subject to the original deadline will then be subject to the new deadline.

4.3 Any tender received after the deadline prescribed in clause 4.2 will be returned to the tenderer un-opened.

4.4 Tenderers may modify or withdraw their tenders by giving notice in writing before the deadline prescribed in clause 4.2. Each tenderer's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with clause 3.13 and 4.1, with the outer and inner envelopes additionally marked "**MODIFICATION"** and "**WITHDRAWAL**", as appropriate. No tender may be modified after the deadline for submission of tenders.

4.5 Withdrawal of a tender between the deadline for submission of tenders and the expiration of the period of tender validity specified in the invitation to tender or as extended pursuant to Clause 3.6 may result in the forfeiture of the Tender Security pursuant to Clause 3.11.

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

5. Tender Opening and Evaluation

5.1 The tenders will be opened by the Employer, including modifications made pursuant to Clause 4.4, in the presence of the tenderers' representatives who choose to attend on **20th November, 2019 at 9.00 am**. Envelopes marked "**WITHDRAWAL**" shall be opened and read out first. Tenderers' and Employer's representatives who are present during the opening shall sign a register evidencing their attendance.

5.2 The tenderers' names, the tender prices, the total amount of each tender and of any alternative tender (if alternatives have been requested or permitted), any discounts, tender modifications and withdrawals, the presence or absence of Tender Security, and such other details as may be considered appropriate, will be announced by the Employer at the opening. Minutes of the tender opening, including the information disclosed to those present will be prepared by the Employer.

5.3 Information relating to the examination, clarification, evaluation, and comparison of tenders and recommendations for the award of Contract shall not be disclosed to tenderers or any other persons not officially concerned with such process until the award to the successful tenderer has been announced. Any effort by a tenderer to influence the Employer's officials, processing of tenders or award decisions may result in the rejection of his tender.

5.4 To assist in the examination, evaluation, and comparison of tenders, the Employer at his discretion, may ask any tenderer for clarification of the tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, telex or facsimile but no change in the price or substance of the tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered in the evaluation of the tenders in accordance with Clause 5.7.

5.5 Prior to the detailed evaluation of tenders, the Employer will determine whether each tender (a) meets the eligibility criteria defined in Clause 1.7;(b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the tendering documents. A substantially responsive tender is one which conforms to all the terms, conditions and specifications of the tendering documents, without material deviation or reservation. A material deviation or reservation is one (a) which

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

5.6 If a tender is not substantially responsive, it will be rejected, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

5.7 Tenders determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows:

(a) where there is a discrepancy between the amount in figures and the amount in words, the amount in words will prevail; and

(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 the adjustment will be made to the entry containing that error.

(c) 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 Bill of Quantities, the amount as stated in the Form of Tender shall prevail.

(d) The Error Correction Factor shall be computed by expressing the difference between the tender amount and the corrected tender sum as a percentage of the corrected Builder's Work (i.e. Corrected tender sum less P.C. and Provisional Sums)

(e) The Error Correction Factor shall be applied to all Builder's Work (as a rebate or addition as the case may be) for the purposes of valuations for Interim Certificates and valuation of variations.

(f) 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 3.11.

5.8 The Employer will evaluate and compare only the tenders determined to be substantially responsive in accordance with Clause 5.5.

5.9 In evaluating the 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 5.7;

(b) excluding provisional sums and the provision, if any, for contingencies in the Bill of Quantities, but including Day works where priced competitively.

(c) making an appropriate adjustment for any other acceptable variations, deviations, or alternative offers submitted in accordance with clause 3.12; and

(d) making appropriate adjustments to reflect discounts or other price modifications offered in accordance with clause 4.6

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

5.11 The tenderer shall not influence the Employer on any matter relating to his tender from the time of the tender opening to the time the Contract is awarded. Any effort by the Tenderer to influence the Employer or his employees in his decision on tender evaluation, tender comparison or Contract award may result in the rejection of the tender.

5.12 Firms incorporated in Kenya where indigenous Kenyans own 51% or more of the share capital shall be allowed a 10% preferential bias provided that they do not sub-contract work valued at more than 50% of the Contract Price excluding Provisional Sums to an non-indigenous sub-contractor.

6. Award of Contract

6.1 Subject to Clause 6.2, the award of the Contract will be made to the tenderer whose tender has been determined to be substantially

responsive to the tendering documents and who has offered the lowest evaluated tender price, provided that such tenderer has been determined to be (a) eligible in accordance with the provision of Clauses 1.2, and (b) qualified in accordance with the provisions of clause 1.7 and 1.8.

6.2 Notwithstanding clause 6.1 above, the Employer reserves the right to accept or reject any tender, and to cancel the tendering process and reject all tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected tenderer or tenderers or any obligation to inform the affected tenderer or tenderers of the grounds for the action.

6.3 The tenderer whose tender has been accepted will be notified of the award prior to expiration of the tender validity period in writing or by cable, telex or facsimile. This notification (hereinafter and in all Contract documents called the "Letter of Acceptance") will state the sum (hereinafter and in all Contract documents called the "Contract Price") that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract. At the same time the other tenderers shall be informed that their tenders have not been successful.

The contract shall be formed on the parties signing the contract.

6.4 The Agreement will incorporate all agreements between the Employer and the successful tenderer. Within 14 days of receipt the successful tenderer will sign the Agreement and return it to the Employer.

6.5 Within 21 days after receipt of the Letter of Acceptance, the successful tenderer shall deliver to the Employer a Performance Security in the amount stipulated in the Appendix to Conditions of Contract and in the form stipulated in the Tender documents. The Performance Security shall be in the amount and specified form

6.6 Failure of the successful tenderer to comply with the requirements of clause 6.5 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Tender Security.

6.7 Upon the furnishing by the successful tenderer of the Performance Security, the Employer will promptly notify the other tenderers that their tenders have been unsuccessful.

6.8 Preference where allowed in the evaluation of tenders shall not be allowed for contracts not exceeding one year (12 months)

6.9 The tender evaluation committee shall evaluate the tender within 30 days of the validity period from the date of opening the tender.

6.10 The parties to the contract shall have it signed within 30 days from the date of notification of contract award unless there is an administrative review request.

6.11 Contract price variations shall not be allowed for contracts not exceeding one year (12 months)

6.12 Where contract price variation is allowed, the valuation shall not exceed 15% of the original contract price.

6.13 Price variation request shall be processed by the procuring entity within 30 days of receiving the request.

6.14 The procuring entity may at any time terminate procurement proceedings before contract award and shall not be liable to any person for the termination.

6.15 The procuring entity shall give prompt notice of the termination to the tenderers and on request give its reasons for termination within 14 days of receiving the request from any tenderer.

6.16 A tenderer who gives false information in the tender document about its qualification or who refuses to enter into a contract after notification of contract award shall be considered for debarment from participating in future public procurement.

7. Corrupt and Fraudulent practices

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

APPENDIX TO INSTRUCTIONS TO TENDERERS

The following appendix to instructions to tenderers shall complement or amend the provisions of the instructions to tenderers (Section II). Wherever there is a conflict between the provisions of the instructions to tenderers and the provisions of the appendix, the provisions of the appendix herein shall prevail over those of the instructions to tenderers.

CLAUSE

1.5 (a) For the requirement of this clause; add the following:

i. Be registered with National Construction Authority, Category 5 and ABOVE (Evidence of current registration and practicing license);

ii. Submit Valid Tax Compliance Certificate;

1.5 (c) For the requirement of this clause;

i. Omit the words "each of" appearing before 'the last five years'

ii. Attach copies of practical completion certificates for similar works undertaken in the last five years

1.5 (d) Delete the word 'Major' and substitute with the word 'Relevant' Key equipment required to carry out the works include:-

1.6Add the following after the words 'qualifying criteria;' (attach the relevant supporting documents as evidence)

1.5 (e) Delete the figure '4' and substitute with figure '2'

Introduce the following:-

1.6 (f) The following tenders shall also be considered non-responsive: - Incomplete **and/or unsigned form of tender;**

3.2 For the requirement of this clause; add the following

(g) Appendix to the Instruction to Bidders.

3.6: Amend the first sentence to read as follows:

'Tenders shall remain valid for a period of 120 days from the date of submission'

3.7 & 3.18: Tender Security Amount of Tender Security shall be as indicated in the tender advertisement.

Form: Guarantee from a Bank or an Insurance Company approved by Public Procurement Regulatory Authority (PPRA).

3.16: For clarification purposes only, the Employer's address is: Attention:

Attention: CHIEF EXECUTIVE OFFICER, TEACHERS SERVICE COMMISSION
Address: Private Bag - Nairobi
Telephone: (020) 289 2000
E-mail: info@tsc.go.ke

Clause 6.12 Delete figure '15%' and substitute with figure '25%'

5. Tenders will be evaluated as per the following criteria

TENDER EVALUATION CRITERIA

After tender opening, the tenders will be evaluated in **5 stages**, namely:

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

STAGE 1: PRELIMINARY EXAMINATION

This stage of evaluation shall involve examination of the pre-qualification conditions as set out in the Letter of Invitation to Tender and any other conditions stated in the bid document.
These conditions shall include the following:

S/No.	Mandatory Requirements	Responsive or Non Responsive
MR1	Be a Registered Company incorporated in Kenya under the Companies Act CAP 486. (Attach copy of certificate of incorporation/Registration)	
MR2	Must provide an original bid security of Kshs.700,000.00 from an approved reputable commercial bank or PPRA approved insurance company in form of a banker's cheque or bank guarantee. Any other form of bid bond will not be accepted. The bid security should be valid for 150 days after the date of tender opening. TSC shall seek information of bid security validity from the issuing Financial Institutions or Insurance firms.	
MR3	Must provide a valid copy of Tax Compliance Certificate (TCC). Attach TCC checker from KRA Website	
MR4	Must provide a copy of valid PIN Certificate and VAT	
MR5	Must be registered in Category NCA5 (Building Works) and above with National Construction Authority (enclose a valid certified copy of registration certificate and Practicing License)	
MR6	For specialists works, must be registered in Category NCA5 and above with National Construction Authority (enclose a valid certified copy of registration certificate and Practicing License) for relevant trade OR provide a signed agreement with a subcontractor who meets the above requirement	
MR7	Where there's a signed agreement in S/No. MR6 above, the subcontractor must provide; i. Certificate of incorporation/Registration ii. valid copy of Tax Compliance Certificate (TCC).	
MR8	Form of Tender must be duly completed, signed and stamped in the format provided by the Director or if delegated, attach a letter of attorney,	
MR9	Copy of audited financial statements of accounts for the last three years (2016,2017 and 2018) signed by an Accountant/Auditor Registered member of ICPAK.	
MR10	Must fill, sign and stamp the Confidential Business Questionnaire in the format provided	
MR11	Provide a valid filled up CR112 from the Registrar of Companies	
MR12	Interested tenderers must provide a letter of authority authorizing the Teachers Service Commission to seek for confirmation or counter check any of the information provided in the tender document from a relevant source	
MR13	During the site visit, tenders will present their signed and stamped site visit forms downloaded from the tender document for signature by TSC officers.	

MR14	Attach copy of current/valid single business permit from the County Government.	
MR15	Must fill, sign and stamp Anti-Corruption Declaration/commitment pledge form.	
MR16	One original tender document properly bound and paginated / serialized / numbered on all pages and attachments.	
MR17	Must fill, sign and stamp Debarment Declaration form in the format provided.	

Note: ***Only bids meeting all the above requirements shall proceed to Second phase of Technical evaluation***

The bid security shall be in accordance with clauses 13 and 23.2 of Instruction to Tenderers which states as follows:

- ***Clause 13.1*** *of Instruction to Tenderers, "the tenderers shall furnish as part of his tenders a tender surety in the amount stated in the tender document in the Appendix to Instructions to Tenderers".*
- ***Clause 13.2*** *of Instruction to Tenderers, "the unconditional Tender surety shall be in Kenya shillings and be in form of a certified cheque, bank draft, an irrevocable letter of credit or a guarantee from a reputable Bank/ Insurance approved by PPOA located in the Republic of Kenya. The format of the surety shall be in accordance with the sample form included in the tender documents and the tender surety shall be valid for* ***150 days*** *from the date of tender opening".*
- ***Clause 23.2*** *of Instruction to Tenderers: "For the purposes of this clause, a substantially responsive tender is one which conforms to all terms and condition and specifications of the tender document without material deviation or reservation and has a valid Bank/Insurance guarantee".*

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

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

STAGE 2: TECHNICAL EVALUATION

Assessment for eligibility

The tender document shall be examined based on clause 2.2 of the Instruction to Tenderers which states as follows: *'In accordance with clause 2.2 of Instruction to Tenderers, the tenderers will be required to provide evidence for eligibility of the award of the tender by satisfying the employer of their eligibility under sub clause 2.1 of Instruction to Tenderers and adequacy of resources to effectively carry out the subject contract. The tenderers shall be required to fill the Standard Forms provided for the purposes of providing the required information. The tenderers may also attach the required information if they so desire.*

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

Parameter		**Maximum Points**
(i)	Tender Questionnaire ----------	2
(ii)	Key personnel ----------	20
(i)	Contract Completed in the last Five (5) years ----------	15
(iv)	Schedules of on-going projects ----------	8
(v)	Schedules of contractors equipment ----------	10

(vi) Audited Financial Report for the last 3 years ---------- 12
(vii) Evidence of Financial Resources ---------- 13
(viii) Litigation History ---------- 2
(ix) Compliance with subcontract technical specifications ---------- 18
TOTAL **100**

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

TABLE 1: Assessment for Eligibility

Item	Description	Point Scored	Max. Point	
i.	**Tender Confidential Questionnaire Form** • Completely filled ----------2 • Not filled ----------0		2	**2**
ii	**Key Personnel (Attach evidence)**			**20**
	Director of the firm • Holder of degree in relevant Engineering field ---------- 6 • Holder of diploma in relevant Engineering field ---------- 5 • Holder of certificate in relevant Engineering field --------- 3 • Holder of trade test certificate in relevant Engineering field --- 2 • No relevant certificate ----------0		6	
	At least 1No. degree holder of key personnel in relevant engineering field • With over 10 years relevant experience ----------6 • With over 5 years' relevant experience ---------- 4 • With under 5 years relevant experience ---------- 2		6	
	At least 1No Diploma holder of key personnel in relevant engineering field • With over 10 years' relevant experience ----------4 • With over 5 years' relevant experience ----------3 • With under 5 years relevant experience ----------1		**4**	
	At least 2No artisan (trade test certificate in relevant engineering field) • Artisan with over 10 years' relevant experience ---------- 2 • Artisan with under 10 years' relevant experience ---------- 1 • Non skilled worker with over 10 years relevant experience ---- 1		4	
iii	**Contract completed in the last five (5) years (Max of 3No. Projects)- Provide Evidence** • Must have completed three (3) projects with similar nature, complexity and magnitude in the last five (5) years (2014, 2015, 2016, 2017, 2018) each of which must be of a value more than 70% and above of contract price quoted for this project (***Attach signed project contract forms and completion certificates***) @ 5 marks each • Complete two (2) projects of similar nature, complexity or magnitude in the last five (5) years (2014,2015,2016, 2017, 2018) with a value between 50% - 69% of the contract price @ 2.5 marks each ***(Attach signed project contract forms and completion certificates***) • No completed project of similar nature ---------- 0		15 10	**15**

iv	**On-going projects – <u>Provide Evidence</u>** • No Project of similar nature, complexity and magnitude --8 • Three and below Projects of similar, nature complexity and magnitude –4		8 4	**8**
v	**Schedule of contractor's equipment and transport ownership/Lease) Please attach proof e.g. lease agreements or ownership/Logbooks. For each Logbook or Lease agreement 2.5 marks** **a) Relevant Transport** • Means of transport (2No. truck/pickup) ----------5 • No means of transport----------0		5	**10**
	Please attach proof e.g. lease agreements or ownership/Logbooks. For each Logbook or Lease agreement 2.5 marks **b) Relevant Equipment** • Has relevant equipment for work being tendered------- 5 • No relevant equipment for work being tendered----------0		5	
vi	**Financial report** a) Audited financial report for the last three (3) years (2016, 2017, 2018) The Audited Financial Reports must be signed by a registered Accountant or Auditor who is a registered member of **ICPAK** • Average Annual Turn-over for the last three years above, greater than or equal to 3 times the cost of the project @ 4 marks • Average Annual Turn-over for the last three (3) years above, greater than or equal to two (2) times the cost of the project @ 2 marks • Average Annual Turn-over for the last three (3) years above. Less than two (2) times the cost of the project @ 1 mark		12 6 1	**12**
vii	b)Evidence of Financial Resources (cash in hand, lines of credit, over draft facility etc.) • Must demonstrate access to--or availability to liquid cash/ asset, lines of credit and other financial means sufficient to the construction provide an estimated cash flow for the first 3months of Kenya shillings 10m and above. Provide measurable evidence @ 13 Marks • Has provided evidence of financial resources as per above estimated at a cost of Kenya Shillings Five Million @ 5 Marks • Has not indicated sources of financial resources @ 0 Marks		13 5	**13**
viii	**Litigation History** • Duly Filled----------2 • Not filled ---------- 0		2	**2**
ix	**Compliance with Subcontract technical specifications** • Compliance with electrical works technical specifications ------ 6 • Compliance with structured cabling & IP - PABX installations technical specifications --------6 • Compliance with mechanical installations technical specifications -------6 • Not complied----------0		6 6 6	**18**
	TOTAL		**100**	

Any bidder who scores 70 points and above shall be considered for Financial Evaluation.

Note;

In order to comply with the requirement ix (Compliance with Subcontract technical specifications) above, the tenderers shall be required;

To supply equipment/items which comply with the technical specifications set out in the bid document. In this regard, the bidder will be required to submit relevant technical brochure/catalogues with the tender document, highlighting the Catalogue Number of the proposed items. Such brochures/ catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:

(i) Standards of manufacture;
(ii) Performance ratings/characteristics;
(iii)Material of manufacture;
(iv) Electrical power ratings; and
(v) Any other necessary requirements (specify).

STAGE 3 - FINANCIAL EVALUATION

Upon completion of the technical evaluation a detailed financial evaluation shall follow. The financial evaluation shall proceed in the manner described in the Public Procurement and Disposal Act (2015) of the Public Procurement and Asset Disposal Act.

The financial evaluation shall be in **two stages;**

a) Comparison of Rates; and
b) Consistency of the Rates.

A) 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 through the Head of Procurement 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) 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.

B) 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.

C. Due Diligence

The Evaluation Committee shall conduct due diligence on the lowest evaluated bidder so as to confirm the information provided in the tender document and get confidential references from the firms mentioned by the tenderer.

STAGE 4 - RECOMMENDATION FOR AWARD

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

SECTION III CONDITIONS OF CONTRACT

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CONDITIONS OF CONTRACT

1. Definitions

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

"Bill of Quantities" means the priced and completed Bill of Quantities forming part of the tender.

"Compensation Events" are those defined in Clause 24 hereunder.

"The 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 Contractor as recorded in the Agreement Form and signed by the parties including all attachments and appendices thereto and all documents incorporated by reference therein to execute, complete, and maintain the Works,

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

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

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

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

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

"The Defects Liability Certificate" is the certificate issued by 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.

"Day works" are Work inputs subject to payment on a time basis for labour and the associated materials and plant.
"Employer", or the **"Procuring entity"** as defined in the Public Procurement Regulations (i.e. Central or Local Government administration, Universities, Public Institutions and Corporations, etc.) is the party who employs the 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 an acceleration order.

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

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

"Project Manager" is the person named in the Appendix to Conditions of 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" is the area defined as such in the Appendix to Condition of Contract.

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

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

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

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

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

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

"The Works" are what the Contract requires the Contractor to construct, install, and turnover to the Employer, as defined in the Appendix to Conditions of Contract.

2. Interpretation

2.1 In interpreting these 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) Bill 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. Language and Law

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

4 Project Manager's Decisions

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

5 Delegation

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

6 Communications

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

7 Subcontracting

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

8 Other Contractors

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

9 Personnel

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

10 Works

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

11 Safety and Temporary Works

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

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

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

12. Discoveries

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

13. Work Program

13.1 Within the time stated in the Appendix to Conditions of Contract, the Contractor shall submit to the Project Manager for approval a program showing the general methods, arrangements, order, and

timing for all the activities in the Works. An update of the program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining Work, including any changes to the sequence of the activities.

The Contractor shall submit to the Project Manager for approval an updated program at intervals no longer than the period stated in the Appendix to Conditions of Contract. If the Contractor does not submit an updated program within this period, the Project Manager

may withhold the amount stated in the said Appendix from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue program has been submitted. The Project Manager's approval of the program shall not alter the Contractor's obligations. The Contractor may revise the program and submit it to the Project Manager again at any time. A revised program shall show the effect of Variations and Compensation Events.

14. Possession of Site

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

15. Access to Site

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

16. Instructions

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

17. Extension or Acceleration of Completion Date

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

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

18. Management Meetings

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

19. Early Warning

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

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

20. Defects

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

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

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

21. Bills of Quantities

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

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

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

22. Variations

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

22.2 The Contractor shall provide the Project Manager with a quotation for carrying out the variations when requested to do so. The Project Manager shall assess the quotation, which shall be given

within seven days of the request or within any longer period as may be stated by the Project Manager and before the Variation is ordered.

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

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

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

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

23. Payment Certificates, Currency of Payments and Advance Payments

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

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

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

23.4 If an amount certified is increased in a later certificate or 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 a 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

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

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

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

24. Compensation Events

24.1 The following issues shall constitute Compensation Events:

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

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

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

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

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

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

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

(h) Other 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 Contractor, 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. 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 provisions in the Contract Bills of Quantities or Specifications) for permanent incorporation in the Works. Unless otherwise stated in the Contract, if at 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 thereunder;

(i) The prices 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 prices 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 rates.

26. Retention

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

27. Liquidated Damages

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

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

28. Securities

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

29. Day works

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

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

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

30. Liability and Insurance

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

(a) The risk of personal injury, death or loss of or damage to property (excluding the Works, Plant, Materials and Equipment), which are due to;
  (i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works, or
  (ii) negligence, breach of statutory duty or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.

(b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in Employer's design, or due to war or radioactive contamination directly affecting the place where the Works are being executed.

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

(a) a defect which existed on or before the Completion Date.

(b) an event occurring before the Completion Date, which was not itself the Employer's risk

(c) the activities of the Contractor on the Site after the Completion Date.

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

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 an insurance shall not be made without the approval of the Project Manager. Both parties shall comply with any conditions of insurance policies.

31. Completion and taking over

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

32. Final Account

32.1 The Contractor shall issue the Project Manager with a detailed account of the total amount that the Contractor considers payable to him by the Employer under the 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. 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 a breach 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 Contract 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. 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 date of the issue of the certificate. Additional liquidated damages shall not apply. If the total amount due to the Employer exceeds any payment due to the 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 any defects and may enter upon the Works and use all materials on the Site, plant, equipment and temporary works.

34.4 The Contractor shall, during the execution or after the completion of the Works under this clause remove from the Site as and when required, within such reasonable time as the Project Manager may in writing specify, any temporary buildings, plant, machinery, appliances, goods or materials belonging to or hired by him, and in default the Employer may (without being responsible for any loss or damage) remove and sell any such property of the Contractor, holding 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 Contractor; and if the said amount added to the said money be less than the said total amount, the difference shall be a debt payable by the Employer to the Contractor.

35. Release from Performance

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

36. Corrupt gifts and payments of commission

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 favor or disfavor 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 him or acting on his behalf (whether with or without the knowledge of the Contractor) shall be an offence under the provisions of the Public Procurement Regulations issued under The Exchequer and Audit Act Cap 412 of the Laws of Kenya.

37. Settlement of Disputes

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

(i) Architectural Association of Kenya
(ii) Institute of Quantity Surveyors of Kenya
(iii) Association of Consulting Engineers of Kenya
(iv) Chartered Institute of Arbitrators (Kenya Branch)
(v) Institution 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 thereunder 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 party:

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 matters 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 desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject of or included in any certificate.

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

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

SECTION IV – APPENDIX TO CONDITIONS OF CONTRACT

THE EMPLOYER IS

Name: **TEACHERS SERVICE COMMISSION**

Address: **PRIVATE BAG, NAIROBI**

Name of Authorized Representative: **THE CHIEF EXECUTIVE OFFICER, TEACHERS SERVICE COMMISSION**

Telephone: (020) 289 2000

Facsimile:

The Project Manager is

Name: **WORKS SECRETARY, MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT -NAIROBI**

Address: **P.O BOX 30743-00200NAIROBI**

Telephone: **+254-20-2723101**

Facsimile: **+254-20-2716738**

The name (and identification number) of the Contract **PROPOSED COMPLETION OF DOUBLE STOREY OFFICE BLOCK AT BOMET FOR TEACHERS SERVICE COMMISSION**

The Works consist of **COMPLETION OF DOUBLE STOREY OFFICE BLOCK**

The Start Date shall be **AGREED WITH THE PROJECT MANAGER**

The Intended Completion Date for the whole of the Works shall be **26 WEEKS AFTER COMMENCEMENT DATE**

The following documents also form part of the Contract: Documents listed in **clause 2.1** conditions of contract

The Contractor shall submit a revised program for the Works within **7**days of delivery of the Letter of Acceptance.

The Site Possession Date shall be **AGREED WITH THE PROJECT MANAGER**

The Site is located **AT THE NEW TEACHERS SERVICE COMMISSION OFFICES IN BOMET TOWN**

The Defects Liability period is **180** days.

Other Contractors, utilities etc., to be engaged by the Employer on the Site
Include those for the execution of;

1. **ELECTRICAL INSTALLATIONS**
2. **MECHANICAL INSTALLATIONS**

The minimum insurance covers shall be;

1. The minimum cover for insurance of the Works and of Plant and Materials in respect of the Contractor's faulty design is **NIL**

2. The minimum cover for loss or damage to Equipment is KShs **2,000,000.00**

3. The minimum for insurance of other property is **Kshs1,000,000.00**

4. The minimum cover for personal injury or death insurance

- For the Contractor's employees is **AS PER APPLICABLE LAWS**
- And for other people is **Kshs 2,000,000.00**

The following events shall also be Compensation Events:

1. Those listed in the conditions of contract Clause 24

The period between Program updates is 14 days.

The amount to be withheld for late submission of an updated Program is **the entire certificate**

The proportion of payments retained is **10**% percent.

The Price Adjustment Clause **SHALL NOT** apply

The liquidated damages for the whole of the Works is Kshs. **25,000** (per week or part thereof)

The Performance Security shall be in form of a bank guarantee from a reputable bank in Kenya equivalent to 10% of the contract sum payable before signing of the contract.

The Completion Period for the Works is **26 Weeks**

The rate of exchange for calculation of foreign currency payments **(AS PER THE PREVAILING EXCHANGE RATE)**

The schedule of basic rates used in pricing by the Contractor is as attached *[Contractor to attach]*.

Advance Payment **SHALL NOT BE GRANTED.**

Period of final re-measurements - 3Months from Practical Completion

Defects Liability period – 6 Months from Practical Completion

Date for possession – to be agreed with the Project Manager

Date for Completion – **26** weeks from Date for possession

Liquidated and ascertained damages – Kshs. **25,000** (per week or part thereof)

Period of interim certificates – 30 days

Period of honoring certificates – 30 days

Percentage value retained – 10%

Limit of amount certified retained – 5%

Prime cost sums for which the contractor desires to tender

SPECIAL CONDITIONS OF CONTRACT

i. Variation shall only be considered if recommended by the contract implementation team.

ii. There shall be no price or rates adjustments for the prices quoted by the tenderer during the implementation period

iii. Tenders shall remain valid for 120 days, however the procurement entity may request for an extension

iv. There shall be no correction of errors. The amount as read out during the tender document shall be absolute and final

v. There shall be no variation within 12 months from the date of the signed of contract

vi. The notification of the award shall not form or constitute a contract but remains an intension to enter into a contract

vii. No contract shall be signed before receipt of a valid performance security bond of **10%** of the contract sum/price. The performance security Bond shall be submitted to Teachers Service Commission within Twenty-Eight (28) days but not earlier than fourteen days (14) from the date of Successful Notification of Tender Award.

All interested bidders shall provide a letter of authority authorizing the clients to seek confirmation or counter check any of the information provided.

SECTION V - SPECIFICATIONS

Notes for preparing Specifications

1.0 Specifications must be drafted to present a clear and precise statement of the required standards of materials, and workmanship for tenderers to respond realistically and competitively to the requirements of the Employer and ensure responsiveness of tenders. The Specifications should require that all materials, plant, and other supplies to be permanently incorporated in the Works be new, unused, of the most recent or current models, and incorporating all recent improvements in design and materials unless provided otherwise in the Contract. Where the Contractor is responsible for the design of any part of the permanent Works, the extent of his obligations must be stated.

2.0 Specifications from previous similar projects are useful and may not be necessary to re-write specifications for every Works Contract.

3.0 There are considerable advantages in standardizing **General Specifications for** repetitive Works in recognized public sectors, such as highways, urban housing, irrigation and water supply. The General Specifications should cover all classes of workmanship, materials and equipment commonly involved in constructions, although not necessarily to be used in a particular works contract. Deletions or addenda should then adapt the General Specifications to the particular Works.

4.0 Care must be taken in drafting Specifications to ensure they are not restrictive. In the Specifications of standards for materials, plant and workmanship, existing Kenya Standards should be used as much as possible, otherwise recognized international standards may also be used.

5.0 The Employer should decide whether technical solutions to specified parts of the Works are to be permitted. Alternatives are appropriate in cases where obvious (and potentially less costly) alternatives are possible to the technical solutions indicated in tender documents for certain elements of the Works, taking into consideration the comparative specialized advantage of potential tenderers.

The Employer should provide a description of the selected parts of the Works with appropriate reference to Drawings, Specifications, Bills of Quantities, and Design or Performance criteria, stating that the alternative solutions shall be at least structurally and functionally equivalent to the basic design parameters and Specifications.

Such alternative solutions shall be accompanied by all information necessary for a complete evaluation by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, proposed construction methodology, and other relevant details. Technical alternatives permitted in this manner shall be considered by the Employer each on its own merits and independently of whether the tenderer has priced the item as described in the Employer's design included with the tender documents.

SECTION VI - DRAWINGS

Note 1. A list of drawings should be inserted here **(to be provided)**

SECTION VII - BILL OF QUANTITIES

Notes for preparing Bills of Quantities

1.0 The objectives of the Bills of Quantities are;

(a) to provide sufficient information on the quantities of Works to be performed to enable tenders to be prepared efficiently and accurately; and

(b) when a Contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed.

In order to attain these objectives, Works should be itemized in the Bill of Quantities in sufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and brief as possible.

2.0 The Bills of Quantities should be divided generally into the following sections:

(a) Preliminaries.

The preliminaries should indicate the inclusiveness of the unit prices, and should state the methods of measurement which have been adopted in the preparation of the Bill of Quantities and which are to be used for the measurement of any part of the Works.

The number of preliminary items to be priced by the tenderer should be limited to tangible items such as site office and other temporary works, otherwise items such as security for the Works which are primarily part of the Contractor's obligations should be included in the Contractor's rates.

(b) Work Items

(i) The items in the Bills of Quantities should be grouped into sections to distinguish between those parts of the Works which by nature, location, access, timing, or any other special characteristics may give rise to different methods of construction, or phasing of the Works, or considerations of cost. General items common to all parts of the Works may be grouped as a separate section in the Bill of Quantities.

(ii) Quantities should be computed net from the Drawings, unless directed otherwise in the Contract, and no allowance should be made for bulking, shrinkage or waste. Quantities should be rounded up or down where appropriate.

(iii) The following units of measurement and abbreviations are recommended for use.

Unit	*Abbreviation*	*Unit*	*Abbreviation*
cubic meter	m^3 or cu m	millimeter	mm
hectare	ha	month	mon
hour	h	number	nr
kilogram	kg	square meter	m^2 or sq m
lump sum	sum	square millimeter	mm^2 or sq mm
meter	m	week	wk
metric ton (1,000 kg)	t		

(iv) The commencing surface should be identified in the description of each item for Work involving excavation, boring or drilling, for which the commencing surface is not also the original surface. The excavated surface should be identified in the description of each item for Work involving excavation for which the excavated surface is not also the final surface. The depths of Work should be measured from the commencing surface to the excavated surface, as defined.

(c) Day work Schedule

A Day work Schedule should be included if the probability of unforeseen work, outside the items included in the Bill of Quantities, is relatively high. To facilitate checking by the Employer of the realism of rates quoted by the tenderers, the Day work Schedule should normally comprise:

(i) a list of the various classes of labor, and materials for which basic Day work rates or prices are to be inserted by the tenderer, together with a statement of the conditions under which the Contractor will be paid for
Work executed on a Day work basis; and

(ii) a percentage to be entered by the tenderer against each basic Day work Subtotal amount for labour, materials and plant representing the Contractor's profit, overheads, supervision and other charges.

(c) Provisional Quantities and Sums

(i) Provision for quantity contingencies in any particular item or class of Work with a high expectation of quantity overrun should be made by entering specific "Provisional Quantities" or "Provisional Items" in the Bill of Quantities, and *not* by increasing the quantities for that item or class of Work beyond those of the Work normally expected to be required. To the extent not covered above, a general provision for physical contingencies (quantity overruns) should be made by including a "Provisional Sum" in the Summary of the Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a "Provisional Sum" in the Summary of the Bill of Quantities. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises.

(ii) Provisional sums to cover specialized works normally carried out by Nominated Sub Contractors should be avoided and instead Bills of Quantities of the specialized

Works should be included as a section of the main Bills of Quantities to be priced by the Main Contractor. The Main Contractor should be required to indicate the name (s) of the specialized firms he proposes to engage to carry out the specialized Works as his approved domestic sub-contractors. Only provisional sums to cover specialized Works by statutory authorities should be included in the Bills of Quantities.

(e) Summary

The Summary should contain a tabulation of the separate parts of the Bills of Quantities carried forward, with provisional sums for Daywork, for physical (quantity) contingencies, and for price contingencies (upward price adjustment) where applicable.

SECTION VIII – STANDARD FORMS

i. Form of Invitation for Tenders
ii. Form of Tender
iii. Letter of Acceptance
iv. Form of Agreement
v. Form of Tender Security
vi. Performance Bank Guarantee
vii. Bank Guarantee for Advance Payment
viii. Qualification Information
ix. Tender Questionnaire
x. Confidential Business Questionnaire
xi. Statement of Foreign Currency Requirement
xii. Details of Sub-Contractors
xiii. Request for Review Form

FORM OF INVITATION FOR TENDERS

_____*[date]*

To: _____*[name of Contractor]*
_____*[address]*
_____
_____

Dear Sirs:

*Reference:*_____*[Contract Name]*

You have been prequalified to tender for the above project.

We hereby invite you and other prequalified tenderers to submit a tender for the execution and completion of the above Contract.

A complete set of tender documents may be purchased by you from _____
_____
[mailing address, cable/telex/facsimile numbers].

Upon payment of a non-refundable fee of Kshs _____

All tenders must be accompanied by_____number of copies of the same and a security in the form and amount specified in the tendering documents, and must be delivered to
_____
[address and location]

at or before_____*(time and date).* Tenders will be opened immediately thereafter, in the presence of tenderers' representatives who choose to attend.

Please confirm receipt of this letter immediately in writing by cable/facsimile or telex.

Yours faithfully,

_____Authorized Signature

_____*Name and Title*

FORM OF TENDER

TO: ……..……..……*[Name of Employer)*

……*[Date]*……

……. *[Name of Contract]*

Dear Sir,

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

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

3. We agree to abide by this tender until …… *[Insert date],* and it shall remain binding upon us and may be accepted at any time before that date.

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

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

Dated this _____day of _____20_____ Signature _____ in the capacity of_____duly authorized to sign tenders for and on behalf of ……. *[Name of Employer]* of……. [*Address of Employer]*

Witness; Name_____

Address_____

Signature_____

Date_____

LETTER OF ACCEPTANCE

[letterhead paper of the Employer]

_____*[date]*

To: _____
[name of the Contractor]

_____
[address of the Contractor]

Dear Sir,

This is to notify you that your Tender dated _____
for the execution of _____
[name of the Contract and identification number, as given in the Tender documents] for the Contract Price of Kshs.
_____*[amount in figures]* [Kenya Shillings_____*(amount in words)*]
in accordance with the Instructions to Tenderers is hereby accepted.

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

Authorized Signature ……

Name and Title of Signatory ……

Attachment: Agreement

FORM OF AGREEMENT

THIS AGREEMENT, made the _____ day of _____ 20 _____ between_____of[or whose registered office is situated at]_____
(hereinafter called "the Employer") of the one part AND
_____of[or whose registered office is situated at]_____
(hereinafter called "the Contractor") of the other part.

WHEREAS THE Employer is desirous that the Contractor executes
_____
(name and identification number of Contract) (hereinafter called "the Works") located at_____*[Place/location of the Works*]and the Employer has accepted the tender submitted by the Contractor for the execution and completion of such Works and the remedying of any defects therein for the Contract Price of Kshs_____[*Amount in figures*],Kenya Shillings_____[*Amount in words]*.

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents shall be deemed to form and shall be read and construed as part of this Agreement i.e.

   (i) Letter of Acceptance

   (ii) Form of Tender

   (iii) Conditions of Contract Part I

   (iv) Conditions of Contract Part II and Appendix to Conditions of Contract

   (v) Specifications

   (vi) Drawings

   (vii) Priced Bills of Quantities

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

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

The common Seal of _____

Was hereunto affixed in the presence of _____

Signed Sealed, and Delivered by the said _____

Binding Signature of Employer _____

Binding Signature of Contractor _____

In the presence of (i) Name_____

Address_____

Signature_____

[ii] Name _____

Address_____

Signature_____

FORM OF TENDER SECURITY

WHEREAS …….. (hereinafter called "the Tenderer") has submitted his tender dated …… for the construction of …… *(Name of Contract)*

KNOW ALL PEOPLE by these presents that WE …… having our registered office at …… (hereinafter called "the Bank"), are bound unto …… (hereinafter called "the Employer") in the sum of Kshs…… for which payment well and truly to be made to the said Employer, the Bank binds itself, its successors and assigns by these presents sealed with the Common Seal of the said Bank this ……. Day of ……20……

THE CONDITIONS of this obligation are:

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

2. If the tenderer, having been notified of the acceptance of his tender by the Employer during the period of tender validity:

   (a) fails or refuses to execute the form of Agreement in accordance with the Instructions to Tenderers, if required; or
   (b) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Tenderers;

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

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

[Date [	*[signature of the Bank]*
[Witness]	*[Seal]*

PERFORMANCE BANK GUARANTEE

To:_____(*Name of Employer*)_____*(Date)*
_____(*Address of Employer)*

Dear Sir,

WHEREAS_____(hereinafter called "the Contractor") has undertaken, in pursuance of Contract No._____dated_____to execute_____(hereinafter called "the Works");

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

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

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

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

We further agree that no change, addition or other modification of the terms of the Contract or of the Works to be performed 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 _____

BANK GUARANTEE FOR ADVANCE PAYMENT

To: _____ *[name of Employer]* _____ *(Date)*
_____ *[address of Employer]*

Gentlemen,

Ref: _____ *[name of Contract]*

In accordance with the provisions of the Conditions of Contract of the above-mentioned Contract, We, _____ *[name and Address of Contractor]* (hereinafter called "the Contractor") shall deposit with _____ *[name of Employer]* a bank guarantee to guarantee his proper and faithful performance under the said Contract in an amount of Kshs. _____ *[amount of Guarantee in figurers]* Kenya Shillings _____ *[amount of Guarantee in words]*.

We, _____ [*bank or financial institution*], as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to _____ [*name of Employer*] on his first demand without whatsoever right of objection on our part and without his first claim to the Contractor, in the amount not exceeding Kshs _____ [*amount of Guarantee in figures*] Kenya Shillings _____ [*amount of Guarantee in words*], such amount to be reduced periodically by the amounts recovered by you from the proceeds of the Contract.

We further agree that no change or addition to 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 _____ [*name of Employer*] and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

No drawing may be made by you under this guarantee until we have received notice in writing from you that an advance payment of the amount listed above has been paid to the Contractor pursuant to the Contract.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until _____ (*name of Employer*) receives full payment of the same amount from the Contract.

Yours faithfully,

Signature and Seal _____

Name of the Bank or financial institution _____

Address _____

Date _____

Witness: Name: _____

Address: _____

Signature: _____

Date: _____

QUALIFICATION INFORMATION

1. Individual Tenderers or Individual Members of Joint Ventures

1.1 Constitution or legal status of tenderer (attach copy or Incorporation Certificate);
Place of registration: _____

Principal place of business _____

Power of attorney of signatory of tender _____

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

Year	Volume	
	Currency	Value

1.3 Work performed as Main Contractor on works of a similar nature and volume over the last five years. Also list details of work under way or committed, including expected completion date.

Project name	Name of client and contact person	Type of work performed	Value of Contract and year of completion
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

1.4 Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below.

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?)
_____ _____ _____(etc.)	_____ _____	_____ _____	

1.5 Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data.

Position	Name	Years of experience (general)	Years of experience in proposed position
Project Manager _____	_____	_____	_____
_____	_____	_____	_____
Etc			

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

_____
_____

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

_____
_____
_____

1.8 Name, address and telephone, telex and facsimile numbers of banks that may provide reference if contacted by the Employer.

_____
_____

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

_____
_____
_____

1.10 Proposed program (work method and schedule) for the whole of the Works.

2 Joint Ventures

2.4 The information listed in 1.1 – 1.10 above shall be provided for each partner of the joint venture.

2.5 The information required in 1.11 above shall be provided for the joint venture.

2.6 Attach the power of attorney of the signatory(ies) of the tender authorizing signature of the tender on behalf of the joint venture

2.7 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that:

a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;

b) one of the partners will be nominated as being in charge, authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture; and

c) The execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

TENDER QUESTIONNAIRE

Please fill in block letters.

1. Full names of tenderer

……

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

……

3. Telephone number (s) of tenderer

……

4. Telex address of tenderer

……

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

……

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

……

……

_____
Signature of Tenderer

Make copy and deliver to:_____(*Name of Employer*)

CONFIDENTIAL BUSINESS QUESTIONNAIRE

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

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

Part 1 – General

Business Name ……

Location of business premises; Country/Town……

Plot No…… Street/Road ……

Postal Address…… Tel No……..

Nature of Business……..

Current Trade License No…… Expiring date……

Maximum value of business which you can handle at any time: K. pound……..

Name of your bankers……

Branch……

Part 2 (a) – Sole Proprietor

Your name in full…… Age……

Nationality…… Country of Origin……

*Citizenship details ……

Part 2 (b) – Partnership

Give details of partners as follows:

	Name in full	*Nationality*	*Citizenship Details*	*Shares*
1				
2				
3				

Part 2(c) – Registered Company:

Private or public……

State the nominal and issued capital of the Company-

Nominal Kshs……

Issued Kshs……

Give details of all directors as follows:

Name in full . Nationality. Citizenship Details*. Shares.

1……

2……

3……

4……

Part 2(d) – Interest in the Firm:

Is there any person / persons in …… …… (*Name of Employer)* who has interest in this firm? Yes/No…… (*Delete as necessary*)

I certify that the information given above is correct.

…… …… ……
(Title) *(Signature)* *(Date)*

☐ Attach proof of citizenship

STATEMENT OF FOREIGN CURRENCY REQUIREMENTS

(See Clause 23] of the Conditions of Contract)

In the event of our Tender for the execution of_____
_____(*name of Contract*) being accepted, we would require in accordance with Clause 21 of the Conditions of Contract, which is attached hereto, the following percentage:

(Figures)…… (Words)……

of the Contract Sum, (Less Fluctuations) to be paid in foreign currency.

Currency in which foreign exchange element is required:

……

Date: The …… Day of …….. 20…….

Enter 0% (zero percent) if no payment will be made in foreign currency.

Maximum foreign currency requirement shall be_____(percent) of the Contract Sum, less Fluctuations.

_____
(Signature of Tenderer)

DETAILS OF SUB-CONTRACTORS

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

Failure to comply with this requirement may invalidate the tender.

(1) Portion of Works to be sublet: ……

[i] Full name of Sub-contractor and address of head office: ……

……

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

……

(2) Portion of Works to sublet: ……

(i) Full name of sub-contractor and address of head office: ……

……

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

……

_____ _____

[Signature of Tenderer) Date

LETTER OF NOTIFICATION OF AWARD

Address of Procuring Entity

_____

_____

To:_____

_____

_____

_____

RE: TenderNo._____

Tender Name_____

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

_____

_____

1. Please acknowledge receipt of this letter of notification signifying your acceptance.

2. The contract/contracts shall be signed by the parties within 30 days of the date of this letter but not earlier than 14 days fromthe date of the letter.

3. You may contact the officer(s) whose particulars appear below on the subject matter of this letter of notification of award.

   *(FULL PARTICULARS)*_____

   _____

SIGNED FOR ACCOUNTING OFFICER

FORM RB 1

REPUBLIC OF KENYA

PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD

APPLICATION NO…….OF… .....20…….

BETWEEN

……APPLICANT

AND

……RESPONDENT (procuring entity)

Request for review of the decision of the …… (Name of procuring entity) of……dated the ……..20……..in the matter of tender no. …….of ……..20……

REQUEST FOR REVIEW

I/We ……, the above named Applicant(s), of address: Physical address……Fax No……tel. No……..Email……, hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds, namely:-

1.

2.

3.

Etc.

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

1.

2.

Etc.

Signed……(Applicant)

Dated on……day of ……/20……..

FOR OFFICIAL USE ONLY

Lodged with the secretary public procurement administrative review board on…….day of …….20……..

Signed

Board secretary

SITE VISIT CERTIFICATE

This is to certify that (IN BLOCK LETTERS)

Name:

Cell Phone No:

Email:
Being the authorized representative of (IN BLOCK LETTERS)

M/S [Firm/Company]

Official Tel No

Official Email:

Participated in the organized inspection visit of the site of the works for:

TSC/T/049/2018/2019: TENDER FOR COMPLETION OF THE PROPOSED DOUBLE OFFICE BLOCK AT BOMET FOT TEACHERS SERVICE COMMISSION
Held on Day of Month 2019

Signed: (Employer's Representative)
(Name of Employer's Representative)

(Designation)

NOTE: 1. This form is to be completed at the time of the organized site visit.
2. Bidder to bring along with him duly filled site visit certificate during the site visit

TSC/T/49/2019/20120: TENDER FOR COMPLETION OF THE PROPOSED DOUBLE STOREY OFFICE BLOCK AT BOMET FOR TEACHERS SERVICE COMMISSION

FORM OF DECLARATION OF TENDERER'S KNOWLEDGE OF SITE

1. This is to certify that

[Name/s] ……

Being the authorized representative/Agent of [Name of Bidder]

……

……

Has undertaken the inspection of site in accordance with the instruction to Bidders, for purposes of bidding for TSC/T/033/2018/2019: TENDER FOR COMPLETION OF THE PROPOSED DOUBLE STOREY OFFICE BLOCK AT BOMET FOT TEACHERS SERVICE COMMISSION

……

Held on……. Day of…….20……..…

2. Having studied the tender document, I carefully examined the site to make myself familiar with the local conditions likely to influence the works and cost thereof.

3. I further certify that I am satisfied with the description of the works and I understand perfectly the scope of the works as specified and implied in the performance of the contract

SIGNED AND STAMPED…….……...…….

(Bidder's Representative)

**Bidder to bring along with him duly filled site visit certificate during the site visit

INTEGRITY DECLARATION

UNDERTAKING BY TENDERER ON ANTI – BRIBERY POLICY / CODE OF CONDUCT AND COMPLIANCE PROGRAMME

1. Each Tenderer must submit a statement, as part of the Tender documents, in either of the two given formats which must be signed personally by the Chief Executive Officer or other appropriate senior corporate officer of the Tendering company and, where relevant, of its subsidiary in the Kenya. If a Tender is submitted by a subsidiary, a statement to this effect will also be required of the parent company, signed by its Chief Executive Officer or other appropriate senior corporate officer.

2. Tenderers will also be required to submit similar No-bribery commitments from their subcontractors and consortium partners; the Tenderer may cover the subcontractors and consortium partners in its own statement, provided the Tenderer assumes full responsibility.

3. a) Payment to agents and other third parties shall be limited to appropriate compensation for legitimate services.

b) Each Tenderer will make full disclosure in the Tender documentation of the beneficiaries and amounts of all payments made, or intended to be made, to agents or other third parties (including political parties or electoral candidates) relating to the Tender and, if successful, the implementation of the contract.

c) The successful Tenderer will also make full disclosure [quarterly or semi- annually] of all payments to agents and other third parties during the execution of the contract.

d) Within six months of the completion of the performance of the contract, the successful Tenderer will formally certify that no bribes or other illicit commissions have been paid. The final accounting shall include brief details of the goods and services provided that they are sufficient to establish the legitimacy of the payments made.

e) Statements required according to subparagraphs (b) and (d) of this paragraph will have to be certified by the company's Chief Executive Officer, or other appropriate senior corporate officer.

4. Tenders which do not conform to these requirements shall not be considered.

5. If the successful Tenderer fails to comply with its No-bribery commitment, significant sanctions will apply. The sanctions may include all or any of the following:

a) Cancellation of the contract;

b) Liability for damages to the public authority and/or the unsuccessful competitors in the Tendering possibly in the form of a lump sum representing a pre-set percentage of the contract value (liquidated).

6. Tenderers shall make available, as part of their Tender, copies of their anti-Bribery Policy/Code of Conduct, if any, and of their-general or project - specific - Compliance Program.

7. The Government of Kenya has made special arrangements for adequate oversight of the procurement process and the execution of the contract, and has invited civil society and other competent Government Departments to participate in the oversight. Those charged with the oversight responsibility will have full access to all documentation submitted by Tenderers for this contract, and to which in turn all Tenderers and other parties involved or affected by the project shall have full access (provided, however, that no proprietary information concerning a Tenderer may be disclosed to another Tenderer or to the public).

ANTI-CORRUPTION DECLARATION PLEDGE

(Sections 39, 40,41,42,43 & of the PPD Act, 2005)

I/We/Messrs…….

of Street, Building, P O Box……

……..

Contact/Phone/E mail……

declare that Public Procurement is based on a free and fair competitive Tendering process which should not be open to abuse.

I/We ..……..

declare that I/We will not offer or facilitate, directly or indirectly, any inducement or reward to any public officer, their relations or business associates, in connection with

Tender/Tender No ……..…….

for or in the subsequent performance of the contract if I/We am/are successful.

Authorized Signature.....

Name and Title of Signatory……

NON-DEBARMENT STATEMENT

I/We/Messrs……

of .....Street/avenue, ... Building,

P. O. Box ……Code ...……, of ..... (town), ... (Nationality),

Phone ..... E-mail .....……

declare that I/We /Messrs ..... are not debarred from participating in public procurement by the Public Procurement Oversight Authority pursuant to pursuant to Section 62 of the Public Procurement & Asset Disposal Act, 2015

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

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

Name and Title of Signatory…….....

PARTICULAR PRELIMINARIES

Item	Description	Amount KShs.
	PARTICULAR PRELIMINARIES	
A	**PRICING ITEMS OF PRELIMINARIES** Prices **SHALL BE INSERTED** against items of "preliminaries" in the tenderer's priced Bills of Quantities. The contractor is advised to read and understand all preliminary items.	
B	**DESCRIPTION OF THE WORKS** The works to be carried out under this contract is; COMPLETION OF OFFICE BLOCK AND ASSOCIATED CIVIL, ELECTRICAL AND MECHANICAL WORKS	
C	**MEASUREMENTS** In the event of any discrepancies arising between the Bills of Quantities and the actual works, the site measurements shall generally take precedence. However, such discrepancies between any contract documents shall immediately be referred to the PROJECT MANAGER in accordance with Clause 22 of the Conditions of Contract. The discrepancies shall then be treated as a variation and be dealt with in accordance with Clause 22 of the said Conditions.	
D	**LOCATION OF SITE** The site of the proposed works is AT THE NEW TEACHERS SERVICE COMMISSION OFFICES IN BOMET TOWN. The Contractor is advised to visit the site, to familiarize with the nature and position of the site. No claims arising from the Contractor's failure to do so will be entertained.	
E	**SIGNING OF THE TENDER DOCUMENTS** The bidder shall append his / her signature and / or company „s rubberstamp on each and every page of tender document.	
F	**DEMOLITIONS AND ALTERATIONS** The Contractor is to allow for all temporary protection required during the works including ordinary and special dust screens, hoardings, barriers, warning signs, etc as directed by the Project Manager and as necessary for the adequate propping and protection of existing property, finishes, workmen employed on the site, employer's agents and the public. Any damage or loss incurred due to the insufficiency of such protection must be made good by the Contractor. All protective devices are to be removed on completion of the works and any necessary making good consequent upon this is to be executed to the satisfaction of the Project Manager The works shall be propped, strutted and supported as necessary before any alteration or demolition work commences. Prices shall include for all cleaning and preparatory work to structure and finishes and for making good to all finishes on completion whether or not specifically described. Unless described as set aside for re-use all arising debris and surplus materials shall be carefully removed from building and carted away from site. The Contractor shall be entirely responsible for any breakage or damage which may occur to materials required for re-use during their removal unless it is certified by the Project Manager that such damage or breakage was inevitable as a result of the condition of the item concerned	
	Carried to collection	

Item	Description	Amount KShs.
A	**CLEARING AWAY** The Contractor shall remove all temporary works, rubbish, debris and surplus materials from the site as they accumulate and upon completion of the works, remove and clear away all plant, equipment, rubbish, unused materials and stains and leave in a clean and tidy state to the reasonable satisfaction of the Project Manager. The whole of the works shall be delivered up clean, complete and in perfect condition in every respect to the satisfaction of the Project Manager.	
B	**CLAIMS** It shall be a condition of this contract that upon it becoming reasonably apparent to the Contractor that he has incurred losses and / or expenses due to any of the contract conditions, or by any other reason whatsoever, he shall present such a claim or intent to claim notice to the PROJECT MANAGER within the contract period. No claim shall be entertained upon the expiry of the said contact period.	
C	**PAYMENTS** The tenderer's attention is drawn to the fact that the GOVERNMENT DOES NOT MAKE ADVANCE PAYMENTS but pays for work done and materials delivered to sit: all in accordance with Clause 23 of the Conditions of Contract Agreement. In order to facilitate this, a list of the general component elements for the works is given at the summary page of these specifications and the tenderer is requested to break down his tender sum commensurate to the said elements	
D	**PREVENTION OF ACCIDENT, DAMAGE OR LOSS** The Contractor is notified that these works are to be carried out on a restricted site where the client is going on with other nomal activities. The Contractor is thus instructed to take reasonable care in the execution of the works as to prevent accidents, damage or loss and disruption of activities beeing carried out by the Client. The Contractor shall allow in his rates any expense he deemed necessary by taking such care within the site.	
E	**WORKING CONDITIONS** The Contractor shall allow in his rates for any interference that he may encounter in the course of the works for the Client may in some cases ask the Contractor not to proceed with the works until some activities within the site are completed, as the facility will be operating as usual during the course of the contract.	
F	**SIGNBOARD** Allow for providing, erecting, maintaining throughout the course of the Contract and afterwards clearing away a signboard as designed, specified and approved by the Project Manager.	
G	**LABOUR CAMPS** The Contractor shall not be allowed to house labour on site. Allow for transporting workers to and from the site during the tenure of the contract.	
H	**MATERIALS FROM DEMOLITIONS** Any materials arising from demolitions and not re-used shall become the property of the Client	
	Carried to collection	

Item	Description	Amount KShs.
A	**PRICING RATES** The tenderer shall include for all costs in executing the whole of the works, including transport, replacing damaged items, fixing, all to comply with the said Conditions of Contract.	
B	**URGENCY OF THE WORKS** The Contractor is notified that these " works are urgent" and should be completed within the period stated in these Particular Preliminaries. The Contractor shall allow in his rates for any costs he/ she deems that he/she may incur by having to complete these works within the stipulated contract period.	
C	**PAYMENT FOR MATERIALS ON SITE** All materials for incorporation in the works must be stored on site before payment is effected, unless specifically exempted by the Project Manager. This is to include materials of the Contractor, nominated sub-Contractors and nominated suppliers.	
D	**EXISTING SERVICES** Prior to the commencement of any work, the Contractor is to ascertain from the relevant authority the exact position, depth and level of all existing services in the area and he/she shall make whatever provisions may be required by the authorities concerned for the support, maintenance and protection of such services.	
E	**CONTRACT COMPLETION PERIOD** The contract completion period in accordance with condition 31 of the Conditions of contract must be adhered to. The „PROJECT MANAGER" shall strictly monitor the Contractors progress in relation to the progress chart and should it be found necessary the „PROJECT MANAGER" shall inform the Contractor in writing that his actual performance on site is not satisfactory .In all such cases the Contractor shall accelerate his rate of performance production and progress by all means such as additional labour, plant, e.t.c and working overtime all at his cost.	
F	**BID SECURITY** The tenderer shall provide a Bid Security not exceeding 2% in accordance with clause 3.7 of the Instructions to Tenderer's.	
G	**TENDER DOCUMENTS** Tender documents are as listed in Clause 2.1 of the Instruction to Tenderer's Page STD/9	
H	**DELIVERY OF TENDER** Tenders and all documents in connection therewith, as specified above must be delivered in the addressed envelope which should be properly sealed and deposited at the offices as specified in the letter accompanying these documents or as indicated in the advertisement. Tenders will be opened at the time specified in the letter accompanying these Tender Documents or as indicated in the advertisement. Tenders delivered/received later than the above time will not be opened.	
	Carried to collection	

Item	Description	Amount KShs.
A	**VALUE ADDED TAX** The Contractor's attention is drawn to the Legal Notice in Finance Act part 3 Section 21(b) operative from 1st September, 1993 which requires payment of VAT on all contracts. In accordance with Government public notice No. 35 & 36 Dated 11th September 2003 operational from 1st October 2003, withholding VAT is to be levied against the contract sum by the Employer and remitted to the Commissioner of VAT through interim certificates. **The contractor shall include V.A.T in the item rates.** **PROJECT MANAGERS EXPENSES** **Airtime**	
B	Allow PROVISIONAL SUM of Kenya Shillings FOURTY EIGHT THOUSAND (KShs. 48,000.00) only for Air time to be expended as directed by the Project Manager	
C	Allow for Contractor's profit and overheads (--------%)	
	Transport and subsistence allowance	
D	Allow PROVISIONAL SUM of Kenya Shillings SEVEN HUNDRED AND FIFTY THOUSAND (K.SH. 750,000.00) only for transport & Subsistence allowance to be expended as directed by the Project Manager	
E	Allow for Contractor's profit and overheads (--------%)	
	Stationery	
F	Allow PROVISIONAL SUM of Kenya Shillings ONE HUNDRED AND FIFTY THOUSAND (150,000.00) only for Project Manager's Stationery	
	Carried to collection	

Item	Description	Amount KShs.
A	**PARTICULARS OF INSERTIONS TO BE MADE IN APPENDIX TO CONTRACT AGREEMENT** The following are the insertions to be made in the appendix to the Contract Agreement: - **Period of Final Measurement** **3** Months From Practical completion **Defects Liability Period** **6** Months from Practical completion **Date for Possession** To be agreed with the Project Manager **Date for Completion** **26 Weeks** from date of Possession **Liquidated and Ascertained** At the rate of **Kshs 25,000.00** per week or part thereof **Prime cost** sums for which …… The Contractor desires to tender …… **Period of Interim Certificates** Monthly **Period of Honouring Certificates** 30 days **Percentage of Certified Value Retained** 10% **Limit of Retention Fund** 5%	
	Carried to collection	
	COLLECTION Brought forward from page PP/1 Brought forward from page PP/2 Brought forward from page PP/3 Brought forward from page PP/4 Brought forward from above	
	TOTAL FOR PARTICULAR PRELIMINARIES CARRIED TO GRAND SUMMARY	

GENERAL PRELIMINARIES

Item	Description	Amount KShs
	GENERAL PRELIMINARIES	
A	**PRICING ITEMS OF PRELIMINARIES AND PREAMBLES**	
	Prices will be inserted against items of Preliminaries in the Contractor's priced Bills of Quantities and Specification.	
	The Contractor shall be deemed to have included in his prices or rates for the various items in the Bills of Quantities or Specification for all costs involved in complying with all the requirements for the proper execution of the whole of the works in the Contract.	
B	**ABBREVIATIONS**	
	Throughout these Bills, units of measurement and terms are abbreviated and shall be all the requirements for the proper execution of the whole of the works in the Contract.	
	C.M. Shall mean cubic metre	
	S.M. Shall mean square metre	
	L.M. Shall mean linear metre	
	MM Shall mean Millimetre	
	Kg. Shall mean Kilogramme	
	No. Shall mean Number	
	Prs. Shall mean Pairs	
	B.S. - Shall mean the British Standard Specification Published by the British Standards Institution, 2 Park Street, London W.I., England.	
	Ditto - Shall mean the whole of the preceding description except as qualified in the description in which it occurs.	
	m.s. Shall mean measured separately.	
	a.b.d Shall mean as before described.	
	Carried to collection	

Item	Description	Amount KShs
A	**EXCEPTION TO THE STANDARD METHOD OF MEASUREMENT** *Attendance;* Clause B19(a) of the Standard Method of Measurement is deleted and the following clause is substituted:- Attendance on nominated Sub-Contractors shall be given as an item in each case shall be deemed to include: allowing use of standing scaffolding, mess rooms, sanitary accommodation and welfare facilities; provision of special scaffolding where necessary; providing space for office accommodation and for storage of plant and materials; providing light and water for their work: clearing away rubbish; unloading checking and hoisting: providing electric power and removing and replacing duct covers, pipe casings and the like necessary for the execution and testing of Sub-Contractors' work and being responsible for the accuracy of the same. *Fix Only:-* "Fix Only" shall mean take delivery at nearest railway station (Unless otherwise stated),pay all demurrage charges, load and transport to site where necessary, unload, store, unpack, assemble as necessary, distribute to position, hoist and fix only.	
B	**EMPLOYER** The "Employer" is the TEACHERS SERVICE COMMISSION (TSC) The term "Employer" and "TSC" wherever used in the contract document shall be synonymous	
C	**PROJECT MANAGER** The term "P.M." wherever used in these Bills of Quantities shall be deemed to imply the Project Manager as defined in Condition 1 of the Conditions of Contract. In this contract the project manager is the **WORKS SECRETARY, MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING AND URBAN PLANNING - NAIROBI P.O. Box 30743-00200, NAIROBI.**	
D	**ARCHITECT** The term "Architect" shall be deemed to mean "The P.M." as defined above whose address unless otherwise notified is Works Secretary, P.O. Box 30743-00200, NAIROBI.	
E	**QUANTITY SURVEYOR** The term "Quantity Surveyor" shall be deemed to mean "The P.M." as defined above whose address unless otherwise notified is Works Secretary, P.O. Box 30743-00200, NAIROBI.	
F	**ELECTRICAL ENGINEER** The term "Electrical Engineer" shall be deemed to mean "The P.M." as defined above whose address unless otherwise notified is Works Secretary, P.O. Box 30743-00200, NAIROBI.	
G	**MECHANICAL ENGINEER** The term "Mechanical Engineer" shall be deemed to mean "The P.M." as defined above whose address unless otherwise notified is Works Secretary, P.O. Box 30743-00200, NAIROBI.	
	Carried to collection	

Item	Description	Amount KShs
A	**STRUCTURAL ENGINEER** The term "Structural Engineer" shall be deemed to mean "The P.M." as defined above whose address unless otherwise notified is Works Secretary, P.O. Box 30743-00200, NAIROBI.	
B	**FORM OF CONTRACT** The Form of Contract shall be as stipulated in the Republic of Kenya's Standard Tender Document for Procurement of Building Works(Revised 2006 Edition) included herein The Conditions of Contract are also included herein *Conditions of Contract* These are numbered from 1 to 37 as set out in pages 22 *to 42* of these tender documents. Particulars of insertions to be made in the Appendix to the Contract Agreement will be found in the Particular Preliminaries part of these Bills of Quantities	
C	**PERFORMANCE BOND.** The Contractor shall find and submit on the Form of Tender an approved bank who will be willing to be bound to the Government in an amount equal to five per cent (5) of the Contract amount for the due performances of the Contract up to the date of completion as certified by the PROJECT MANAGER and who will, when and if called upon, sign a Bond to that effect on the relevant standard form included herein. (without the addition of any limitations) on the same day as the Contract Agreement is signed, by the Government, the Contractor shall furnish within seven days another Surety to the approval of the Government.	
D	**PLANT, TOOLS AND VEHICLES** Allow for providing all scaffolding, plant, tools and vehicles required for the works except in so far as may be stated otherwise herein and except for such items specifically and only required for the use of nominated Sub-Contractors as described herein. No timber used for scaffolding, formwork or temporary works of any kind shall be used afterwards in the permanent work.	
E	**TRANSPORT.** Allow for transport of workmen, materials, etc., to and from the site at such hours and by such routes as may be permitted by the competent authorities.	
F	**MATERIALS AND WORKMANSHIP.** All materials and workmanship used in the execution of the work shall be of the best quality and description unless otherwise stated. The Contractor shall order all materials to be obtained from overseas immediately after the Contract is signed and shall also ensure they are onsite when required for use in the works. The Bills of Quantities shall not be used for the purpose of ordering materials.	
	Carried to collection	

Item	Description	Amount KShs
A	**SIGN FOR MATERIALS SUPPLIED.** The Contractor will be required to sign a receipt for all articles and materials supplied by the PROJECT MANAGER at the time of taking deliver thereof, as having received them in good order and condition, and will thereafter be responsible for any loss or damage and for replacements of any such loss or damage with articles and/or materials which will be supplied by the PROJECT MANAGER at the current market prices including Customs Duty and V.A.T., all at the Contractor's own cost and expense, to the satisfaction of the PROJECT MANAGER	
B	**STORAGE OF MATERIALS** The Contractor shall provide at his own risk and cost where directed on the site weather proof lock-up sheds and make good damaged or disturbed surfaces upon completion to the satisfaction of the PROJECT MANAGER Nominated Sub-Contractors are to be made liable for the cost of any storage accommodation provided especially for their use.	
C	**SAMPLES** The Contractor shall furnish at his own cost any samples of materials or workmanship including concrete test cubes required for the works that may be called for by the PROJECT MANAGER for his approval until such samples are approved by the PROJECT MANAGER and the PROJECT MANAGER, may reject any materials or workmanship not in his opinion to be up to approved samples. The PROJECT MANAGER shall arrange for the testing of such materials as he may at his discretion deem desirable, but the testing shall be made at the expense of the Contractor and not at the expense of the PROJECT MANAGER. The Contractor shall pay for the testing in accordance with the current scale of testing charges laid down by the Ministry of Land, Housing and Urban Development The procedure for submitting samples of materials for testing and the method of marking for identification shall be as laid down by the PROJECT MANAGER The Contractor shall allow in his tender for such samples and tests except those in connection with nominated sub-contractors' work.	
D	**GOVERNMENT ACTS REGARDING WORKPEOPLE ETC.** Allow for complying with all Government Acts, Orders and Regulations in connection with the employment of Labour and other matters related to the execution of the works. In particular the Contractor's attention is drawn to the provisions of the Factory Act 1950 and his tender must include for all costs arising or resulting from compliance with any Act, Order or Regulation relating to Insurances, pensions and holidays for workpeople or so the safety, health and welfare of the workpeople. The Contractor must make himself fully acquainted with current Acts and Regulations, including Police Regulations regarding the movement, housing, security and control of labour, labour camps, passes for transport, etc. It is most important that the Contractor, before tendering, shall obtain from the relevant Authority the fullest information regarding all such regulations and/or restrictions which may affect the organisation of the works, supply and control of labour, etc., and allow accordingly in his tender. No claim in respect of want of knowledge in this connection will be entertained.	
	Carried to collection	

Item	Description	Amount KShs
A	**SECURITY OF WORKS ETC.** The Contractor shall be entirely responsible for the security of all the works stores, materials, plant, personnel, etc., both his own and sub-contractors' and must provide all necessary watching, lighting and other precautions as necessary to ensure security against theft, loss or damage and the protection of the public.	
B	**PUBLIC AND PRIVATE ROADS.** Maintain as required throughout the execution of the works and make good any damage to public or private roads arising from or consequent upon the execution of the works to the satisfaction of the local and other competent authority and the PROJECT MANAGER	
C	**EXISTING PROPERTY.** The Contractor shall take every precaution to avoid damage to all existing property including roads, cables, drains and other services and he will be held responsible for and shall make good all such damage arising from the execution of this contract at his own expense to the satisfaction of the PROJECT MANAGER	
D	**VISIT SITE AND EXAMINE DRAWINGS.** The Contractor is recommended to examine the drawings and visit the site the location of which is described in the Particular Preliminaries hereof. He shall be deemed to have acquainted himself therewith as to its nature, position, means of access or any other matter which, may affect his tender. No claim arising from his failure to comply with this recommendation will be considered.	
E	**ACCESS TO SITE AND TEMPORARY ROADS.** Means of access to the Site shall be agreed with the PROJECT MANAGER prior to commencement of the work and Contractor must allow for building any necessary temporary access roads for the transport of the materials, plant and workmen as may be required for the complete execution of the works including the provision of temporary culverts, crossings, bridges, or any other means of gaining access to the Site. Upon completion of the works, the Contractor shall remove such temporary access roads; temporary culverts, bridges, etc., and make good and reinstate all works and surfaces disturbed to the satisfaction of the PROJECT MANAGER The Contractor should also allow for relocating existing fence (approx. 30 metres long).	
F	**AREA TO BE OCCUPIED BY THE CONTRACTOR** The area of the site which may be occupied by the Contractor for use of storage and for the purpose of erecting workshops, etc., shall be defined on site by the PROJECT MANAGER	
	Carried to collection	

Item	Description	Amount KShs
A	**OFFICE ETC. FOR THE PROJECT MANAGER** The Contractor shall provide, erect and maintain where directed on site and afterwards dismantle the site office of the standard type, complete with furniture. He shall also provide a strong metal trunk complete with strong hasp and staple fastening and two keys. He shall provide, erect and maintain a lock-up type water or bucket closet for the sole use of the PROJECT MANAGER including making temporary connections to the drain where applicable to the satisfaction of Government and Medical Officer of Health and shall provide services of cleaner and pay all conservancy charges and keep both office and closet in a clean and sanitary condition from commencement to the completion of the works and dismantle and make good disturbed surfaces. The office and closet shall be completed before the Contractor is permitted to commence the works. The Contractor shall make available on the Site as and when required by the "PROJECT MANAGER" a modern and accurate level together with leveling staff, ranging rods and 50 metre metallic or linen tape.	
B	**WATER AND ELECTRICITY SUPPLY FOR THE WORKS** The Contractor shall provide at his own risk and cost all necessary water, electric light and power required for use in the works. The Contractor must make his own arrangements for connection to the nearest suitable water main and for metering the water used. He must also provide temporary tanks and meters as required at his own cost and clear away when no longer required and make good on completion to the entire satisfaction of the PROJECT MANAGER . The Contractor shall pay all charges in connection herewith. No guarantee is given or implied that sufficient water will be available from mains and the Contractor must make his own arrangements for augmenting this supply at his own cost. Nominated Sub--contractors are to be made liable for the cost of any water or electric current used and for any installation provided especially for their own use.	
C	**SANITATION OF THE WORKS** The Sanitation of the works shall be arranged and maintained by the Contractor to the satisfaction of the Government and/or Local Authorities, Labour Department and the PROJECT MANAGER	
D	**SUPERVISION AND WORKING HOURS** The works shall be executed under the direction and to the entire satisfaction in all respects of the PROJECT MANAGER who shall at all times during normal working hours have access to the works and to the yards and workshops of the Contractor and sub-Contractors or other places where work is being prepared for the contract.	
E	**PROVISIONAL SUMS.** The term "Provisional Sum" wherever used in these Bills of Quantities shall have the meaning stated in Section A item A7(i) of the Standard Method of Measurement. Such sums are net and no addition shall be made to them for profit.	
F	**PRIME COST (OR P.C.) SUMS.** The term "Prime Cost Sum" or "P.C. Sum" wherever used in these Bills of Quantities shall have the meaning stated in Section A item A7 (ii) of the Standard Method of Measurement. Persons or firms nominated by the PROJECT MANAGER to execute work or to provide and fix materials or goods are described herein as Nominated Sub-Contractors. Persons or firms so nominated to supply goods or materials are described herein as Nominated Suppliers.	
	Carried to collection	

Item	Description	Amount KShs
A	**PROGRESS CHART.** The Contractor shall provide within two weeks of Possession of Site and in agreement with the PROJECT MANAGER a Progress Chart for the whole of the works including the works of Nominated Sub-Contractors; one copy to be handed to the PROJECT MANAGER and a further copy to be retained on Site. Progress to be recorded and chart to be amended as necessary as the work proceeds.	
B	**ADJUSTMENT OF P.C. SUMS.** In the final account all P.C. Sums shall be deducted and the amount properly expended upon the PROJECT MANAGER'S order in respect of each of them added to the Contract sum. The Contractor shall produce to the PROJECT MANAGER such quotations, invoices or bills, properly receipted, as may be necessary to show the actual details of the sums paid by the Contractor. Items of profit upon P.C. Sums shall be adjusted in the final account pro-rata to the amount paid. Items of "attendance" Should the Contractor be permitted to tender and his tender be accepted of any work for which a P.C. Sum is included in these Bill of Quantities profit and attendance will be allowed at the same rate as it would be if the work were executed by a Nominated Sub-Contractor.	
D	**ADJUSTMENT OF PROVISIONAL SUMS.** In the final account all Provisional Sums shall be deducted and the value of the work properly executed in respect of them upon the PROJECT MANAGER's order added to the Contract Sum. Such work shall be valued as described for Variations, but should any part of the work be executed by a Nominated Sub-Contractor, the value of such work or articles for the work to be supplied by a Nominated Supplier, the value of such work or articles shall be treated as a P.C. Sum and profit and attendance comparable to that contained in the priced Bills of Quantities for similar items added.	
E	**NOMINATED SUB-CONTRACTORS** When any work is ordered by the PROJECT MANAGER to be executed by nominated sub-contractors, the Contractor shall enter into sub-contracts and shall thereafter be responsible for such sub-contractors in every respect. Unless otherwise described the Contractor is to provide for such Sub-Contractors any or all of the facilities described in these Preliminaries. The Contractor should price for these with the nominated Sub-contract Contractor's work concerned in the P.C. Sums under the description "add for Attendance".	
F	**DIRECT CONTRACTS** Notwithstanding the foregoing conditions, the Government reserves the right to place a "Direct Contract" for any goods or services required in the works which are covered by a P.C. Sum in the Bills of Quantities and to pay for the same direct. In any such instances, profit relative to the P.C. Sum the priced Bills of Quantities will be adjusted as described for P.C. Sums and allowed.	
	Carried to collection	

Item	Description	Amount KShs
A	**ATTENDANCE UPON OTHER TRADESMEN, ETC.** The Contractor shall allow for the attendance of trade upon trade and shall afford any tradesmen or other persons employed for the execution of any work not included in this Contract every facility for carrying out their work and also for use of his ordinary scaffolding. The Contractor, however, shall not be required to erect any special scaffolding for them. The Contractor shall perform such cutting away for and making good after the work of such tradesmen or persons as may be ordered by the PROJECT MANAGER and the work will be measured and paid for to the extent executed at rates provided in these Bills.	
B	**INSURANCE** The Contractor shall insure as required in Clause 30 of the Conditions of Contract. No payment on account of the work executed will be made to the Contractor until he has satisfied the PROJECT MANAGER either by production of an Insurance Policy or and Insurance Certificate that the provision of the foregoing Insurance Clauses have been complied with in all respects. Thereafter the PROJECT MANAGER shall from time to time ascertain that premiums are duly paid up by the Contractor who shall if called upon to do so, produce the receipted premium renewals for the PROJECT MANAGER's inspection.	
C	**PROVISIONAL WORK** All work described as "Provisional" in these Bills of Quantities is subject to remeasurement in order to ascertain the actual quantity executed for which payment will be made. All "Provisional" and other work liable to adjustment under this Contract shall left uncovered for a reasonable time to allow all measurements needed for such adjustment to be taken by the PROJECT MANAGER Immediately the work is ready for measuring, the Contractor shall give notice to the PROJECT MANAGER. If the Contractor makes default in these respects he shall if the PROJECT MANAGER so directs uncover the work to enable all measurements to be taken and afterwards reinstate at his own expense.	
D	**ALTERATIONS TO BILLS, PRICING, ETC.** Any unauthorised alteration or qualification made to the text of the Bills of Quantities may cause the Tender to be disqualified and will in any case be ignored. The Contractor shall be deemed to have made allowance in his prices generally to cover any items against which no price has been inserted in the priced Bills of Quantities. All items of measured work shall be priced in detail and the Tenders containing Lump Sums to cover trades or groups of work must be broken down to show the price of each item before they will be accepted.	
E	**BLASTING OPERATIONS** Blasting will only be allowed with the express permission of the PROJECT MANAGER in writing. All blasting operations shall be carried out at the Contractor's sole risk and cost in accordance with any Government regulations in force for the time being, and any special regulations laid down by the PROJECT MANAGER governing the use and storage of explosives.	
	Carried to collection	

Item	Description	Amount KShs
A	**MATERIALS ARISING FROM EXCAVATIONS** Materials of any kind obtained from the excavations shall be the property of the Government. Unless the PROJECT MANAGER directs otherwise such materials shall be dealt with as provided in the Contract. Such materials shall only be used in the works, in substitution of materials which the Contractor would otherwise have had to supply with the written permission of the PROJECT MANAGER Should such permission be given, the Contractor shall make due allowance for the value of the materials so used at a price to be agreed.	
B	**PROTECTION OF THE WORKS.** Provide protection of the whole of the works contained in the Bills of Quantities, including casing , casing up, covering or such other means as may be necessary to avoid damage to the satisfaction of the PROJECT MANAGER and remove such protection when no longer required and make good any damage which may nevertheless have been done at completion free of cost to the Government.	
C	**REMOVAL OF RUBBISH ETC.** Removal of rubbish and debris from the Buildings and site as it accumulates and at the completion of the works and remove all plant, scaffolding and unused materials at completion.	
D	**WORKS TO BE DELIVERED UP CLEAN** Clean and flush all gutters, rainwater and waste pipes, manholes and drains, wash (except where such treatment might cause damage) and clean all floors, sanitary fittings, glass inside and outside and any other parts of the works and remove all marks, blemishes, stains and defects from joinery, fittings and decorated surfaces generally, polish door furniture and bright parts of metalwork and leave the whole of the buildings watertight, clean, perfect and fit for occupation to the approval of the PROJECT MANAGER	
E	**GENERAL SPECIFICATION.** For the full description of materials and workmanship, method of execution of the work and notes for pricing, the Contractor is referred to the Ministry of Roads, Public Works and Housing General Specification dated 1976 or any subsequent revision thereof which is issued as a separate document, and which shall be allowed in all respects unless it conflicts with the General Preliminaries, Trade Preambles or other items in these Bills of Quantities.	
F	**TRAINING LEVY** The Contractor's attention is drawn to legal notice No. 237 of October, 1971, which requires payment by the Contractor of a Training Levy at the rate of 1/4 % of the Contract sum on all contracts of more than Kshs. 50,000.00 in value.	
G	**MATERIALS ON SITE** All materials for incorporation in the works must be stored on or adjacent to the site before payment is effected unless specifically exempted by the PROJECT MANAGER. This includes the materials of the Main Contractor, Nominated Sub-Contractors and Nominated Suppliers.	
	Carried to collection	

Item	Description	Amount KShs
A	**HOARDING** The Contractor shall enclose all the areas under construction with approved material to the satisfaction of the PROJECT MANAGER	
B	**CONTRACTOR'S SUPERINTENDENCE/SITE AGENT** The Contractor shall constantly keep on the works a literate English speaking Agent or Representative, competent and experienced in the kind of work involved who shall give his whole experience in the kind of work involved and shall give his whole time to the superintendence of the works. Such Agent or Representative shall receive on behalf of the Contractor all directions and instructions from the Project Manager and such directions shall be deemed to have been given to the Contractor in accordance with the Conditions of Contract.	
	Carried to collection	
	COLLECTION Brought Forward From Page GP/ 1 Brought Forward From Page GP/ 2 Brought Forward From Page GP/ 3 Brought Forward From Page GP/ 4 Brought Forward From Page GP/ 5 Brought Forward From Page GP/ 6 Brought Forward From Page GP/ 7 Brought Forward From Page GP/ 8 Brought Forward From Page GP/ 9 Brought Forward From Above	
	TOTAL FOR GENERAL PRELIMINARIES CARRIED TO GRAND SUMMARY	

PREAMBLES AND PRICING NOTES

PREAMBLES AND PRICING NOTES

A. GENERALLY

All work to be carried out in accordance with the Ministry of Roads, Public Works and Housing General Specifications for Building Works issued in 1976 or as qualified or amended.

B. MANUFACTURERS' NAMES

Where manufacturers' name(s) and catalogue references are given, it is for guidance to quality and standard only. Alternative manufacturer of equal quality will be accepted at the discretion of the Project Manager.

C. WALLING

All precast concrete blocks shall be manufactured by the methods and to the sizes specified in the Ministry of Roads, Public Works and Housing "Specification for Metric Sized Concrete Blocks for Building (1972)"

Walling of 100 mm thickness or under shall be reinforced with hoop iron at every alternate course.

Prices for walling must allow for all costs in preparing, packing and sending sample blocks for testing as and when required by the Project Manager.

D. CARPENTRY

The grading rules for cypress shall be the same as for podocarpus and all timber used for structural work shall be select (second grade).

All structural timber must conform to the minimum requirements for moisture content and preservative treatment and timber prices must allow for preparing, packing and sending samples for testing when required.

Prices must also include for all nails and fasteners.

A. JOINERY

Cypress for joinery shall be second grade in accordance with the latest grading rules of the Kenya Government.

Where Mahogany is specified, this refers to prime grade only. The Contractor may with the approval of the Project Manager, use either Msharagi or Mvuli in lieu of Mahogany but such approval will be given only in the case of shortages of the hardwoods specified.

Plugging shall be carried out by drilling walling or concrete with masonry drill and filling with propriety plugs of the correct sizes. Cutting with hammer and chisel will not be allowed.

Prices for joinery must include for pencil rounded arrises, protection against damage, nails, screws, framing and bedding in cement mortar as required.

Sizes given for joinery items are nominal sizes and exact dimensions of doors, etc, must be ascertained on site.

B. IRONMONGERY

Ironmongery shall be as specified in the Bills of Quantities or equal and approved.

Prices must include for removing and re-fixing during and after painting, labeling all keys, and for fixing to hardwood, softwood, concrete or blockwork.

Catalogue references given for ironmongery are for purposes of indicating quality and size of item(s). Should the Contractor wish to substitute the specified item(s) with others of equal quality, he must inform the Project Manager and obtain approval in writing.

C. STRUCTURAL STEELWORK

All structural steelwork shall comply with the Ministry of Roads, Public Works and Housing “Structural Steelwork Specification (1973) and shall be executed by an approved Sub-contractor.

A. PLASTERWORK AND OTHER FINISHES

All finishings shall be as described in the general specifications and in these Bills of Quantities.

Prices for pavings are to include for brushing concrete clean, wetting and coating with cement and sand grout 1:1.

Rates for glazed wall tiling are to include for a 12 mm cement and sand (1:4) backing screed unless otherwise specified in these Bills of Quantities.

B. GLAZING

Where polished plate glass is specified, this refers to general glazing quality.

Prices for glazing shall include for priming of rebates before placing putty.

The Contractor will be responsible for replacing any broken or scratched glass and handing over in perfect condition.

C. PAINTING

Painting shall be applied in accordance with the manufacturers' instructions.

Prices for painting are to include for scaffolding, preparatory work, priming coats, protection of other works and for cleaning up on completion. Prices for painting on galvanized metal are to include for mordant solution as necessary.

BUILDER'S WORK

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	PROPOSED COMPLETION OF DOUBLE STOREY OFFICE BLOCK AT BOMET FOR TEACHERS SERVICE COMMISSION				
	ELEMENT NO. 1				
	SUBSTRUCTURES (ALL PROVISIONAL)				
	ENTRANCE STAIRCASE AND RAMP				
	Excavation				
A	Excavate for footing starting from reduced level not exceeding 1.50 meters deep.	9	cm		
B	Return, fill-in and rum selected excavated materials around foundations	3	cm		
C	Remove and cart away surplus excavated materials.	6	cm		
	Filling				
D	Natural gravel (murram) filling in making up levels, watering and compacting in layers of 150mm maximum thickness	36	cm		
E	50mm (average) thick quarry dust blinding to surfaces of hardcore	59	sm		
	Concrete				
F	50mm thick mass concrete class Q (1:3:6) to bottoms of foundations	59	sm		
	Insitu concrete; reinforced; class 20 / (20mm); vibrated				
G	Foundations in trenches irrespective of thickness	6	cm		
H	150mm thick ramp to slope not exceeding 15 degrees	4	cm		
J	Steps, staircases or strings	9	cm		
	Fabric; B.S. 4483				
K	Reference A142 mesh 200 x 200 mm , weight 2.22 kgs per square meter (measured net - no allowance made for laps(including bends, tying wire and distance blocks	23	sm		
	Sawn formwork to insitu concrete as described:-				
L	To sides; vertical or battering of foundations, ground beams or the like	18	sm		
M	Edges of risers; 75 to 150mm wide	120	lm		
N	Edges of ramp; 75 to 150mm wide	30	lm		
	Carried to Collection				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	Walling				
A	200mm thick approved natural stone; local; roughly squared to foundation walling; bedding and jointing in cement sand (1:3) mortar	36	sm		
	Damp proofing				
B	Polythene sheet; 1000 gauge, 200mm welted laps (no allowance made to laps), horizontal; 1 no. layer laid on compacted quarry dust blinding	23	sm		
	Insitu Finishings				
C	14mm thick 2 No. coatwork cement sand (1:3) render; wood floated to concrete or blockwork base to walls; external	119	sm		
	Painting and Decorations				
	Prepare and apply three coats bituminous paint to:				
D	Wood floated rendered plinths over 300mm girth	119	sm		
	Paving Slabs.				
E	600 x 600 x 50 mm Precast concrete class 20/20 paving slabs, laid to falls on blinded hardcore surface and jointed in cement and sand (1:3) mortar	143	sm		
	Carried to Collection				
	COLLECTION				
	From page BW/1				
	From above				
	TOTAL FOR SUBSTRUCTURES CARRIED TO SUMMARY				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	ELEMENT NO. 2				
	WALLING				
	Glass curtain walling				
A	Approved curtain walling overall 12mm thick toughened glass consisting of 6mm thick glass (both sides) and 2mm thick plastic laminate between complete with all necessary fixing accessories to Architect's detail	75	sm		
	Sunshading				
	Precast concrete grade 25 fair finished on all exposed surfaces with 12mm aggregate including moulds and hoisting, bedding, and flush pointing in cement and sand (1:4) mortar				
B	200 x 50mm thick fins with rebated top and bottom and including all necessary reinforcement and pinning ends to concrete beams (24No.)	96	sm		
	TOTAL FOR WALLING CARRIED TO SUMMARY				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	ELEMENT NO. 3				
	ROOFING AND RAIN WATER GOODS (ATRIUM AND MAIN ENTRANCE)				
	Polycarbonate				
A	Provide and fix 12mm thick pvc polycarbon blue coloured, but translucent roof cover complete with all fixing materials; fixing to steel trusses (m/s) as per "steel structure company ltd" or any other equal and approved	182	Sm		
	STRUCTURAL STEELWORK				
	Structural steel to BS 4360 and to the Engineers specifications and approval complete with and including fabricating hoisting and fixing in position approximately 7 metres from the existing ground level, red oxide primer and two coats chlorinated rubber paint, connection details in steel plates, packing pieces and drilled 100 x 100 x 100mm thick steel angle cleats welds bolts washers and nuts fish plates and steel angle cleats are to be included in the rates for steelwork in the particular trusses where they occur.				
	Unframed; weldable				
B	100 x 50 x 2mm thick Z-purlins	214	lm		
C	50 x 50 x 4mm truss bracings	32	lm		
	Framed; weldable				
	Roof trusses ; 6 No. spanning 6.0 to 7.0metres; hoisting 8 metres above ground; all fillet welded; all to structural Engineer's details and specifications				
D	40 x 40 x 3mm S.H.S thick rafters	182	lm		
E	30 x 30 x 3mm S.H.S struts and ties	127	lm		
	Roof trusses ; 4No. Spanning 4.0 to 5.0metres; hoisting 8 metres above ground; all fillet welded; all to structural Engineer's details				
F	40 x 40 x 3mm S.H.S thick rafters	65	lm		
G	30 x 30 x 3mm S.H.S struts and ties	49	lm		
	Roof trusses ; 2No. spanning 3.0 to 4.0metres; hoisting 8 metres above ground; all fillet welded; all to structural Engineer's details				
H	40 x 40 x 3mm S.H.S thick rafters	27	lm		
J	30 x 30 x 3mm S.H.S struts and ties	19	lm		
	Carried to Collection				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	Sundries				
	Labour and material				
A	250 x 200 x 10mm base plate welded to truss (m.s)	18	No		
B	20mm diameter, 300mm long steel bolts including nut and washer	72	No		
C	Making hole in 100 x 100 x 6mm thick steel plate	72	No		
D	R16mm diameter, 1000mm long anti-sag steel rods including nut and washer	60	No		
	Waterproofing				
	Waterproofing as "abe Silicot" or equal and approved coloured cement and sand (1:4) screed on concrete: to				
E	50 mm (Average); to roof slab; slope not exceeding 15 degrees	565	Sm		
	Sirrah PGR 5 kg/sm - APP bituminous membrane or other equally approved waterproofing membrane including three coats reflective paints				
F	Laid to roof slab; slope not exceeding 15 degrees	565	Sm		
	RAINWATER DISPOSAL				
	UPVC				
K	100mm dia. UPVC gutter fixed to fascia board with and including brackets at approved centers	9	lm		
L	Extra; 100mm dia.outlet 100mm long	2	No		
M	100mm dia. UPVC rainwater downpipe fixed with and including mild steel straps at 900mm centres, plugged and screwed to wall	80	lm		
N	Extra; swanneck bend with 1135mm projection	10	No		
P	Extra; horse shoe bend	10	No		
	Carried to Collection				
	COLLECTION				
	From page BW/4				
	From above				
	TOTAL FOR ROOF CONSTRUCTION CARRIED TO SUMMARY				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	ELEMENT NO. 4				
	DOORS				
	Wrot hardwood framed frames and framings				
A	150 x 50 mm; 2 No. labours; plugged door frame	230	lm		
B	40 x 35 mm moulded architrave	230	lm		
C	25 x 25mm moulded quadrants	230	lm		
	50mm thick mahogany pannelled door, comprising 150 x 50mm top, middle and bottom rails infilled with 50mm thick solid moulded timber panels in 6 No. per leave with moulded beading around panels; edges bevelled and grooved into frames; all framed, clamped and grooved together.				
D	Single swing door size 1740 x 2060 mm high	1	No.		
	45mm Thick solid core flush doors to B.S 459: part 2 veneered both sides with internal quality plywood and lipped on all edges in approved hardwood				
E	Ditto; but single swing door size 840 x 2060 mm high	32	No.		
	PURPOSE MADE UNITS				
	Supply and fix composite extruded coloured anodized aluminium doors; standard hollow or angle sections; frames mitred at corners including reinforcing cleats, glazing beads, sealing strips and all necessary ironmongery				
	Fixing with aluminium screws; plugging or fixing to aluminium background, sealing with mastic, oiling and adjusting on completion				
F	Door overall size 900 x 2100mm high comprising single leaf side hang, fixed top and bottom lights infilled with approved 6mm thick laminated glazing	17	No		
	Iron monger				
	Supply and fix the following to UNION catalogue or other equal and approved				
	To softwood, hardwood or the like fixing with screws				
G	Euro cylinder mortice deadlock comprising case and Euro profile single cylinder	1	No.		
H	Three lever mortice lock complete with set lever aluminium handle furniture	32	No.		
	Carried to Collection				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
A	140 x 35mm heavy Duty polished solid brass hinges	51	prs		
B	"TIOLET" symbols	2	No.		
C	Delayed action door closer as 'Briton' Catalogue No.2003E'	17	No.		
	To concrete or blockwork; fixing with bolts; plugging				
D	Rubber door stop complete with 38 mm rawl bolt	34	No.		
	Glazing				
E	4mm Thick obscure sheet glass panes to metal surfaces; fixing with putty	14	sm		
	Painting and Decorations				
	Aluminium primer or other equal and approved wood primer before fixing: -				
F	Backs of frame, board, etc over 100mm but not exceeding 200mm girth	230	lm		
	Knot, prime and stop; prepare and apply one coat stain and two coats of clear varnish				
G	General surfaces of timber doors over 300mm girth; external	121	sm		
H	Frames; over 200mm but not exceeding 300mm girth; internal	230	lm		
J	Frames not exceeding 100mm girth; internal	230	lm		
	Carried to Collection				
	COLLECTION From page BW/6 From above				
	TOTAL FOR DOORS CARRIED TO SUMMARY				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	ELEMENT NO. 5				
	WINDOWS				
	PRECAST CONCRETE				
	Normal; class 20 / (20mm); vibrated; part surface fair finish as described in:-				
A	Sills; 250 x 75 mm extreme thickness; once sunk weathered; once throated; reinforced as necessary for handling; surface fair finish 375 mm girth; bedding, jointing and pointing in cement sand (1:3) mortar	61	lm		
	Wrot Mahogany				
B	150 x 25 mm thick window boards including bull-nosed edges and 25 x 25 mm bearer; plugged, counter sinking and flush pelleting.	61	lm		
C	15 x 15mm quadrant bead	61	lm		
	Curtain rods;				
D	20mm diameter chrome coated rod complete accessories to approval	61	lm		
	METAL WORK				
	PURPOSE - MADE UNITS				
	Supply and fix the following composite extruded coloured anodized aluminium windows; standard hollow or angle sections; frames mitred at corners including reinforcing cleats, glazing beads, sealing strips and all necessary ironmongery				
	Fixing with aluminium screws; plugging or fixing to aluminium background, sealing with mastic, oiling and adjusting on completion				
E	Window, overall size 2000 x 1500mm high in 2No. Sliding openable light size 1000 x 1500 mm high	25	No		
F	Window, overall size 1500 x 1500mm high in 2No. Sliding openable light size 750 x 1500 mm high	3	No		
G	Window, overall size 600 x 600mm high with 1 No. top-hung openable light size 600 x 300 mm high	10	No		
	Glazing				
H	5mm Thick clear sheet glass panes over 0.1 but not exceeding 0.5 square meters; fixing with putty	82	sm		
J	Ditto; obscure	4	sm		
	TOTAL FOR WINDOWS CARRIED TO SUMMARY				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	ELEMENT NO. 6				
	FINISHES				
	Wall finishes				
	Insitu finishes				
	Render; 15mm thick, 1 No. coatwork of cement and sand (1:3); wood floated to concrete or blockwork base generally to: -				
A	Beams and columns; external	180	sm		
	Plaster; 15mm thick, 2 No. coatwork, 12mm first coat of cement sand (1:3); 3mm second coat of cement and lime putty (1:9); steel trowelled to concrete or blockwork base				
B	Walls; internal	1,016	sm		
	Tile, Slab or Block Finishings				
	Approved ceramic tiles to B.S. 1281; local; white glazed wall tiles to regular or approved other pattern; bedding and jointing in cement sand (1:4) mortar, grouting with white cement				
C	6mm thick; butt joints straight both ways; to cement sand base (m/s) to walls internal	254	sm		
D	Plastic edging (provisional)	177	lm		
	Beds or Backings				
	Render; cement and sand (1:3)				
E	14mm thick one coat backings; wood floated to receive ceramic tiles (m/s) to concrete or blockwork base; to walls internal	254	sm		
	Prepare and apply one undercoat and three coats of first quality weather guard emulsion paint to the following surfaces				
F	Rendered walls; external	180	sm		
	Prepare and apply one undercoat and three coats of first quality emulsion paint to the following surfaces				
G	Plastered walls; internal	1,016	sm		
	Carried to Collection				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	Floor finishes				
	Tile, Slab or Block Finishings				
	Granito tiles				
	Approved granito tiles; matt finish to regular pattern; bedding and jointing in cement sand (1:4) mortar; grouting with matching cement				
A	450 x 450 x 10mm thick; butt joints both ways; to cement sand base (m/s); to floors level; internal	1,270	sm		
B	Skirtings; 100mm wide; rounded junction with wall finish and straight junction with floor finish.	233	lm		
	Approved non slip ceramic floor tiles; local; coloured floor tiles to regular or approved other pattern; bedding and jointing in cement sand (1:4) mortar, grouting with white cement				
C	300 x 300 x 8mm thick; butt joints both ways; to cement sand base (m/s); to floors level; internal	60	sm		
D	Skirtings; 100mm wide; rounded junction with wall finish and straight junction with floor finish.	46	lm		
	Beds or Backings				
	Screed; cement and sand (1:3)				
E	30mm thick one coat backings; wood floated to receive granito tiles (m/s) to concrete or blockwork base; to floors level; internal	1,270	sm		
F	32mm thick one coat backings; wood floated to receive ceramic tiles (m/s) to concrete or blockwork base; to floors level; internal	60	sm		
	RAMP				
	Tile, Slab or Block Finishings				
	Approved granito tiles; matt finish to regular pattern; bedding and jointing in cement sand (1:4) mortar; grouting with matching cement				
G	Ramp to slope not exceeding 15 degrees	83	sm		
H	Ditto; edges ramp girth not exceeding 150mm	133	lm		
	Beds and backings				
J	20mm thick one coat backings; wood floated to receive terrazzo (m/s) to concrete or blockwork base; to floors level	83	sm		
	Carried to Collection				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	STAIRCASE				
	Tile, Slab or Block Finishings				
	Approved granito tiles; matt finish to regular pattern; bedding and jointing in cement sand (1:4) mortar; grouting with matching cement				
A	Quarter space or half space landing;	18	sm		
B	Treads; 250mm wide	235	lm		
C	Risers; 150mm wide	259	lm		
D	Skirtings; 100mm wide with rounded junction with wall finish and coved junction with floor finish	24	lm		
E	Open strings and closed strings; 370mm extreme width ditto	48	lm		
	METAL WORK				
	PURPOSE MADE UNITS				
	Balustrades				
F	1000 mm long, 25mm diameter x 2mm thick steel rods, fanged at one end built into concrete, other end welded and ground smooth	121	No.		
	Bottom and Intermediate rails				
G	25mm diameter ditto	144	lm		
	Handrail				
H	50mm diameter x 2mm thick moulded handrail welded to balustrades and ground smooth	72	lm		
	Painting and Decorations				
	To metal surfaces				
	One coat etching primer; one undercoat; two coats super gloss oil paint to "Crown Paints" or other equal and approved				
J	Small pipes	265	lm		
K	Frames; 100 to 200mm girth	72	lm		
	Carried to Collection				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	Ceiling finishes				
	12mm (minimum) two-coat plaster; 9mm first coat of cement sand (1:6), 3mm second coat of cement and lime putty (1:10); steel trowelled to: -				
A	Concrete soffits	1,330	sm		
B	Ditto to sloping soffits of staircase.	36	sm		
C	Ditto to soffits of landing	18	sm		
D	Ditto to soffits of ramp	60	sm		
	Painting and Decorations				
	On steel trowelled plastered surfaces				
	Prepare and apply one undercoat and three coats of first quality emulsion paint to the following surfaces				
E	Concrete soffits	1,330	sm		
F	Ditto to sloping soffits of staircase.	36	sm		
G	Ditto to soffits of landing	18	sm		
H	Ditto to soffits of ramp	60	sm		
	Carried to Collection				
	COLLECTION				
	From page BW/9				
	From page BW/10				
	From page BW/11				
	From above				
	TOTAL FOR FINISHES CARRIED TO SUMMARY				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	ELEMENT NO. 7				
	PARTITIONS				
	JOINERY				
	DEMOUNTABLE PARTITIONS				
	METAL WORK				
	Powder coated aluminium frames to approval				
A	76 x 44 x 1.2mm thick base piece, screwed to concrete backgrounds at bottom and top grooved to receive glazing or MDF (m/s)	123	lm		
B	76 x 44 x 1.2mm thick horizontal pieces grooved to approval at both top and bottom to receive glazing (m/s) at 600mm centres	123	lm		
C	76 x 44 x 1.2mm thick top piece, screwed to concrete backgrounds at bottom and top grooved to receive glazing or MDF (m/s)	123	lm		
D	76 x 44 x 1.2mm thick Verticle piece grooved to approval at both sides to receive glazing (m/s) fixed to skirting and middle piece (m/s) at 1200mm centres	311	lm		
	Aluminium bidings				
E	43 x 19 x 1.6mm thick biding member riveted to aluminium hollow section frames (m/s)	492	lm		
F	27.5 x 17.25 x 1.5mm thick bidding to glass m/s)	492	lm		
	Rubber gasket				
G	25 x 12mm thick approved rubber lining to aluminium framing	492	lm		
	Birch laminated Medium Density Fibre boards (MDF), both sides with lamination; fixing with aluminium connecting members (m/s)				
H	18mm thick laminated MDF boards	148	sm		
	GLAZING				
	6mm thick clear sheet glass fixed to aluminium frames with rubber gaskets (m/s) complete with "llumar film" to approval				
J	0.5 to 1.0 square meters	222	sm		
	Sundries				
K	45 x 25mm sillicon filler applied as directed and to the approval of the Project Manager at the joints between existing concrete ceiling and aluminium top rail.	492	lm		
	TOTAL FOR PARTITIONS CARRIED TO SUMMARY				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	ELEMENT NO. 8				
	BUILDER'S WORK IN CONNECTION WITH SPECISLIST SERVICES (provisional)				
	Builder's work in connection with Plumbing and drainage installations				
	Labour and Materials				
A	Form or leave hole in 200mm thick natural stone wall for large pipe and later make good	20	No.		
B	Ditto for small pipe and ditto	20	No.		
C	Form or leave hole in 100mm thick natural stone wall for small pipe and later make good	20	No.		
D	Cut horizontal or vertical chase in natural stone walling for small pipes and later make good	100	lm		
E	Ditto for large pipes	50	lm		
	Builder's work in connection with electrical installations				
	Cut away for and make good after Electrician installing a concealed conduit system to the following points including cutting or leaving all holes, mortices, sinkings in the structure and its finishes and for all making good therewith:-				
F	Lighting point with associated switch point	100	No.		
G	External security light fittings with ditto	20	No		
H	Single socket outlet point.	20	No.		
	TOTAL FOR BUILDER'S WORKS CARRIED TO SUMMARY				

Item	Description	Qty	Unit	Rate	Amount K.Sh.
	SUMMARY				

CIVIL WORKS

PROJECT: PROPOSED CONSTRUCTION OF TSC OFFICES BOMET

CIVIL WORKS

BILL NO. 01 FOUL DRAINAGE SYSTEM

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSHS
	FOUL DRAINAGE SYSTEM				
	EXCAVATIONS .				
	Excavate trench for 160mm diameter uPVC pipe, backfill after laying of pipes and cart away.				
B01/1	Depth to invert n.e 1.50m.	CM	20		
B01/2	Ditto, depth n.l.t 1.5m but n.e 2.0m.	CM	25		
B01/3	Ditto, depth n.l.t 2.0m but n.e 3.0m.	CM	5		
B01/4	Ditto, depth n.l.t 3.0m but n.e 4.5m.	CM	1		
B01/5	Excavation in rock class I	CM	10		
	PIPE LAYING.				
B01/6	Provide lay and joint 160mm diameter uPVC pipe class 41 to B.S 4660 on compacted murram bedding as per detailed drawing No. (50)5310.	LM	75		
B01/7	Provide, place and compact murram in 150mm bed and haunch type E to uPVC soil pipes (measured Separately) as specified.	LM	25		
	MANHOLES.				
	Excavation				
B01/8	Excavate in pit for rectangular manhole type A as per detailed drawing No. (50)5300, return fill and ram selected approved material after construction of manholes and cart away surplus excavated material depth n.e 0.6m.	CM	2		
B01/9	Ditto, but rectangular manhole type B depth to invert t n.e 1.0m.	CM	15		
B01/10	Ditto, but rectangular manhole type C depth to invert t n.e 1.5m.	CM	10		
	TOTAL CARRIED TO COLLECTION PAGE CIV 4				

PROJECT: PROPOSED CONSTRUCTION OF TSC OFFICES BOMET

CIVIL WORKS

BILL NO. 01 FOUL DRAINAGE SYSTEM

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSHS
	MANHOLES CONT'D				
B01/11	Ditto, but rectangular manhole type D depth to invert n.l.t 1.5m but n.e 2.0m.	CM	15		
B01/12	Ditto, but rectangular manhole type E depth to invert n.l.t 2.0m but n.e 5.0m.	CM	10		
B01/13	Extra over all excavation items for excavation in rock class I.	CM	10		
	Construction				
	Concrete class P (mix 1:4:8)				
B01/14	Provide all materials, mix and place 50mm thick concrete as blinding for manholes.	CM	5		
	Vibrated concrete class 15 (mix 1:3:6)				
B01/15	Ditto but 150mm thick base slab for manholes.	CM	10		
	Vibrated reinforced concrete class 20/20 (mix 1:2:4)				
B01/16	Provide all materials, mix and place 150mm thick concrete class 20 as cover for manholes.	SM	60		
	Vibrated concrete class 20 (mix 1:2:4)				
B01/17	Provide all materials, mix place concrete class 20 as benching for 150mm diameter pipe. Include for forming the main and branch channels as well as finishing benching to falls and building-in pipes as per detailed drawings.	CM	5		
	WALLING.				
B01/18	Provide, lay and joint 150mm thick approved concrete block or dressed natural stone walling to manholes types A and B details (50) 5300 and (50) 5301.	SM	10		
B01/19	Ditto but 200mm thick for types C & Details (50)5302 & (50)5303	SM	50		
B01/20	Provide materials for and erect 250mm thick concrete walling for manhole type E as per drawing detail 50(5304) and 50(5305) manhole cover and frame to detail 50(5317)	SM	15		
	TOTAL CARRIED TO COLLECTION PAGE CIV 4				

PROJECT: PROPOSED CONSTRUCTION OF TSC OFFICES BOMET

CIVIL WORKS

BILL NO. 01 FOUL DRAINAGE SYSTEM

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSHS
	MANHOLES CONT'D				
	Mild Steel Reinforcement Bars to B.S 4449.				
B01/21	Provide 8mm diameter bars for cover slab to detail (50) 5309.	KG	250		
	Step Iron.				
B01/22	Provide and fix deep galvanized malleable iron as step iron to B.S 1247 as per detailed drawings.	NO.	50		
	Rendering.				
B01/23	Provide 12mm thick water proof cement and sand (mix 1:3) steel float finished rendering to walls.	SM	100		
B01/24	Ditto but to cover slab.	SM	60		
B01/25	Provide 12mm thick cement and sand (mix 1:1) water proof rendering trowelled smooth to surface of benching.	SM	60		
B01/26	Provide and fix 600 x 450mm medium duty C.I manhole cover and frame to B.S 497	NO	8		
	TOTAL CARRIED TO COLLECTION PAGE CIV 4				

PROJECT: PROPOSED CONSTRUCTION OF TSC OFFICES BOMET

CIVIL WORKS

BILL NO. 01 FOUL DRAINAGE SYSTEM

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSHS
	COLLECTION Brought forward from CIV 1..... Brought forward from CIV 2..... Brought forward from CIV 3.....				
	TOTAL CARRIED TO SUMMARY CIV 8				

PROJECT: PROPOSED CONSTRUCTION OF TSC OFFICES BOMET

CIVIL WORKS

BILL NO 3: FOOTPATHS AND PAVING SLABS ROUND THE BUILDING

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSHS
	FOOTPATHS.				
B03/1	Remove vegetable soil average depth 150mm and dispose as directed by project manager	SM	80		
B03/2	Provide, lay and compact 100mm thick approved murram base.	SM	80		
B03/3	Provide and apply persistent herbicide.	SM	80		
B03/4	Provide, lay and joint in cement mortar 600x600x50mm precast concrete paving slabs including 50mm thick sand bed.	SM	80		
B03/5	Provide, lay and joint 125x100mm precast concrete channel including 100mm thick concrete bed and haunch, mix 1:3:6, any necessary excavation, formwork and disposal of surplus material.	LM	50		
B03/6	Ditto but curved to varying radii as shown on the plan.	LM	50		
	PAVING SLABS ROUND THE BUILDING				
B03/7	Clear area around the building and trim surfaces above to achieve reduced levels and cart away excavated material to tips as directed. depth ne 0.2m	CM	50		
B03/8	Provide, lay and compact 100mm hardcore filling.	SM	200		
B03/9	Provide, lay and compact 50mm concrete (mix 1:4:8) blinding.	SM	200		
B03/10	Provide, lay and joint in cement sand mortar (mix 1:4) 600 X 600 X 50mm precast concrete paving slabs.Drg. (50) 5353.	SM	200		
	TOTAL CARRIED TO SUMMARY CIV 8				

PROJECT: PROPOSED CONSTRUCTION OF TSC OFFICES BOMET
CIVIL WORKS
BILL NO. 04 STORM WATER DRAINAGE

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSHS
	OPEN STORM DRAIN				
B04/1	Excavate trench for 450x225mm external dimension Pcc IBD not exceeding 0.7m (average depth 0.45m) and cartaway surplus material to detail (50) 5329'B'	CM	120		
B04/2	Ditto but average depth 1.0m ditto.	CM	80		
B04/3	Extra over for excavation in rock.	CM	10		
B04/4	Provide, lay and compact 100mm thick murram bed and on sloping sides of the IBD to detail (50)5329'B'	LM	150		
B04/5	Provide, lay and joint 450x225mm external dimensions Pcc IBD to detail (50) 5326.	LM	160		
B04/6	Extra over Item J for one side slab on each side to detail (50) 5329'B'.	LM	60		
B04/7	Ditto; but two side slabs;	LM	90		
B04/8	Ditto; but three side slabs;	LM	20		
	COVERED STORM DRAIN				
B04/9	Excavate trench for covered storm drain average depth 0.7m and cart away as directed by the Engineer	CM	30		
B04/10	Provide material and construct covered storm drain composing of 100mm concrete bed class Q 1:3:6, 300mm dia. Concrete invert block drain 190 x 140mm concrete block walls, 10mm render to detail(50) 5352 and r.c cover slab to detail (50) 5352A. Average depth 0.6m.	LM	20		
B04/11	Ditto; but steel grating cover to detail (50) 5352 B	LM	20		
	STONE PITCHING				
B04/12	Provide all materials and stone pitch the edge of the storm drain and other sloping surfaces as directed by the Engineer.	SM	150		
	CULVERTS				
B04/13	Provide, lay and joint 450mm dia. Concrete pipe as culvert including 150mm concrete 1:3:6 bed and surround to detail (50) 5310 type C including excavation and backfilling.	LM	10		
B04/14	Ditto; but 600mm dia. Concrete pipe; ditto	LM	20		
B04/15	Provide material and construct headwalls type A to detail (50) 5318 including excavation all necessary formwork and disposal of surplus material.	NO.	4		
B04/16	Rehabilitation of the existing earth drain adjacent to the main road to enable drainage	item			
	TOTAL CARRIED TO COLLECTION CIV 7				

PROJECT: PROPOSED CONSTRUCTION OF TSC OFFICES BOMET
CIVIL WORKS
BILL NO. 04 STORM WATER DRAINAGE

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSHS
	COLLECTION Brought forward from CIV6.....				
	TOTAL CARRIED TO SUMMARY CIV 8				

PROJECT: PROPOSED CONSTRUCTION OF TSC OFFICES BOMET
CIVIL WORKS
BILL NO SUMMARY

	DESCRIPTION		Total Amount
	SUMMARY Brought forward from CIV 4..... Brought forward from CIV 5..... Brought forward from CIV 7.....		
	TOTAL CARRIED TO GRAND SUMMARY		

ELECTRICAL INSTALLATION WORKS

REPUBLIC OF KENYA

TEACHERS SERVICE COMMISSION

PROPOSED ERECTION AND COMPLETION OF TSC COUNTY OFFICES

SPECIFICATIONS AND BILLS OF QUANTITIES

FOR

ELECTRICAL INSTALLATIONWORKS

BOMET COUNTY

CHIEF ARCHITECT
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 30743– 00100
NAIROBI.

CHIEF QUANTITY SURVEYOR
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 30743 - 00100
NAIROBI.

CHIEF ENGINEER (STRUCTURAL)
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 30743- 00100
NAIROBI.

CHIEF ENGINEER (ELECTRICAL)
STATE DEPARTMENT OF PUBLICWORKS
P.O BOX 41191 - 00100
NAIROBI.

CHIEF ENGINEER (MECHANICAL)
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 41191– 00100
NAIROBI.

CLIENT:
SECRETARY/CHIEF EXECUTIVE
TEACHERS SERVICE COMMISSION
P O BOX PRIVATE BAG-00100
NAIROBI.

OCTOBER, 2019

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TITLE **PAGE**

DEFINITIONS

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

The Employer	Government of the Republic of Kenya Represented by: The Secretary/Chief Executive Teachers Service Commission P.O. Box Private Bag-00100 NAIROBI
Architect	Chief Architect State Dept. of Public Works P.O. Box 30743 – 00100 NAIROBI
Engineer	Chief Engineer Electrical State Dept. of Public Works P.O. Box 41191 - 00100 NAIROBI
Quantity Surveyor	Chief Quantity Surveyor State Dept. of Public Works P.O. Box 30743 - 00100 NAIROBI
Structural Engineer	Chief Engineer (Structural) State Dept. of Public Works P.O. Box 30743 - 00100 NAIROBI
Engineer	Chief Engineer Mechanical State Dept. of Public Works P.O. Box 41191 - 00100 NAIROBI
Project Manager	The Works Secretary State Dept. of Public Works P.O. Box 30743 – 00100 NAIROBI
Contractor	The firm appointed to carry out Builders Works.
Sub-contractor	The firm appointed to carry out Electrical Installation works.
Site Location:	**The Site is Located in Bomet County**

SECTION B

GENERAL SPECIFICATION

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 Position of Electrical Plant and Apparatus

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2.40 Current Operated Earth leakage circuit breaker

2.41 MV Switchboard

2.42 Steel Conduits and Steel Trunking

2.43 Testing on Site

2.1 SHOP DRAWINGS

Before manufacture or Fabrication is commenced the sub-contractor shall submit Two copies of detailed drawings of all control pillars, meter cubicles, medium voltage switchboards including their components showing all pertinent information including sizes, capacities, construction details, etc, as may be required to determine the suitability of the equipment for the approval of the Engineer. Approval of the detailed drawings shall not relieve the sub-contractor of the full responsibility of errors or the necessity of checking the drawings himself or of furnishing the materials and equipment and performing the work required by the plans and specifications.

2.2 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.

2.3 REGULATIONS AND STANDARDS

All work executed by the Sub-contractor shall comply with the current edition of the "Regulations" for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, and with the Regulations of the Local Electricity Authority.

Where the two sets of regulations appear to conflict, they shall be clarified with the Engineers. All materials used shall comply with relevant Kenya Bureau of Standards Specification.

2.4 SETTING OUT WORK

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

2.5 POSITIONS OF ELECTRICAL PLANT AND APPARATUS

The routes of cables and approximate positions of switchboards etc, as shown on the drawings shall be assumed to be correct for purpose of Tendering, but exact positions of all electrical Equipment and routes of cables must be agreed on site with the Engineer before any work is carried out.

2.6 MCB DISTRIBUTION PANELS AND CONSUMER UNITS

All cases of MCB Panels and consumer units shall be constructed in heavy gauge sheet with hinged covers.

Removable undrilled gland plates shall be provided on the top and bottom of the cases. Miniature circuit breakers shall be enclosed in moulded plastic with the tripping mechanism and arc chambers separated and sealed from the cable terminals.

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

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

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

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

2.7 FUSED SWITCHGEAR AND ISOLATORS

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

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

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

Isolators shall be load breaking/fault making isolators.

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

2.8 CONDUITS AND CONDUIT RUNS

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

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

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

The Sub-contractors attention is drawn to the necessity of keeping all conduits entirely separate from other piping services such as water and no circuit connections will be permitted between conduits and such pipes.
All conduits systems shall be arranged wherever possible to be self-draining to switch boxes and conduit outlet points for fittings:

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

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

Conduit connections shall either be by a demountable (screwed up) assembly or adhesive fixed and water tight by solution. The tube and fittings must be clean and free of all grease before applying the adhesive. When connections are made between the conduit and switch boxes, circular or non-screwed boxes, and care shall be taken that no rough edges of conduit stick out into the boxes.

Runs between draw in boxes are not to have more than two right angle bends or their equivalent. The sub-contractor may be required to demonstrate to the Engineers that wiring in any particular run is easily withdrawable and the sub-contractor may, at no extra cost to the contract; be required to install additional draw-in boxes required. If conduit is installed in straight runs in excess of 6000mm, expansion couplings as manufactured by Egatube shall be used at intervals of 6000mm.

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

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

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

2.13 CONDUIT BOXES AND ACCESSORIES

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

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

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

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

Adaptable boxes are to of PVC or mild steel (of not less than 12swg) and black enameled or galvanized finish according to location. They shall be of square or oblong shape location. They shall be of square or oblong shape complete with lids secured by four 2 BA brass roundhead screws; No adaptable box shall be less than 75mm x 75mm x 50mm or larger than 300mm x 300mm x 75mm and shall be adequate in depth in relation to the size of conduit entering it. Conduits shall only enter boxes by means of conduit bushes.

2.14 LABELS

Labels fitted to switches and fuse boards;-

(i) Shall be Ivorine engraved black on white.

(ii) Shall be secured by R.H brass screws of same manufacturing throughout.

(iii) Shall be indicated on switches:-

a) Reference number of switch

b) Special current rating

c) Item of equipment controlled

(iv) Shall indicate on MCB panels

a) Reference number
b) Type of board, i.e.; lighting, sockets, etc.
c) Size of cable supplying panel
d) where to isolate feeder cable

(v) Shall be generally not less than 75mm x 50mm.

2.15 EARTHING

The earthing of the installation shall comply with the following requirements;-

(i) It shall be carried out in accordance with the appropriate sections of the current edition of the Regulations, for the Electrical Equipment of Buildings issued by Institute of Electrical Engineers of Great Britain.

(ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross sectional area Copper tape shall be provided and all equipment including the lead sheath and armouring of cables, distribution boards and metal frames shall be bonded thereto.

(iii) The earth tape in Sub-clause (ii) shall be connected by means of a copper tape or cable of suitable cross sectional area to an earth electrode which shall be a copper earth rod (see later sub-clause).

(iv) All tapes to be soft high conductivity copper, untinned except where otherwise specified and where run underground on or through walls, floors, etc., it shall be served with corrosion resisting tape or coated with corrosion compound and braided

(v) Where the earth electrode is located outside the building a removable test link shall be provided inside the building as near as possible to the point of entry to the tape, for isolating the earth electrode for testing purposes.

(vi) Earthing of sub-main equipment shall be deemed to be satisfactory where the sub-main cables are M.I.C.S. or conduit with separate earth wire, and installation is carried out in accordance with the figures stated in the current edition of the I.E.E Regulations.

(vii) Where an earth rod is specified (see Sub-clause (iii) it shall be proprietary manufacture, solid hand drawn copper of 15mm diameter driven into the ground to a minimum depth of 3.6m. It shall be made up to 1.2m sections with internal screw and socket joints and fitted with hardened steel tip and driving cap.

(viii) Earth plates will not be permitted

(ix) Where an earth rod is used the earth resistance shall be tested in the manner described in the current edition of the IEE Regulations, by the Sub-Contractor in the presence of the Engineer and the Sub-Contractor shall be responsible for the supply of all test equipment.

(x) Where copper tape is fixed to the building structure it structure it shall be by means of purpose made non-ferrous saddles which space the conductor away from the structure a minimum distance of 20mm. Fixings, shall be made using purpose made plugs; No fixings requiring holes to be drilled through the tape will be accepted.

(xi) Joints in copper tape shall be tinned before assembly riveted with a minimum of two copper rivets and seated solid.

(xii) Where holes are drilled in the earth tape for connection to items of equipment the effective cross sectional area must not be less than required to comply with the IEE regulations.

(xiii) Bolts, nuts and washers for any fixing to the earth tape must be of non-ferrous material.

(xiv) Attention is drawn to the need for the earthing metal parts of lighting fittings and for bonding ball joint suspension in lighting fittings.

2.16 CABLES AND FLEXIBLE CORDS

All cables used in this Sub-Contract shall be manufactured in accordance with the current appropriate Kenya standard Specification which are as follows:-

P.V.C. Insulated Cables and Flexible Cords - Ks 04-192:1988

Pvc Insulated Armoured Cables - Ks 04-194:1990

Armouring of Electric cables - Ks 04-290:1987

The successful Sub-Contractor will, at the Engineers discretion be required to submit samples of cables for the Engineers approval; the Engineer reserves the right to call for the cables of an alternative manufacture without any extra cost being incurred.
P.V.C. Insulated cables shall be 500/1000 volt grade. No cables smaller than 1.5mm² shall be used unless otherwise specified. The installation and the finish of cables shall be as detailed in later clauses. The colour of cables shall conform to the details stated in the "Cable Braid and insulation Colours" Clause.

2.17 ARMOURED P.V.C. INSULATED AND SHEATHED CABLES:

Shall be 600/1000 volt grade manufactured to Ks 04-194:1988 and Ks 04-187/188 with copper stranded conductors.

The wire armour of the cable shall be used wholly as an earth continuity conductor and the resistance of the wire armour shall have a resistance not more than twice of the largest current carrying conductor of the cable.

P.V.C./S.W.A./P.V.C. cables shall be terminated using "Telecom" "B" type or approved equal or approved equal glands and a P.V.C. tapered sleeve shall be provided to shroud each gland.

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

2.18 CABLE SUPPORTS, MARKERS AND TILES

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

Alternatively, fixing shall be by BICC claw type cleaning system with die-cast cleats and galvanised mild steel back straps or similar approved equal method. For one or two cables run together the cleats shall be fixed a special channel section supports or back straps described above which shall in turn be secured to walls or ceilings of ducts by raw bolts.

In excessively damp or corrosive atmospheric conditions special finishes may be required and the Sub-contractor shall apply to the Engineer for further instructions before ordering cleats and channels for such areas.

The above type of hooks and clamps and channels or cleats and black straps shall also be used for securing cables in vertical ducts.

Cables supports shall be fixed at 600mm maximum intervals, the supports being supplied and erected under this Sub-contract. Saddles shall not be used for supporting cables nor any other type of fixing other than one of the two methods described above or other system which has received prior approval of the Engineer;

Cables are to be kept clear of all pipe work and the Sub-contractor shall work in close liaison with other services Sub-contractors.

The Sub-Contractor shall include for the provision of fixing of approved type coloured slip on cables end markers to indicate permanently the correct phase and neutral colours on all ends.

Provision shall be made for supplying and fixing approved non-corrosive metal cable markers to be attached to the outside of all PVC/SWA/PVC cables at 15mm intervals indicating cable size and distinction.

Where PVC/SWA/PVC cables are outside the building they shall be laid underground 750mm deep with protecting concrete interlocking cover tiles laid over which shall be provided and laid under this Sub-contract.

All necessary excavations and reinstatement of ground including sanding or trenches will be carried out by the Sub-Contractor, unless otherwise stated.

2.19 PVC INSULATED CABLES

Shall be of non-braided type as CMA reference 6491 x 600/1000/1000 volt grade cables, or equal approved.

PVC cables shall conform to the details of the "Cables and Flexible cords" and "Cable Braid and Insulation Colours" clauses.

2.20 HEAT RESISTING CABLES

Final connections to cookers, water heaters, etc., shall be made using butyl rubber insulated cable as CMA reference 610 butyl (Single core 600/1000 Volt).

This type of cable shall be used in all instances where a temperature exceeding 100°F, but not exceeding 150°F is likely to be experienced. Final connections to all lighting fittings (and other equipment where a temperature in excess of 150°c likely to be experienced) shall be made using silicon rubber insulated cable or equal and approved.

2.21 FLEXIBLE CORDS

Shall be in accordance with the "Cable and Flexible Cords" clause. No cord shall be less than 24/0.2mm in size unless otherwise specified.

Circular white twin TRS flex shall be used for plain pendant fittings up to 100 watts. For all other types of lighting fittings the flexible cable shall be silicone rubber insulated.

No polythene insulated flexible cable shall be used in any lighting fitting or other appliance (see "Heat Resisting Cables" Clause 30).

2.22 CABLE ENDS AND PHASE COLOURS

All cable ends connected up in switchgear, MCB panels etc.; shall have the insulation carefully cut back and the ends sealed with Hellerman rubber slip on cable end markers.

The markers shall be of appropriate phase colour for switch and all other live feeds to the details of the "Cable Insulation Colours" clause. Black cable with black end markers shall only be used for neutral cables.

2.23 CABLE INSULATION COLOURS

Unless otherwise stated in later clauses the insulation colours shall be in accordance with the following table.

Where other systems are installed the cable colours shall be in accordance with the details stated in the appropriate clause.

SYSTEM	INSULATION COLOUR	CABLE END MARKER
Main and Sub-Main		
a) Phase	Red	Red
b) Neutral	Black	Black
1) Sub-Circuits Single Phase		
a) Phase	Red	Red
b) Neutral	Black	Black

2.24 SUB-CIRCUIT WIRING

For all lighting and sockets wiring shall be carried out in the "looping in" system and there shall be no joints whatsoever. No lighting circuits shall comprise more than 20 points when protected by 10A MCB. Cables with different cross-section area of copper shall not be used in combination.

Lighting circuits P. V.C. cable 1.5mm² for all lighting circuits indicated on the drawing.
Power circuits P.V.C cable (minimum sizes).

(i) 2.5mm² for one, two or three 5Amp sockets wired in parallel.

(ii) 2.5mm² for one 15Amp socket.

(iii) 2.5mm² for maximum of ten switched 13 Amp sockets wired from 30 Amp MCB.

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

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

2.25 SPACE FACTOR

The maximum number of cables that may be accommodated in a given size of conduit or trunking or duct is not to exceed the number in Tables B.5 and B.6 or as stated in Regulation B.91, B.117 and B.118 of the I.E.E Regulations whichever is appropriate.

2.26 INSULATION

The insulation resistance to earth and between poles of the whole wiring system, fittings and lumps, shall not be less than the requirements of the latest edition of the I.E.E Regulations. Complete tests shall be made on all circuits by the Sub-contractor before the installations are handed over.

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

2.27 LIGHTING SWITCHES

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

2.28 SOCKETS AND SWITCHED SOCKETS

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

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

2.29 FUSED SPUR BOXES

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

2.30 COOKER OUTLETS

These shall be flush mounted with 13-A switched socket outlet and neon indicator Lamps. The cooker control units shall be as manufactured by "M.K. Electrical Company Ltd", or other approved equal KS 04 – 247: 1988

2.31 CONNECTORS

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

2.32 LAMPHOLDERS

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

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

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

2.33 LAMPS

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

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

Pearl lamps shall be used in all fittings unless otherwise specified.

2.34 LIGHTING FITTINGS AND STREET LIGHTING LANTERNS

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

All fittings and pendants shall be fixed to the conduit boxes with brass R/H screws. These to be in line with metal finish of fittings. The lighting fittings are detailed for the purpose of establishing a high standard of finish and under no circumstances will substitute fittings be permitted.
In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to the central conduit box fittings. Supports shall be provided and fixed by the Sub-Contractor.

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

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

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

2.35 POSITIONS OF POINTS AND SWITCHES

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

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

2.36 STREET/SECURITY OUTDOOR LIGHTING COLUMNS:

The column shall be at a minimum of 225mm in the ground on 75mm thick concrete foundations and the pole upto 150mm shall be surrounded with concrete. The top bracket and plain section of the columns shall be common to and interchangeable with all brackets with maximum mismatching tolerance of 3mm between any pole and bracket. After manufacture and before erection the columns shall be treated with an approved mordant solution which shall be washed off and the whole allowed to dry. Thereafter, the columns shall be painted with one undercoat and two coats of gloss paint to an approved colour. All columns shall be complete with fused cut-outs.

2.37 TIMING CONTROL SWITCH

These shall be installed where shown on the drawings. Photocell timing control circuits which will operate 'on' with a specified level of darkness and 'off' with a given level of light. The initial adjustment will be done with approval of the Electrical Engineer.

2.38 WIRING SYSTEM FOR STREETLIGHTING

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

2.39 METAL CONTROL PILLAR

These shall be metal clad and fabricated as per contract drawings and specification. The Sub-Contractor shall supply, install, test and commission control pillars including supplying, fixing connecting switchgears as detailed on the appropriate drawings.

2.40 CURRENT OPERATED EARTH LEAKAGE CIRCUIT BREAKER

Current operated earth leakage circuit breaker shall conform to B.S.S. 4293:68 rated at 240 volts D.P. 50 cycles A.C. Mains.

The breaker shall be provided with test switch and fitted in weather proof enclosure for surface mounting. The rated load current and earth fault operating current shall be as specified in the drawings. These shall be as manufactured by Crabtree, Siemens or other equal and approved.

2.41 M.V. SWITCHBOARD AND SWITCHGEAR

The switchboard shall be manufactured in accordance with KS04-226 which co-ordinates the requirements for electrical power switchgear and associated apparatus. It is not intended that this K.S. should cover the requirements for specified apparatus for which separate Kenyan Standard exist. All equipment and material used in the switchboard shall be in accordance with the appropriate Kenya Standard.

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

Switchboard shall be of the flush fronted, enclosed, metal clad type with full front or rear access as called for in the particular specifications, suitable for indoor use, sectionalized as necessary to facilitate transport and erection. The maximum height of the switchboard is to be approximately 2.0 meters. A suitable connection chamber containing all field terminals shall be provided at the top or bottom of the switchboard as appropriate.

Before manufacture, the Sub-Contractor shall submit to the consulting Engineer for approval of detailed drawings showing the layout, construction and connection of the switchboard.

All bus-bars and bus-bar connections shall consist of high conductivity copper and be provided in accordance with KS 04-226: 1985. The bus-bars shall be clearly marked with the appropriate phase and neutral colours which should be red, yellow, blue for the phases and black for neutral. The bus-bars shall be so arranged in the switchboard that the extensions to the left and right may be made in the future with ease should the need arise.

Small wiring, which will be neatly arranged and cleated, shall be executed in accordance with B.S. 158 and the insulation of the wiring shall be colored according to the phase or neutral connection.

Switches and fuse switches, shall be in strict accordance with KS04-183:1978 Class 2 switches. Means of locking the switch in the "OFF" position shall be provided.

All fuse switches shall comply with KS04-183:1978, PARTS 2 and 3 a fault rating at least equal to the fault rating of the switchboard in which they are installed. Cartridge fuse links to KS 04-183:1978 category A.C. 46, class Q1 and fusing factor not exceeding 1.5 shall be supplied with each fused switch.

Mounting arrangements shall be such that individual complete fuse switches may be disconnected and withdrawn when necessary without extensive dismantling work. When switches are arranged in their formation all necessary horizontal and vertical barriers shall be provided to ensure segregation from adjacent units. Means of locking the switch in the "OFF" position shall be provided.

2.42 STEEL CONDUITS AND STEEL TRUNKING

Conduits shall be of heavy gauge class "B" welded to Standard specification KS 04-180:1985. In no case will conduit smaller than 20mm diameter be used on the works. Conduits installed within buildings shall be black enameled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanized. Conduit fittings, accessories or equipment used in conjunction with galvanised conduits shall also be galvanised or otherwise as approved by the service engineer.

Metal trunking shall be fabricated from mild steel of not less than 18 SWG. All sections of trunking shall be rigidly fixed together and attached to the framework or fabric or the building at intervals of not less than 1.2m. Joint trunking shall not overhang fixing points by more than 0.5m.

All trunking shall be made electrically continuous by means of 25 x 3mm copper links across each joint and where the trunking is galvanised, the links shall be made by galvanised flat iron strips.

All trunking fittings (i.e. Bends, tees, etc) shall leave the main through completely clear of obstructions and continuously open except through walls and floors at which points suitable fire resisting barriers shall be provided as may be necessary. The inner edge of bends and tees shall be chamfered where cables larger than 35mm² are employed.

Where trunking passes through ceilings and walls the cover shall be solidly fixed to 150mm either side of ceilings and floors and 50mm either side of walls.

Screws and bolts securing covers to trunking or sections of covers together shall be arranged so that damage to cables cannot occur either when fixing covers or when installing cables in the trough.

Where trunking is used to connect switchgear of fuse boards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

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

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

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

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

Conduit and trunking shall be mechanically and electrically continuous. Conduit shall be tightly screwed between the various lengths so that they butt at the socketed joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects. Oil and any other insulating substance shall be removed from the screw threads; where conduits terminate in fuse-gear, distribution boards, adaptable boxes, non-spouted switchboxes, etc., they shall, unless otherwise stated, be connected thereto by means of smooth bore male brass bushes, compression washers and sockets. All exposed threads and abrasions shall be painted using an oil paint for black enameled tubing and galvanizing paint for galvanized tubing immediately after the conduits are erected. All bends and sets shall be made cold without altering the section of the conduit. The inner radius of the bed shall not be less than four (4) times the outside diameter of the conduit. Not more than two right angle bends will be permitted without the inter-position of a draw-in-box. Where straight runs of conduit are installed, draw-in-boxes shall be provided at distances not exceeding 15mm. No tees, elbows, sleeves, either of inspection or solid type, will be permitted.

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

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

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

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

All adaptable boxes and lids of the same size shall be interchangeable.
Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.

Where used in conjunction with mineral insulated copper sheathed cable, galvanized boxes shall be used and painted after erection.

Draw-in boxes in the floors are generally to be avoided but where they are essential they must be grouped in positions approved by the services engineer and covered and by the suitable floor traps, with non-ferrous trays and covers.

The floor trap covers are to be recessed and filled in with a material to match the floor surface.

The Sub-contractor must take full responsibility for the filling in of all covers, but the filling in material will be supplied and the filling carried out by the main building contractor.

Where buried in the ground outside the building the whole of the buried conduit is to be painted with two coats of approved bitumastic composition before covering up.

Where run on the surface, unpainted fittings and joints shall be painted with two coats of oil bound enamel applied to rust and grease free metalwork.

2.43 TESTING ON SITE

The Sub-contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specification and the Electric Supply Company's By-Laws.

(a) Tests shall be carried out to prove that all single pole switches are installed in the 'live' conductor.

(b) Tests shall be carried out to prove that all socket outlets and switched socket outlets are connected to the 'live' conductor in the terminal marked as such, and that each earth pin is effectively bonded to the earth continuity system. Tests shall be carried out to verify the continuity of all conductors of each 'ring' circuit.

(c) Phase tests shall be carried out on completion of the installation to ensure that correct phase sequence is maintained throughout the installation. Triplicate copies of the results of the above tests shall be provided within 14 days of the witnessed tests and the Sub-contractor will be required to issue to the service engineer the requisite certificate upon completion as required by the regulations referred to above.

(d) Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparently by such inspections or tests shall be rectified by the Sub-contractor at his own expense.

(e) The Sub-contractor shall provide accurate instruments and apparatus and all labour required to carry out the above tests. The instruments and apparatus shall be made available to the services engineer to enable him to carry out such tests as he may require.

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

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

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

APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

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

1. Government Electrical Specifications No. 1 and No. 2.

2. All requirements of Kenya Power and Lighting Company Limited, and Communications Authority of Kenya (CAK).

3. The following LED lighting requirements;

Item No.	Parameters	Values	Comments
1.	Input Voltage	240V±20%	
2.	LED Efficiency (Lumens/watt)	95 Lumens/Watt	Certificate from LED manufacturer needs to be provided with Datasheet of LED
3.	Life Expectancy	Above 35,000 Hours	LED model should have LM80 certificate to prove the LED life is guaranteed for > 35,000. LED manufacturer should provide T21 –Life test report
4.	Color Temperature	5500-6500K	
5.	Working Humidity	10 to 90% RH6	
6.	Working Temperature	5 to 50 degree	
7.	Average Lighting Angle (Beam Angle)	120 Degree	
8.	Lamp Starting Time	Instantaneous, Less than 2 Seconds	
9.	System Efficacy (%)	Greater than 90%	
10.	Power Factor	>0.90	

SECTION C

SCHEDULE OF CONTRACT DRAWINGS

SCHEDULE OF CONTRACT DRAWINGS

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

NOTE:

Tenderers are advised to inspect the electrical drawings at the office of the **Chief Engineer (Electrical) - Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development - State Department of Public Works**, at Chief Engineer (Electrical) office, Hill Plaza Building, Community area, Nairobi along Ngong road, during normal working hours.

SECTION D

PARTICULAR SPECIFICATIONS

OF

MATERIALS AND WORKS

PARTICULAR SPECIFICATIONS

1.0 SITE LOCATION

The site of the proposed works is at Bomet Town.

2.0 SCOPE OF WORKS

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

a. Lighting fittings, Switches, Sockets and Accessories
b. Cabling
c. L.V Switchboard
d. PVC conduits and Trunking for both data and Power.

3.0 MATERIALS FOR THE WORKS

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

SECTION E

SCHEDULE OF UNIT RATES

SCHEDULE OF UNIT RATES

1. The tenderer shall insert unit rates against the items in the following schedules and may add such other items as he considers appropriate.

2. The unit rates shall include for supply, transport, insurance, delivery to site, storage as necessary, assembling, cleaning, installing, connecting, profit and maintenance in defects liability and any other obligation under this contract.

3. The unit rates will be used to assess the value of additions or omissions arising from authorised variations to the contract works.

4. Where trade names or manufacturer's catalogue numbers are mentioned in the specification, the reference is intended as a guide to the type of article or quality of material required. Alternative brands of **equal** and **approved** quality will be accepted.

SCHEDULE OF UNIT RATES

NO	DESCRIPTION	QTY	UNIT	UNIT RATE	
				KSHS	CTS
	1) **Cables** PVC SWA PVC Cables:-				
	a) 4 core 10mm2	1	M		
	b) 4 core 16mm2	1	M		
	c) 4 core 35mm2	1	M		
	d) 4 core 95mm2	1	M		
	2) Telephone Point With Outlet Face Plate.	1	NO		
	3) Data outlet faceplate single	1	NO		
	4) Data outlet faceplate Double	1	NO		
	5) Scalable (modular) 20KW/25KVA, 415V, 50Hz Three Phase in, three phase out, true on line UPS with at least 30minutes battery autonomy and complete with service bypass, start up service and all other necessary accessories	1	NO		
	6) 3phase Automatic Voltage Regulator with a rating of 150KVA. It should offer protection against overvoltage, undervoltage and spikes. It should have a 20mS response time and give an output of ± 4%.	1	NO		
	7) Manual change over switch rated at 100A triple pole	1	NO		
	8) 1200mm 28W 3200Lm LED tube	1	NO		
	9) 600x600mm 45W LED panel luminaire	1	NO		
	8) 1200mm 28W panel luminaire	1	NO		
	9) Addressable Fire alarm flasher	1	NO		

SECTION F

BILLS OF QUANTITIES

BILLS OF QUANTITIES

A) PRICING OF PRELIMINARIES ITEMS.

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

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

a) Preliminaries – Bill 1

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

b) Installation Items and Other Bills - Bill 2
The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the contract Drawings, conditions of contract and specifications.
The unit of measurements and observations are as per those described in clause 1.05 of the section C.

c) Summary

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

B) NOTES FOR BILLS OF QUANTITIES

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

2. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning and all taxes (including **16% V.A.T and 3 % Withholding tax**).

   In accordance with Government policy, the 16% V.A.T and 3% withholding Tax **shall be deducted** from all payments made to the tenderer, and the same shall be forwarded to the **Kenya Revenue Authority (KRA).**

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

4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere to. Otherwise alternative brands of **equal** and **approved** quality will be accepted.

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

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

1. Statement of Compliance

a) I confirm compliance of all clauses of the General Conditions, General Specifications and Particular Specifications in this tender.

b) I confirm I have not made and will not make any payment to any person, who can be perceived as an inducement to win this tender.

Signed: …….*for and on behalf of the Tenderer*

Date: ……..

Official Rubber Stamp: ……

PROPOSED TSC COUNTY HEADQUARTERS. -ELECTRICAL INSTALLATION WORKS BILLS OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE KSHS	TOTAL KSHS
2.0	GROUND FLOOR - LIGHTING INSTALLATION				
2.1	Supply and install lighting points using 3 x 1.5mm^2 PVC insulated Copper cables to be drawn in 20mm diameter PVC heavy gauge conduits concealed in the floors, roof and for one way switching but excluding the fittings and switches. Conduits to be laid during floor casting where necessary	No	39		
2.2	As item 2.1 above but for two way switching	No	40		
2.3	Supply and install 10 Amps rated moulded plate switches(white in colour) for flush mounting and as crabtree.				
	(a) One gang one way	No	19		
	(b) Three gang one way	No	1		
	(c) One gang two way	No	5		
	(d) Three gang two way	No	1		
	(e) Four gang two way	No	1		
	(i) Pull switch	No	3		
2.4	Supply and install the following lighting fittings				
	(a) Surface mounted 1200mm 30W 95Lm/w LED Panel fitting complete with mounting brackets, High frequency electronic control gear and all other accessories As Thorn or approved equivalent. (1)	No	38		
	(b) Surface mounted 15W 95Lm/w LED Circular Ceiling club luminaire in white with opal diffuser high frequency control gear As THORN Novaline White fitting (HF) or Approved equivalent (2)	No	4		
	(c) Surface mounted 22W 95Lm/w LED Circular Ceiling club luminaire in white with opal diffuser high frequency control gear As THORN Novaline White fitting (HF) or Approved	No	4		
	SUB TOTAL CARRIED FORWARD TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
	Sub-Total B/F from Previous Page				
	(d) Clear shave single ended LED mirror luminaire for horizontal mounting with a 11W warm white single ended LED tube and with a pull switch incorporated as MK or Thorn or approved equivalent (4)	No	3		
	(e) 1200mm 40W 95Lm/w LED Luminaire with IP65 fully polycarbonate weather resistant and corrosion proof luminaire with High Frequency Control Gear as FITZGERALD or Thorn or approved equivalent (6)	No	6		
	(f) Outdoor IP65 corrosion proof foot light made of white finish plastic body with glass lense and protective sleeve complete with 5W LED lamp and as Radiant outdoor foot light KH49 or approved equivalent (7).	No	8		
	(g) 50W High Powered LED luminaire with 10800Lm lighting output, over 50,000Hours lamp life, wall mounted, corrosion proof floodlight Luminaire to IP65 complete with reflector electronic control gear and lamp and As Massive, Micromark or Thorn or approved equivalent. (8)	No	10		
	(h) 18W LED Decorative wall luminaire with up and down lights to IP65 complete with reflector electronic control gear and lamp and As Ecolite Outdoor Cat No. 1012 or approved equivalent. (9)	No	6		
	TOTAL CARRIED FORWARD TO COLLECTION PAGE F/10				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
3.0	GROUND FLOOR- POWER INSTALLATION				
3.1	Supply and install a heavy gauge PVC conducting of size 2x38mm diameter for crossings in the slab	M	100		
3.2	Supply and install an adaptable box 450X450mm for the power and data/voice reticulation using 38mm diameter heavy gauge PVC conduits.	No	3		
3.3	Supply and install recessed 9 way TPN distribution board incorporating an incomer MCB rated at 150A.(without the MCBs).The DB is to be as Merlin Gerlin / Hager or as approved.	No	1		
3.4	Supply and install rectangular skirting trunking Type B of dimensions 150X50mm Three (3) compartment along all walls as indicated in drawing number drg. Trunking to be powder coated and white in colour	M	219		
3.5	Supply and install factory manufactured corner rectangular skirting trunking Type B of dimensions 150X50mm three (3) compartment along all walls. Trunking to be powder coated and white in colour				
	a) Inside Corner Bends	No.	45		
	b) Outside Corner Bends	No.	16		
	c) End covers	No.	20		
3.6	Supply and install Galvanized cable tray Type U of dimensions 300X25mm as indicated in drawing number drg. The cable tray to be complete with the wall mounting brackets and all accessories.	M	15		
3.7	Supply and install the following miniature circuit breakers (MCB'S) rated at 500Vac for the above Distribution board and consumer unit.				
	(a) 10A (SP)	No	3		
	(b) 20A (SP)	No	12		
	(c) 30A (SP)	No	6		
	(d) 45A (SP)	No	1		
3.8	Supply and install Blanking Plates for covering the spare ways in the distribution board.	No	11		
	SUB TOTAL CARRIED FORWARD TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
	Sub-Total B/F from Previous Page				
3.9	Supply and install 13Amps twin switched socket outlet point using 3 x 2.5mm2 PVC insulated copper cables drawn in 20mm diameter PVC heavy gauge conduits laid concealed in the floors and walls and in the surface mounted powder coated 150x50mm metal trunking but without the outlet plates.	No	54		
3.10	Supply and install White 13Amps twin switched socket outlet for the raw power and as MK Cat No. 2757WH1,CRABTREE/CLIPSAL e series cat no E25N or equivalent and approved.	No	54		
3.11	Supply and install twin mounting plates for mounting socket outlet plates on the trunking (150mm x 50 mm)	No	54		
3.12	Supply and install single mounting plates for mounting data outlet plates on the trunking (150mm x 50 mm)	No	23		
3.13	Supply and install single mounting plates for mounting TV outlet plates on the trunking (150mm x 50 mm)	No	5		
3.14	Supply and install television outlet point in heavy gauge conduits and trunking complete with the faceplate and television outlet as MK	No	5		
3.15	Supply and install master aerial TV wiring for four outlets using coaxial cable. Wiring to include installation of one UHF and one VHF aerial to be located outside the building	Item	1		
3.16	Supply and install routing for the closed circuit television (CCTV) system in conduits and metal trunking system.	Item	11		
3.17	Supply and install hand drier wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20mm diameter PVC heavy gauge conduits but excluding the 20A DP switch.	No	3		
3.18	Supply and install air extract fans circuits wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20 mm diameter PVC heavy gauge conduits but excluding the 20 Amps DP switch .	No	4		
	SUB TOTAL CARRIED FORWARD TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
	Sub-Total B/F from Previous Page				
3.19	Supply and install A/C circuits wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20 mm diameter PVC heavy gauge conduits but excluding the 20 Amps DP switch .	No	3		
3.20	Supply and install Solar water heater wired using 2x6mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20mm diameter PVC heavy gauge conduits but excluding the 20A DP switch.	No	1		
3.21	Supply and install water booster pump wired using 2x6mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20mm diameter PVC heavy gauge conduits but excluding the 20A DP switch.	No	1		
3.22	Supply and install flush mounted 20Amps DP switch complete with a pilot lamp and as MK CatNo 5423WHI,CRABTREE or equivalent and approved.	No	12		
3.23	Supply and install a cooker circuit wired using 2x6mmsq+1x2.5mmsq ECC PVC insulated copper cables drawn in 25mm diameter PVC heavy gauge conduits, but excluding the cooker control and connection units.	No	1		
3.24	Supply and install a 45A rated cooker control unit incorporating a 13 amps switched socket outlet and fitted with pilot lamps and as MK Cat No.506 WHI	No	1		
3.25	Supply and install a cooker connection unit capable of accommodating upto 2x10mmsq cable and as MK Cat 5045 WHIincorporating a 13 amps switched socket outlet and fitted with pilot lamps and as MK Cat No.506 WHI	No	1		
3.26	Supply and install an electric lock circuit for the door system getting into the teller area. The system is to be inclusive of the switching system, cabling and the operating system. To be as UNION range	Item	4		
3.27	Supply and install corrosive resistant floor box for the data and power points with 4No. compartment and cover lid to IP65 floor mounted and recessed as indicated in drawing number drg.	No.	1		
	TOTAL CARRIED FORWARD TO COLLECTION PAGE F/10				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
4.0	FIRE ALARM SYSTEM				
	The stated brand of fire alarm items is for purposes of quality and any other brand may be installed as per engineers approval				
4.1	Supply and install fire alarm manual call point wiring done using fire resistant 2x1.5mm2 PVC copper cables drawn in 20 mm dia PVC heavy gauge conduits but without the manual call point.	No	3		
4.2	As item 4.1 above but for the fire bell outlet	No	3		
4.3	Supply and install a recessed addressable manual call point, as menvier or approved equivalent.	No	3		
4.4	Supply and install addressable 24V dc polarised 6' fire bell/sounder complete with flasher for wall mounting and as Menvier or approved equivalent.	No	3		
4.5	Supply and install smoke detector (Photo electric type) point wiring done using fire resistant 2x1.5mm2 PVC insulated copper cables drawn in 20mm dia PVC heavy gauge conduits but without the smoke detector.	No	15		
4.6	Supply and install addressable smoke detector-photoelectric type complete with the common base and as Menvier or approved equivalent.	No	15		
4.7	Supply and install a rate of rise Heat detector point wiring done using fire resistant 2x1.5mm2 PVC insulated copper cables drawn in 20mm dia PVC heavy gauge conduits but without the Heat detector.	No	1		
4.8	Supply and install addressable heat detector (rate of rise type) complete with the common base ans as MENVIER MAH730.	No	1		
4.9	Supply and install emergency exit point wiring done using fire resistant 2x1.5mm2 PVC copper cables drawn in 20 mm dia PVC heavy gauge conduits but without the manual call point.	No	4		
4.10	Supply and install 300mm 8w fluorescent emergency exit lighting luminaire with 3hour duration and as MENVIER Recessed Safe Edge Order Code RSEM or approved equivalent	No	4		
	TOTAL CARRIED FORWARD TO COLLECTION PAGE F/10				

	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
5.0	DIGITAL CLOSED CIRCUIT TELEVISION (CCTV) SYSTTEM				
5.1	Supply and install Digital Color Camera outlet point done using 25mm dia PVC heavy gauge conduit complete with draw wire (wiring to be done by others).	No	11		
5.2	Provide for security alarm sensors, access control, alarm control panel point and panic button points using 25mm dia PVC heavy gauge conduits and complete with a draw wire (wiring to be done by others).	No	27		
	TOTAL CARRIED FORWARD TO COLLECTION PAGE F/10				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
6.0	COLLECTION PAGE FOR GROUND FLOOR				
6.1	Total for lighting Installation brought forward from page F/7				
6.2	Total for Power Installation brought forward from page F/10				
6.3	Total for Fire Alarm Installation brought forward from page F/11				
6.4	Total for CCTV and Access control brought forward from page F/12				
	TOTAL CARRIED FORWARD TO GRAND COLLECTION PAGE F/22				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
7.0	FIRST FLOOR - LIGHTING INSTALLATION				
7.1	Supply and install lighting points using 3 x 1.5mm^2 PVC insulated Copper cables to be drawn in 20mm diameter PVC heavy gauge conduits concealed in the floors, roof and for one way switching but excluding the fittings and switches. Conduits to be laid during floor casting where necessary	No	27		
7.2	As item 7.1 above but for two way switching	No	40		
7.3	Supply and install 10 Amps rated moulded plate switches (white in colour) for flush mounting and as crabtree.				
	(a) One gang one way	No	14		
	(b) Two gang one way	No	1		
	(c) One gang two way	No	7		
	(d) Two gang two way	No	1		
	(e) Three gang two way	No	2		
	(f) Four gang two way	No	1		
	(h) Pull switch	No	3		
7.4	Supply and install the following lighting fittings				
	(a) Surface mounted 1200mm 30W 95Lm/w LED Panel fitting complete with mounting brackets, High frequency electronic control gear and all other accessories As Thorn or approved equivalent. (1)	No	41		
	(c) Surface mounted 22W 95Lm/w LED Circular Ceiling club luminaire in white with opal diffuser high frequency control gear As THORN Novaline White fitting (HF) or Approved equivalent (3)	No	5		
	SUB TOTAL CARRIED FORWARD TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
	Sub-Total B/F from Previous Page				
	(c) Clear shave single ended LED mirror luminaire for horizontal mounting with a 11W warm white single ended LED tube and with a pull switch incorporated as MK or Thorn or approved equivalent (4)	No	4		
	(d) 1200mm 40W 95Lm/w LED Luminaire with IP65 fully polycarbonate weather resistant and corrosion proof luminaire with High Frequency Control Gear as FITZGERALD or Thorn or approved equivalent (6)	No	3		
	(e) Outdoor IP65 corrosion proof foot light made of white finish plastic body with glass lense and protective sleeve complete with 5W LED lamp and as Radiant outdoor foot light KH49 or approved equivalent (7).	No	8		
	(f) 50W High Powered LED luminaire with 10800Lm lighting output, over 50,000Hours lamp life, wall mounted, corrosion proof floodlight Luminaire to IP65 complete with reflector electronic control gear and lamp and As Massive, Micromark or Thorn or approved equivalent. (8)	No	6		
	TOTAL CARRIED FORWARD TO COLLECTION PAGE F/18				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
8.0	FIRST FLOOR FLOOR- POWER INSTALLATION				
8.1	Supply and install a heavy gauge PVC conduiting of size 2x38mm diameter for crossings in the slab	M	100		
8.2	Supply and install recessed 9 way TPN distribution board incorporating an incomer MCB rated at 150A.(without the MCBs).The DB is to be as Merlin Gerlin / Hager or as approved.	No	1		
8.3	Supply and install rectangular skirting trunking Type B of dimensions 150X50mm Three (3) compartment along all walls as indicated in drawing number drg. Trunking to be powder coated and white in colour	M	215		
8.4	Supply and install factory manufactured corner rectangular skirting trunking Type B of dimensions 200X50mm three (3) compartment along all walls. Trunking to be powder coated and white in colour				
	a) Inside Corner Bends	No.	47		
	b) Outside Corner Bends	No.	16		
	c) End covers	No.	25		
8.5	Supply and install Galvanized cable tray Type U of dimensions 300X25mm as indicated in drawing number drg. The cable tray to be complete with the wall mounting brackets and all accessories.	M	10		
8.6	Supply and install the following miniature circuit breakers (MCB'S) rated at 500Vac for the above Distribution board and consumer unit.				
	(a) 10A (SP)	No	3		
	(b) 20A (SP)	No	14		
	(c) 30A (SP)	No	6		
8.7	Supply and install Blanking Plates for covering the spare ways.	No	4		
8.8	Supply and install 13Amps twin switched socket outlet point using 3 x 2.5mm2 PVC insulated copper cables drawn in 20mm diameter PVC heavy gauge conduits laid concealed in the floors and walls and in the surface mounted powder coated 150x50mm metal trunking but without the outlet plates.	No	52		
	SUB TOTAL CARRIED FORWARD TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
	Sub-Total B/F from Previous Page				
8.9	Supply and install White 13Amps twin switched socket outlet for the raw power and as MK Cat No. 2757WH1,CRABTREE/CLIPSAL e series cat no E25N or equivalent and approved.	No	52		
8.10	Supply and install twin mounting plates for mounting socket outlet plates on the trunking (150mm x 50 mm)	No	46		
8.11	Supply and install single mounting plates for mounting data outlet plates on the trunking (150mm x 50 mm)	No	21		
8.12	Supply and install single mounting plates for mounting TV outlet plates on the trunking (150mm x 50 mm)	No	7		
8.13	Supply and install television outlet point in heavy gauge conduits and trunking complete with the faceplate and television outlet as MK 3521	No	7		
8.14	Supply and install master aerial TV wiring for four outlets using coaxial cable. Wiring to include installation of one UHF and one VHF aerial to be located outside the building	Item	1		
8.15	Supply and install routing for the closed circuit television (CCTV) system in conduits and metal trunking system.	Item	6		
8.16	Supply and install hand drier wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20mm diameter PVC heavy gauge conduits but excluding the 20A DP switch.	No	4		
	SUB TOTAL CARRIED FORWARD TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
	Sub-Total B/F from Previous Page				
8.17	Supply and install air extract fans circuits wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20 mm diameter PVC heavy gauge conduits but excluding the 20 Amps DP switch .	No	4		
8.18	Supply and install water heater wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20mm diameter PVC heavy gauge conduits but excluding the 20A DP switch.	No	1		
8.19	Supply and install A/C wired using 2x4mm2+2.5mm2 ECC PVC insulated copper cables drawn in 20mm diameter PVC heavy gauge conduits but excluding the 20A DP switch.	No	6		
8.20	Supply and install flush mounted 20Amps DP switch complete with a pilot lamp and as MK CatNo 5423WHI,CRABTREE or equivalent and approved.	No	14		
8.21	Supply and install an electric lock circuit for the door system. The system is to be inclusive of the switching system, cabling and the operating system.To be as UNION range	Item	4		
8.22	Supply and install corrosive resistant floor box for the data and power points with 4No. compartment and cover lid to IP65 floor mounted and recessed as indicated in drawing number drg.	No.	2		
	TOTAL CARRIED FORWARD TO COLLECTION PAGE F/18				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
9.0	FIRE ALARM SYSTEM				
	The stated brand of fire alarm items is for purposes of quality and any other brand may be installed as per engineers approval				
9.1	Supply and install fire alarm manual call point wiring done using fire resistant 2x1.5mm2 PVC copper cables drawn in 20 mm dia PVC heavy gauge conduits but without the manual call point.	No	2		
9.2	As item 9.1 above but for the fire bell outlet	No	2		
9.3	Supply and install a recessed addressable manual call point, as menvier or approved equivalent.	No	3		
9.4	Supply and install addressable 24V dc polarised 6' fire bell/sounder complete with flasher for wall mounting and as Menvier or approved equivalent.	No	2		
9.5	Supply and install smoke detector (Photo electric type) point wiring done using fire resistant 2x1.5mm2 PVC insulated copper cables drawn in 20mm dia PVC heavy gauge conduits but without the smoke detector.	No	14		
9.6	Supply and install addressable smoke detector-photoelectric type complete with the commonbase and as Menvier or approved equivalent.	No	14		
9.7	Supply and install emergency exit point wiring done using fire resistant 2x1.5mm2 PVC copper cables drawn in 20 mm dia PVC heavy gauge conduits but without the manual call point.	No	3		
9.8	Supply and install 300mm 8w fluorescent emergency exit lighting luminaire with 3hour duration and as MENVIER Recessed Safe Edge Order Code RSEM approved equivalent.	No	3		
	TOTAL CARRIED FORWARD TO COLLECTION PAGE F/18				

	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
10.0	DIGITAL CLOSED CIRCUIT TELEVISION (CCTV) SYSTTEM				
10.1	Supply and install Digital Color Camera outlet point done using 25mm dia PVC heavy gauge conduit complete with draw wire (wiring to be done by others).	No	6		
10.2	Provide for security alarm sensors, access control, alarm control panel point and panic button points using 25mm dia PVC heavy gauge conduits and complete with a draw wire (wiring to be done by others).	No	6		
	TOTAL CARRIED FORWARD TO COLLECTION PAGE F/18				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
11.0	COLLECTION PAGE FOR FIRST FLOOR				
11.1	Total for lighting Installation brought forward from page F/12				
11.2	Total for Power Installation brought forward from page F/15				
11.3	Total for Fire Alarm Installation brought forward from page F/16				
11.4	Total for CCTV and Access control brought forward from page F/17				
	TOTAL CARRIED FORWARD TO GRAND COLLECTION PAGE F/22				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
12.0	INCOMER POWER DISTRIBUTION AND COMMON SERVICES				
12.1	Supply and install a wall mounted ,locable meterboard made out of 16SWG Mild Steel Sheet to house a 1 No 3 phase energy meter, KPLC services cutouts and consumer isolation devices, 1No. 0-500V Voltmeter, 1 No. 0-250A Ammeter, 1 No. 7 position Selector switch, 1No. 4 position selector switch, 250 Amps TPN MCCB main switch with current adjustable of 0.5I-1.0I,earthing bars and all other accessories. To have a 250Amps TPN rated busbars with 3No. 125A TPN MCCBs with current adjustable of 0.5I-1.0I, 2No. 100A TPN MCCBs, 2No. 63A TPN MCCBs, spareways and to be powder coated and manufactured by Powertechnics ltd or equivalent. To be mounted as per the drawing and approved by the Engineer.	Item	1		
12.2	Supply and install a 40 KVAR rated stepped power factor correction capacitor bank to be installed on the main meter board complete with a 63Amps TPN MCCB for connection to the main busbars. The plant is to have an electronic programmable controller with programming ports and capable of downloading data through an non isolated RS232 serial interface.	No	1		
12.3	Supply and install earthing comprising of: (a)1500mmx12mm dia copper bound earth electrode (b)TCA clamp made from gunmetal (c)1x70mm sq single core PVC insulated copper cable (d)300x300x300mm precast earthing manhole with a removable concrete cover (e)38mm dia PVC heavy gauge conduit for green PVC earth lead	Item	1		
12.4	Supply and install 100mm dia ducts for Kenya Power incoming power supply from the pole to the L.V Board and for the power Reticulation.	m	100		
12.5	Supply and install manhole of size 450x450mm and depth of 450mm and with a water tight cover	No	3		
12.6	Supply and install Adaptable box made out of 12 gauge flat iron and of size 450x450x75mm and as MOW.	No	2		
12.7	Supply and install the following sub-mains cables from the switchroom				
	(a) 4Core 25mm sq PVC/SWA/PVC copper cable.	m	50		
	SUB TOTAL CARRIED FORWARD TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
	Sub-Total B/F from Previous Page				
12.8	Supply and install water booster pump wired using 2Core 4mm2 PVC/SWA/PVC armoured copper cable.	m	25		
12.9	Supply and install fire fighting water pump wired using 2core 4mm2 PVC/SWA/PVC armoured copper cable.	m	30		
12.10	Supply and install flush mounted 20Amps DP switch complete with a pilot lamp and as MK CatNo 5423WHI,CRABTREE or equivalent and approved.	No	2		
12.11	Compression glands (a) 4Core 25mm sq PVC/SWA/PVC cable	No	4		
12.12	Supply and install Galvanized cable tray Type U of dimensions 300X25mm as indicated in drawing number drg. The cable tray to be complete with the wall mounting brackets and accessories.	M	12		
12.13	Supply and install accessories for the Galvanized cable tray Type U of dimension				
	a) 90° inside/outside bend	No	1		
	b) T-Junction	No	1		
12.14	Supply and install a 2 loop addressable fire alarm panel flush mounted on wall with 72 hour standby battery, complete with all accessories and as Menvier or approved equivalent.	No	1		
12.15	Supply and install a photo electric cell to fit NEMA socket or photocell kit with 70-75lux switch on level and 1.5maximum differential and 5A switching capacity complete with the contactor switch and As THORN cat no QP/QPK/QPK PN or equivalent and approved.	No	2		
12.16	Supply and install a 63A rated TPN IP67 wall mounted switched socket outlet plate complete with a switch disconnector and plugs for the outdoor A/C unit As MK switched socket outlet Cat No.6700 or Approved Equivalent.	No	1		
	TOTAL FOR INCOMING POWER AND DISTRIBUTION CARRIED FORWARD TO GRAND COLLECTION PAGE F/22				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Project managers stationery and Expense				
A	Ream white photocopying paper A/4 80g/m2	10	Ream		
B	Letter head quality paper, size A4, 80g/cm^3, Green, 500 sheets	5	Ream		
C	Letter head quality paper, Blue, 500 Sheets as Classic or Conqueror or approved equivalent.	5	Ream		
D	HP LaserJet Print Cartridge serial 5A No. CE505A	2	No.		
E	8 Giga Bit Storage Flash disk as Transcend or approved equivalent	1	No		
F	2 Terabit External portable harddrive as seagate or approved equivalent	1	No.		
G	Tablet with 9.7 inch retina LED backlit display, 128GB internal storage, WIFI, Bluetooth and 4G enabled, Front and Back camera of 12 megapixels minimum complete with a book cover as 'I PAD PRO'.	1	No.		
H	Laptop Computer Intel corei 7 eight generation processor /2.7GHz Quad-core/16GB System RAM/1TB SSD/ win10/HD13.3" Screen/carry porch and preinstalled with MS Office 16 and an antivirus as 'Hp Spectre X 360'.	1	No.		
	Total Carried Forward to the Grand Collection page F/22				

	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
13.0	GRAND COLLECTION PAGE				
13.1	Total for Ground Floor electrical installation brought forward from F/10				
13.2	Total for First Floor electrical installation brought forward from page F/18				
13.3	Total for Incoming power and Power Distribution brought forward from page F/20				
13.4	Total for Project Manager's Stationery brought forward from page F/21				
	TOTAL CARRIED FORWARD TO PRICE SUMMARY PAGE F/23				

P R I C E S U MMAR Y S CH E D U L E

ITEM	DESCRIPTION				TOTAL KSHS
1.0	Preliminaries and general conditions				0.00
2.0	Total for Electrical Installation works carried over from the grand summary page F/22				
3.0	Provisional Sum for Kenya Power Service line Connection				250,000
4.0	Allow for attendance to Kenya Power by the electrical sub-contractor				
5.0	Contingency Sum to be expended at the discretion of the electrical engineer				0.00
	TOTAL COST CARRIED TO GRAND SUMMARY PAGE GS/1				

SECTION G

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 equipment's they intend to offer to the employer in this schedule.

3.0 **Any bid returned with unfilled Technical Schedule shall be considered technically non-responsive, and the bidder shall automatically be disqualified.**

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

ITEM	DESCRIPTION	TYPE/MAKE	COUNTRY OF ORIGIN
1.	Socket Outlets, Switches		
2.	Lighting Fittings		
3.	Switches		
4.	L.V sub board		
5.	Distribution Boards		
6.	MCBs		
7.	MCCBs		
8.	Trunking		
9.	Cables		
10.	Fire Alarm Panel		
11.	Smoke Detector		
12.	Heat Detector		
13.	Manual Call Point		
14.	Emergency Exit light		

STRUCTURED CABLING AND IP-PABX

REPUBLIC OF KENYA

TEACHERS SERVICE COMMISSION

PROPOSED ERECTION AND COMPLETION OF TSC COUNTY OFFICES

TENDER SPECIFICATIONS AND BILLS OF QUANTITIES FOR SUPPLY, INSTALLATION TESTING AND COMMISSIONING OF STRUCTURED CABLING AND IP-PABX

BOMET COUNTY

CHIEF ARCHITECT
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 30743– 00100
NAIROBI.

CHIEF QUANTITY SURVEYOR
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 30743 - 00100
NAIROBI.

CHIEF ENGINEER (STRUCTURAL)
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 30743 - 00100
NAIROBI.

CHIEF ENGINEER (ELECTRICAL)
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 41191 - 00100
NAIROBI.

CHIEF ENGINEER (MECHANICAL)
STATE DEPARTMENT OF PUBLIC WORKS
P.O BOX 41191– 00100
NAIROBI.

CLIENT:
SECRETARY/CHIEF EXECUTIVE
TEACHERS SERVICE COMMISSION
P O BOX PRIVATE BAG-00100
NAIROBI.

OCTOBER, 2019

TABLE OF CONTENTS

TITLE **PAGE**

DEFINITIONS

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

The Employer	Government of the Republic of Kenya Represented by: The Secretary/Chief Executive Teachers Service Commission P.O. Box Private Bag-00100 NAIROBI
Architect	Chief Architect State Dept. of Public Works P.O. Box 30743 – 00100 NAIROBI
Engineer	Chief Engineer Electrical State Dept. of Public Works P.O. Box 41191 - 00100 NAIROBI
Quantity Surveyor	Chief Quantity Surveyor State Dept. of Public Works P.O. Box 30743 - 00100 NAIROBI
Structural Engineer	Chief Engineer (Structural) State Dept. of Public Works P.O. Box 30743 - 00100 NAIROBI
Engineer	Chief Engineer Mechanical State Dept. of Public Works P.O. Box 41191 - 00100 NAIROBI
Project Manager	The Works Secretary State Dept. of Public Works P.O. Box 30743 – 00100 NAIROBI
Contractor	The firm appointed to carry out Builders Works.
Sub-Contractor:	The firm appointed to carry out Structured Cabling and IP-PABX Installation Works.
Site Location:	**The Site is Located in Bomet County**

SECTION B

PARTICULAR AND TECHNICAL SPECIFICATIONS

OF

MATERIALS AND WORKS

(A) PARTICULAR AND TECHNICAL SPECIFICATIONS OF MATERIALS AND WORKS FOR I.P-P.A.B.X AND TELEPHONE INSTRUMENTS

PART 1

1.00 PARTICULAR SPECIFICATIONS

1.01 DESCRIPTION OF THE SITE

The site of the proposed works is located at **Bomet Town**

1.02 DESCRIPTION OF THE PROJECT

The works comprise the Supply, Installation, Testing and Commissioning of a new IP-P.A.B.X, telephone instruments, cabling and associated installation works.

1.03 CLIMATIC CONDITIONS

Maximum Temperature:	41.4.^{o}C
Minimum Temperature:	13.9^{o}C
Relative humidity range:	40% - 90%
Atmospheric salt content:	Less than 0.002%
Dust in Atmosphere:	Relatively dusty conditions prevail
Longitude (approximately):	39^{o} 38' E
Latitude (approximately):	00^{o} 28' S
Altitude:	1104m above sea level

Solar Radiation, February Mean Max 543 Langleys

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

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

1.04 BOND FOR IP-P.A.B.Xs WITH PROVISIONAL TYPE APPROVAL

Where the IP-P.A.B.X offered for this tender does not possess full type approval from C.A.K but has provisional type approval, the tendered will be required to submit the name of a separate surety who will be willing to be bound to the Kenya Government in an amount equal to the full value of the IP-P.A.B.X project for a period of 18 months from the date the IP-P.A.B.X is commissioned into service. The surety will be subject to the approval of the government.

1.05 REGULATIONS

The contractor shall, in the 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:

- Communication Authority of Kenya (CAK)
- The Kenya Communications Act
- The Electronic Power Act and the Rules made there under.
- The Kenya Power and Lighting Company Limited's Bye-Laws.
- The current edition of the "Regulations for the Electric Equipment of Buildings" issued by the Institution of Electrical Engineers.
- The requirements of the Chief Inspector of Factories for the Kenya Government.
- Kenya Bureau of Standards (KBS) Standard Specifications and Codes of Practice, or other equal and approved standard specifications and codes.
- The Bye-Laws of the Local Authority.
- Any other regulations applicable to Electric and Electronic Installations or Communications systems in Kenya.
- The Employer's Safety Regulations.

1.06 POSITION OF SERVICES AND EQUIPMENT

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

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

1.07 SETTING TO WORK AND REGULATING SYSTEMS

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

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

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

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

1.08 IDENTIFICATION OF PLANT AN COMPONENTS

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

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

1.09 WORKING DRAWINGS

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

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

1.10 RECORD DRAWINGS

During the execution of works on site the contractor shall, in a manner approved by the P.M. 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 P.M. as he may require for inspection and checking.

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

- Working Drawings amended as necessary but titled “Record Drawings” and certified as a true record of the as installed” contract works.

- Fully dimensioned drawings of all plant and apparatus.

- System Schematic and trunking diagrams showing all salient information relating to control and instrumentation.

- Wiring diagrams of individual plant, apparatus and switch and control boards. These diagrams to include these particular to individual plant or apparatus and else where applicable those applicable to system operation as a whole.

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

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

1.11 TESTS

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

1.12 QUALITY OF MATERIALS

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

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

1.13. TRAINING

In the direction and to the satisfaction of the P.M. the contractor shall arrange for the training of the attendant console operators, users and the administrators at the site or the contractor’s office on the workings of the IP-PABX. The cost of such training shall be included in the contractor’s prices.

1.14 EQUIPMENT GUARANTEE

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

1.15 PATENT RIGHTS

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

PART 2

2.00 TECHNICAL SPECIFICATIONS

2.01 SCOPE OF THE WORK

The contractor shall supply, deliver, unload, test, commission, guarantee and be liable for defects, and be responsible for the initial maintenance, all as specified herein, of IP-P.A.B.X, Telephone instruments and structured cabling works. The IP-P.A.B.X will be entirely Electronic, ISDN native and with time multiplexing architecture.

The contractor shall supply and install associated items of plant equipment other than those clearly stated to be supplied by others. He shall supply and install all accessories, whether described in the specification or not, essential to the completion of the works to the satisfaction of the P.M.

All equipment supplied shall be type approved by CAK and the installation shall be approved by the Communications Authority of Kenya (the competent Authority). The tenderer shall be responsible for all negotiations with and payments to the commission. He shall also pay all fees.

2.02 MINIMUM REQUIREMENTS

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

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

2.03 EQUIPMENT FINISH

The equipment finish shall be the responsibility of the contractor, who shall be responsible for its protection during erection and in the course of making good to the building finishes after equipment erection.

2.04 INTERFERENCE SUPPRESSION

The equipment and all its accessories shall be suppressed so as not to interfere with any communications, radio, T.V, Security or electro-medical equipment, recording or computer systems.

2.05 DOOR KEYS

The contractor shall keep the IP-P.A.B.X suite locked at all times when his staff are not present and shall at the conclusion of the contract hand over all keys to the P.M.

2.06 EQUIPMENT HARDWARE

The tenderer shall quote for multimedia applications IP-P.A.B.X. The equipment may operate on single processor.

2.07 EQUIPMENT SOFTWARE

The equipment shall be preloaded with core software for driving it and giving it full operating flexibility. The list of features and services should be comprehensive and extensive and comprising of;-

- System features
- Operator features
- Standard telephone features
- Executive telephone features
- System administration features
- Digital Network features
- Data features
- Special applications features

2.08 SYSTEM FEATURES

The system features shall include but not limited to the following facilities;-

- Direct inward dialing
- Direct outward dialing
- Dial pulse signaling
- DTMF to dial pulse conversion (Tone to pulse conversion)
- Direct Trunk access
- Class of Service
- Flexible assignment of printer ports
- Flexible numbering of extensions
- Flexile tone plan
- Group Hunting
- Multiple operator console
- Music on hold
- Tandem trunks
- Tie trunks
- Extension features eg call forwarding, Busy override, conference, (up to 8 conferences) camp on etc.

2.09 BARRING AND ROUTE RESTRICTION

It shall be possible at will to bar any extension from access to the public exchange network. Selective route Restriction equipment is required on all both way and outgoing exchange lines to prevent any or all extensions from reaching certain areas of the public telephone network including all areas outside the borders of the Republic. The equipment shall prevent a user, after receiving main exchange dial tone, dialing any number of pre-selected 4 digit codes. It shall be possible to change such pre- selected codes easily and at will without the addition of further equipment, but a security system must prevent this being done by unauthorized persons. It shall not be possible to defeat this equipment from an extension by non-standard dialing, switch hook flashing, enquiry or transfer use, tie line transfer, switch follow on calls after an outside caller has disconnected, or in any other way except that which may be used especially for extensions entitled to full access.

It shall not be possible for an extension to receive public exchange dial tone without the route restriction devices being in circuit.

A follow-on call trap is required on the exchange lines, and this must not prevent the operator from flashing the main exchange.

It shall not be possible for an extension to originate a new outside call following the disconnection of an established call until the public exchange and local subscribers auto equipment has released, and the route restriction and barring equipment has been reset and re-connected to the circuit.

Camp-on-busy, Trunk offer, “call back” and automatic transfer facilities must not de-activate the barring and route restriction circuit.

The exchange should be suitable for the future addition of direct dialing-in facilities, ring back when free absent extension transfer.

2.10 CLASS OF SERVICE

It is required to group subscribers at will into and/or more of the following categories;

- **Full Access**

  Those permitted incoming calls, tie line calls, internal calls, and outside access to exchange lines and STD but not to the international codes.

- **Trunk Route Restriction**

  Those permitted incoming call, tie line calls, internal calls, and outside access to local codes permitted by the trunk barring equipment.

- **Trunk Barred**

  Those permitted incoming call, tie line calls, internal calls, and outside access via the operator.

- **Restricted Access**

  Those permitted incoming calls and internal calls only.

- **Barred Access**
  Those permitted tie line and internal calls only.

  It should not be possible to transfer an exchange line from category (i) extension or from the switchboard to a category (ii) extension without activating the route restriction equipment to prevent the barred extension dialing, unauthorized codes. It shall not be possible to transfer an exchange line to a category (iv) or (v) extension.

  There shall be a means of re-allocating subscriber access to the various IP-P.A.B.X facilities which shall be promoted by a security system that will prevent unauthorized alterations.

  The contractor will be responsible for programming the IP-P.A.B.X to incorporate the clients initial wishes regarding extension access to facilities, and for reprogramming it to incorporate such changes as the client wishes to make up to the end of the guarantee period. He will also be responsible for training such staff as the employer shall nominate to undertake reprogramming.

2.11 ATTENDANT CONSOLE

One or more operator attendant consoles as indicated in the list of main requirements shall be supplied, together with two operators' handsets and two operators' lightweight headsets per position. They shall be fitted with suitable lightweight plugs and jacks.

Each console shall be equipped with all necessary facilities for controlling, connecting and monitoring the progress of calls and shall display alarms as necessary.

Night service facilities will normally be provided such that the operator can route in-coming calls to pre-selected extensions when the console in not manned.

Attendant consoles will be multiplex so that the connecting cable will comprise a minimum number of pairs, with little restriction on the sitting of the consoles and positions shall be so common that any operator can attend to any call.

Call presentation, chaining process, call back will be entirely managed by the IP-P.A.B.X; however it will be possible to put certain call on individual hold, on keys which have been reserved to that effect.

The information displayed on the terminal give maximum details about the communication (normal call, urgent call, queue status, internal called-party, status of the terminal etc).

2.12 TELEPHONE INSTRUMENTS

The acquiring of telephone instruments has been liberalized. However, they must be type-approved by the CAK and the tenderer must obtain the necessary approval.

(a) Executive Telephone Instruments

The **Executive Telephone** instruments shall have but not limited to the following operating characteristics:-

- Standard I.P telephone facilities
- Abbreviated dialing
- Automatic ring back indication
- Calling number display
- Calls indication
- Call waiting display
- Do-not disturb indication
- Extension status indication
- Hands free
- Individual speed dialing
- Intercom
- LCD display (16 characters)
- Microphone unit.
- On hook dialing
- Password protection
- Repeat last number
- Ringing level and tune selection
- Store and redial
- Single key access to line features

(b) Standard Telephone Instruments

The ordinary telephone instruments shall be of push button type. They shall at least have the following operating characteristics:-

- Standard I.P telephone facilities
- Automatic ring back indication
- Extension status indication
- Individual speed dialing
- On hook dialing
- Repeat last Number
- Ringing level and tune selection
- Store and redial.

2.13 NUMBER SYSTEM

The number scheme will be:-

Level O Access to IP-PABX Telephone Operator
" 9 Access to the main exchange
" 8 Night service
" 7 spare for future tie line access
" 6 Tie line access
" 5 spare for extensions
" 4 Extensions
" 3 Extensions
" 2 Extensions
" 1 Spare for special facilities.

2.14 EXCHANGE LINES

Exchange lines shall be arranged for first party release. The IP-PABX must be capable of processing the number of digits required for international calls in accordance with CCITT and CCIL recommendations.

A device shall be fitted to sense main exchange dial tone as there maybe considerable delay in receiving this after the seizure of a tree exchange line.

2.15 TIE LINES

The lines will provide access to all extensions and the operator. They are to be for auto-auto working through signaling and first party release. Tones are to be returned over to tie lines.

Disconnect loop signaling is at present employed with a maximum loop resistance of 2000 ohms.

2.16 SYSTEM MAINTENANCE

- **Test Equipment and Tools**

A IP-PABX routine test set and a set of maintenance tools are to be supplied. The tools are to be listed in schedule D.

- **Maintenance Features**

The IP-PABX shall have the following system maintenance features:-

- Line status monitoring device
- Station message data recording port
- System Working report
- On site system administration using a compatible terminal and attendant console.
- Remote system administration capability
- Automatic on-line diagnostic testing

Maintenance diagnostic software programmes shall be provided which can be run as required whilst the IP-PABX is in normal service.

- **Maintenance and Operating Manuals**

On practical completion of the works, the contractor shall furnish two sets of copies each of maintenance and operating manuals relating to the IP-PABX installed. The manuals shall be legibly written in English and properly bound with hard cover.

They will include but not limited to:-

- System description
- Fault finding procedure
- Maintenance and servicing periods and procedures
- Schematic and wiring diagrams of the equipment
- Record drawings

2.17 POWER SUPPLY

Rectifier

The IP-P.A.B.X shall be fed through rectifier and a DC –DC converter fed from 240V A.C. 50Hz power supply. The rectifier will be equipped with the following devices:-

Security device to monitor the minimum and maximum authorized values of the output voltage. When one of the thresholds is reached, the power supply to the IP-P.A.B.X must cut itself automatically “Floating” and automatic “Equalization” device with manual command of the “Equalization” mode and automatic switch back to “floating” mode once the battery is loaded.

The rectifier will be sized to supply power to the IP-P.A.B.X and simultaneously allow re-loading of the battery within 10Hours maximum.

- **Battery**

A stationery battery is required to supply power during peak hours and mains supply failures and to provide smoothing for DC out put from the rectifier.

The battery shall be “Maintenance Free” and shall have sufficient capacity when fully charged to supply power to the IP-PABX in the event of mains supply failure for minimum of 8 hours. The minimum DC out put shall be 48V DC = 10% and its life expectancy shall be 20 years. Automotive or Traction battery will not be accepted.

- **Voltage stabilizer**

A voltage stabilizer of suitable rating is required. It shall have a response time of NOT more than 0.1 second and a correction range from -12% to +12% with surge/spike protection

Earthing

An independent telecommunication earth shall be provided for the IP-P.A.B.X and the MDF *(if available).* The earth lead cable shall not be less than 6mm2 and shall terminate to copper earth electrode(s) in a concrete manhole (300mm x 300mm) with a suitable concrete cover.

2.18 LIST OF MAIN REQUIREMENTS FOR THE PROPOSED IP-P.A.B.X FOR TEACHERS SERVICE COMMISSION - BOMET COUNTY

FACILITY	INITIALLY EQUIPPED	ULTIMATE SIZE
No. of I.P Extensions	**48**	**96**
No. of Trunk lines	**8**	**12**
No. of ISDN lines	**1**	**1**
Tie Lines	**4**	**4**
No. of GSM Lines	**4**	**6**
No. of Operator's Consoles	**1**	**2**
No. of Operator's Head sets	**1**	**2**
No. of Operators' Hand sets	**1**	**2**

2.19 OTHER REQUIREMENTS

The IP-P.A.B.X shall:

1. Be fully IP with a redundant processor with its own power supply
2. have remote maintenance interface MDF and lightning protection;
3. be of compact modular design with sub-lines pre-wired and easily removable;
4. have at least 50% power failure trunk transfer facility;
5. be able to support both digital and analogue circuits;
6. have a UPS of at least 8 hrs autonomy;
7. have direct inward system access facilities and data communication services;
8. be equipped with flexible music on hold;
9. be ISDN equipped;
10. be equipped with station Hunt groups facility;
11. be complete with a maintenance terminal facility with VDU and Key board;
12. have call forwarding automatic call transfer, three party conference among other standard features;
13. be equipped with mains power supply Anti-surge, over-voltage and under-voltage protection devices and lightning protectors for all cards;
14. have facility for selection for night service/special night answer point;
15. have on screen fault indication facility;
16. have computer-telephone inter-face for digital instruments capability;
17. be ready to accommodate either or all E1 and ISDN cards which include but are not limited to BRA ,PRA BPRA and LIOx;

18. be **type approved by the CAK**. The tenderer must indicate the type approval references for the various parts that constitute the equipment. Photostat copies of type approvals must be attached and
19. be **compatible** for connection to Telkom Kenya Telecommunication network.

2.20 ITEMS TO BE STATED BY THE TENDERER

Delivery period from date of award of contract.....weeks

Period required for installation from receipt of equipment .....weeks

What is the name and model number of the IP-P.A.B.X for which you have tendered?
.....

In which countries is the IP-PABX and it PCB's manufactured.....
.....

With what standard does the IP-PABX comply? .....

Is a full stock of spares available in Kenya? .....

For how many years is the continuity of spare parts guaranteed? (A minimum of 10 years is required).....years

What is the busy hour traffic capacity of the IP-PABX assuming no delay in main exchange dial tone? .....

What is the maximum ambient temperature in which the IP-PABX will function satisfactorily? .....

Is air conditioning required for the IP-PABX? ..... Is

protection against high transient line voltage incorporated? .....

How many pairs are required per extension line? .....

Is the operator's console suitable for a blind operator? .....

What is the guarantee period offered? .....
(Note: 12 months is the minimum)

Is an MDF incorporated in the IP-PABX? .....

Capacity of the standby battery in A.H.....

Output of charger in Amps .....

(B) PARTICULAR AND TECHNICAL SPECIFICATIONS OF MATERIALS AND WORKS FOR STRUCTURED CABLING WORKS

A. GENERAL TECHNICAL SPECIFICATIONS

PART 3

a. Section Includes: Equipment, materials, labor, and services to provide telephone and data distribution system including but not limited to:

1) Telephone and data cabling terminations
2) Optical fiber and terminations
3) Data/voice outlets
4) Terminal blocks/cross-connect systems
5) Equipment racks and cabinets
6) System testing
7) 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*®)/IEE 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.

1. 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.

2. 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 6A cables 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.

2.1. 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.

2.2. 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.

g. Vertical/horizontal backbone cabling consists of 50/125 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.*

3. 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 contractors. 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. ***Backbone (riser) diagrams***

1) System block diagram, indicating interconnection between system components and subsystems

2) Interface requirements, including connector types and pin-outs, to external systems and systems or components not supplied by the contractor

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:*

4. QUALITY ASSURANCE

4.1. The contractor shall have worked satisfactorily for a minimum of five (5) years on systems of this type and size.

4.2. 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.

4.3. 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.

4.4. 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.

4.5. 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.

4.6. Subcontractors shall assume all rights and obligations toward the contractor that the contractor assumes toward the client and P.M.

5. WARRANTY

5.1. Unless otherwise specified, unconditional guarantee shall be in writing for the materials, equipment, and workmanship for a period of not less than fifteen (15) years from date of commissioning of the project for active components.

5.2. 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.

6. DELIVERY, STORAGE, AND HANDLING

6.1. 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.

7. SEQUENCE AND SCHEDULING

7.1. 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.

8. USE OF THE SITE

8.1. 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 main 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 4 - 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 6A 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 6A 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 6A, 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 6A, 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 6A 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 and 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 **Bomet Town**

2.0 DESCRIPTION OF THE PROJECT

The works to be carried out comprise the following;

i) Proposed supply, installation, testing and commissioning of a structured cabling system to cater for computer data points and telephone points.
ii) Configure and set up the structured cabling system to be used on LAN,
iii) Produce test result, warranty certification, reports and as installed drawings. The Network will be capable of supporting approximately 50 data/voice points.
iii) Supply, install appropriate telephone cables to interconnect the data cabinets to the IP-P.A.B.X *(to be supplied by others).* The works shall include inter-wiring, programming and activating all 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 each floor in designated rooms 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. 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.
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 floor to the core should be connected to 1000Base X(GBIC) port on the core switch.
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.

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) 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 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 year of warranty** covering free replacement of parts and units.

8.0 NETWORK MANAGEMENT SYSTEM

Bidders must propose the manufacturers Network Management system for centralized configuration, maintenance and trouble shooting 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.

9.0 CABLES

9.1 UTP CABLE

The UTP cable must be category 6A 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 polyeletin insulation
d) Pulling force should support up to 50N/mm^2

9.2 OPTICAL FIBRE CABLE

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

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

10.0 CAT 6A PATCH PANELS

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

11.0 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.

12.0 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 ons’ for future expansions. Hence enough capacity shall be allowed for future expansion.

13.0 EDGE/FLOOR SWITCHES

These shall be per floor and have enough capacity for expansion

14.0 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.

15.0 BROCHURES AND TECHNICAL LITERATURE

Tenderers **must** enclose together with their submitted bids brochures detailing technical Literature and specifications of the active components of the structured cabling system. The brochures shall be used to evaluate the suitability of these components.

Any bid submitted without the brochures shall be considered technically non-responsive, and may subsequently be disqualified.

STATEMENT OF COMPLIANCE

(a) I confirm compliance with all clauses in this tender specification.

(b) I confirm that I have not and will not make any payment to any person which can be perceived as in inducement to enable me win this tender.

Signed .....for and on behalf of the Tenderer.

Date .....

SECTION C

SCHEDULE OF CONTRACT DRAWINGS

SCHEDULE OF CONTRACT DRAWINGS

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

NOTE:

Tenderers are advised to inspect the electrical drawings at the office of the **Chief Engineer (Electrical) - Ministry of Transport, Infrastructure, Public Works, Housing and Urban Development-State Department of Public Works**, at Chief Engineer (Electrical) office, Hill Plaza Building, Community area, Nairobi along Ngong road, during normal working hours.

SECTION D

SCHEDULE OF UNIT RATES

SCHEDULE OF UNIT RATES

1. The tenderer shall insert unit rates against the items in the following schedules and may add such other items as he considers appropriate.

2. The unit rates shall include for supply, transport, insurance, delivery to site, storage as necessary, assembling, cleaning, installing, connecting, profit and maintenance in defects liability and any other obligation under this contract.

3. The unit rates will be used to assess the value of additions or omissions arising from authorised variations to the contract works.

4. Where trade names or manufacturer's catalogue numbers are mentioned in the specification, the reference is intended as a guide to the type of article or quality of material required. Alternative brands of **equal** and **approved quality, capacity and capability will be considered.**

SCHEDULE OF UNIT RATES
(To be completed by the Tenderer)

Item	Description	Unit	Rate(Kshs)
1	**Cisco Edge Switch** (a) 48 Port (b) 12 port	No	
2	**Digital Executive Telephone Head Sets** (Indicate Make)	No.	
3	**Digital Standard Telephone Head Sets** (Indicate Make)	No.	
4	**CAT 7A UTP 4-Pair Cable**	LM	
5	**Category 6A angled faceplate, DOUBLE port white colour complete with fixing screws (**Indicate Make)	No.	
6	**Category 7A angled faceplate, SINGLE port white colour complete with fixing screws** (Indicate Make)	No.	

SECTION E

BILLS OF QUANTITIES

PRICING OF PRELIMINARIES ITEMS

Prices will be inserted against item of preliminaries in the contractor's Bills of Quantities and specification. These Bills are designated as Bill No.1 in this Section. Where the contractor fails to insert his price in any item he shall be deemed to have made adequate provision for this on various items in the Bills of Quantities. The preliminaries form part of this contract and together with other Bills of Quantities covers for the costs involved in complying with all the requirements for the proper execution of the whole of the works in the contract.

The Bills of Quantities are divided generally into three sections:

(a) Preliminaries – Bill No.1

Contractors preliminaries are as per those described in section C – contract preliminaries and general conditions of contract. The contractor shall study the conditions and make provision to cover their cost in this Bill. The number of preliminary items to be priced by the Tenderer
have been limited to tangible items such as site office, temporary works and others.
However the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.

(b) Installation Items – Other Bills

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

(ii) The unit of measurements and observations are as per those described in clause
1.0 5 of the section C.

(c) Summary

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

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

SPECIAL NOTES TO BILLS OF QUANTITIES

1. The Bills of Quantities form part of the 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 (**including VAT and withholding tax)**.

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

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

4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the contractor shall adhere. Otherwise alternative brands of **equal** and **approved** quality will be accepted.

   Should the contractor install any material not specified here in before receiving **written approva**l 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:
   - Standby battery and UPS
   - Data switches
   - Data Cabinets
   - Cat 6ACables
   - Fibre Cable
   - Passive components
   - IP PABX
   - Telephone instruments

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

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
	ALL PRICES TO BE IN KSHS				
	QUOTE FOR THE SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF THE FOLLOWING ITEMS				
2.0	**GROUND FLOOR**				
(A)	**HORIZONTAL CABLING**				
2.1	Category 6A angled faceplate, SINGLE port white colour complete with fixing screws and as Siemon or approved equivalent.	No.	23		
2.2	Category 6A, 4pair stranded UTP 3 metre factory terminated patch cords for data. Colour to be selected by client and as Siemon or approved equivalent.	No.	23		
2.3	Category 6A, 4pair stranded UTP 3 metre factory terminated patch cords. One side RJ 45 and the other RJ12 for voice and as Siemon or approved equivalent.	No.	23		
2.4	Category 6A 4pair, 24 AWG, UTP, 10 ohm cable, must exceed ANSI/TIA/EIA-568-B1 requirement for voice and data and as Siemon or approved equivalent.	Lm	2,300		
2.5	Category 6A, 4pair stranded UTP 1meter factory terminated patch cords for voice and data and as Siemon or approved equivalent.	No.	23		
2.6	24 port category 6A UTP (19".0) patch panel to ANSI/TIA/EIA-568A, colour black for data and as Siemon or approved equivalent.	No.	1		
2.7	12 port category 6A UTP (19".0) patch panel to ANSI/TIA/EIA-568A, colour black for voice and as Siemon or approved equivalent.	No.	-		
2.8	24 port category 6A UTP (19".0) patch panel to ANSI/TIA/EIA-568A, for voice colour black and as Siemon or approved equivalent.	No.	-		
2.9	Self adhesive Labels for cable labelling(PACKETS OF 200 LABLES EACH)	Item	Item		
(B)	**ACTIVE COMPONENTS AND CABINETS**				
2.10	22U free standing metal cabinet/ S Rack with glass door complete with Double Vertical Cable Managers, fans, power outlet points, grounding kits and castors. The data cabinet to be 600mm wide x 1070 mm deep enclosure complete with 2No. APC Power Distribution Units (PDU) to accommodate power for the active devices. The PDUs with an input of 240Vmust be metered and have an LCD display clearly indicating Current (Amps) and Voltage (Volts). The connections should conform with the IEC 309 standards with a 32Amps industrial rotary socket with at least 8No. C13 female sockets and 2No. C19 Female sockets. The PDU will also be required to have intelligent ports to monitor over the network and an overload protection system that should be able to send notifications on the network and As Toten TD8922 c/w APC PDU or Approved equivalent.	No.	1		
2.11	24 Port PoE edge switch as described in the particular specifications Section "B" item 7.0 page B/30 and as CISCO or approved equivalent	No.	1		
2.12	Siemon 1U(19".0) horizontal cable managers or approved equivalent.	No.	5		
2.13	Telephone cable 50 pair for line extensions.	Lm	-		
2.14	50 pair discase for line extensions	No.	-		
2.15	100 pair discase for line extensions	No.	-		
	TOTAL FOR GROUND FLOOR CARRIED FORWARD TO PRICE COLLECTION PAGE E/7				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
	ALL PRICES TO BE IN KSHS				
	QUOTE FOR THE SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF THE FOLLOWING ITEMS				
3.0	**FIRST FLOOR**				
(A)	**HORIZONTAL CABLING**				
3.1	Category 6A angled faceplate, DOUBLE port white colour complete with fixing screws and as Siemon or approved equivalent.	No.	21		
3.2	Category 6A, 4pair stranded UTP 3 metre factory terminated patch cords for data. Colour to be selected by client and as Siemon or approved equivalent.	No.	21		
3.3	Category 6A, 4pair stranded UTP 3 metre factory terminated patch cords. One side RJ 45 and the other RJ12 for voice and as Siemon or approved equivalent.	No.	21		
3.4	Category 6A 4pair, 24 AWG, UTP, 10 ohm cable, must exceed ANSI/TIA/EIA-568-B1 requirement for voice and data and as Siemon or approved equivalent.	Lm	2,100		
3.5	Category 6A, 4pair stranded UTP 1meter factory terminated patch cords for voice and data and as Siemon or approved equivalent.	No.	21		
3.6	24 port category 6A UTP (19".0) patch panel to ANSI/TIA/EIA-568A, colour black for data and as Siemon or approved equivalent.	No.	1		
3.7	12 port category 6A UTP (19".0) patch panel to ANSI/TIA/EIA-568A, colour black for voice and as Siemon or approved equivalent.	No.	-		
3.8	24 port category 6A UTP (19".0) patch panel to ANSI/TIA/EIA-568A, for voice colour black and as Siemon or approved equivalent.	No.	-		
3.9	Self adhesive Labels for cable labelling(PACKETS OF 200 LABLES EACH)	Item	Item		
(B)	**ACTIVE COMPONENTS AND CABINETS**				
3.10	42U free standing metal cabinet/ S Rack with glass door complete with Double Vertical Cable Managers, fans, power outlet points, grounding kits and castors. The data cabinet to be 600mm wide x 1070 mm deep enclosure complete with 2No. APC Power Distribution Units (PDU) to accommodate power for the active devices. The PDUs with an input of 240Vmust be metered and have an LCD display clearly indicating Current (Amps) and Voltage (Volts). The connections should conform with the IEC 309 standards with a 32Amps industrial rotary socket with at least 8No. C13 female sockets and 2No. C19 Female sockets. The PDU will also be required to have intelligent ports to monitor over the network and an overload protection system that should be able to send notifications on the network and As Toten TD8942 c/w APC PDU or Approved equivalent.	No.	1		
3.11	24 Port PoE edge switch as described in the particular specifications Section "B" item 7.0 page B/30 and as CISCO or approved equivalent	No.	1		
3.12	Siemon 1U(19".0) horizontal cable managers or approved equivalent.	No.	5		
	TOTAL FOR FIRST FLOOR CARRIED FORWARD TO PRICE COLLECTION PAGE E/7				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
	ALL PRICES TO BE IN KSHS				
	QUOTE FOR THE SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF THE FOLLOWING ITEMS				
4.0	**FIBER OPTIC INTERLINKS AND BACKBONE CORE SWITCH**				
4.1	Supply and install an outdoor 4 core single mode fiber cable to be installed in 100mm diameter HGPVC duct buried 450mm below ground. Cable to link the existing building.	Lm	150		
4.2	Supply and install an outdoor multicore Telephone cable 50 pair for line extensions to be installed in 100mm diameter HGPVC duct buried 450mm below ground. Cable to be terminated on the discase and voice patch panels and to link the existing building.	Lm	150		
4.3	Trenching, microtunnelling,Tilling, Backfilling and cable markers for items No.4.1 and 4.2 above	Lm	150		
4.4	Supply and install all the necessary slicing kits to terminate the fiber cable between the floors and existing building.	lot	1		
4.5	Supply and install indoor 4 core single mode fiber cable between floor cabinets for the same	Lm	50		
4.6	Supply and install splicing kits for terminating the fiber cable to the different switches GBIC ports.	No	4		
4.7	Supply and install fiber trays for each of the cabinets	No	2		
4.8	Supply and install a rack mounted 5KVA Uninterruptible power	No	2		
4.9	Main fiber back bone distribution frame/panel for both the incoming fiber cable and for reticulation. The panel is to be waterproof, complete with all accessories and as cisco, siemon or approved	Item	1		
4.10	Labelling and documentation	lot	1		
4.11	Allow for structured cabling termination at all computer terminals, attendance in power connections, testing and commissioning of the network to TSD-ISN standards.	lot	1		
4.12	Grounding and bounding kit complete with 50mm diameter copper bounding bar and 6mm thick green and yellow wire. The Earthing the system is to be to the approval of the Engineer.	Item	1		
4.13	Provide for fiber cable testing, preparing and presenting warranty and documentation, cabling layout diagrams, indelible point labels and preparing and submitting individual test results (for each point and for all point to be submitted as a bound report). Attach printed results and soft copy	lot	1		
4.14	Any other items necessary to complete the structured cabling satisfactorily. (List and give quantities of the items and prices)				
	a)…….. b)…….. c)……..…… d)……..…… e)……..				
	TOTAL FOR FIBER LINKS, BACK BONE CORE SWITCH CARRIED FORWARD TO PRICE COLLECTION PAGE E/7				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
5.0	**IP-P.A.B.X**				
5.1	Supply, install, test and commission an IP PABX equipped and complete with all necessary accessories and as specified in section "B".	No	1		
5.2	Supply, install, test and commission a battery set for the IP-P.A.B.X. above with enough capacity to serve all auxiliary equipment linked to the IP-P.A.B.X. for a period of minimum 8 hours.	No	1		
5.3	Supply, install, test and commission an AC Voltage stabilizer for the IP-P.A.B.X. and all auxiliary equipment. Connected to the IP-P.A.B.X	No	1		
5.4	Supply, install, test and commission a 5KVA 100-240V AC input voltage and 240V AC output U.P.S	No	1		
5.5	Provide telecommunication earth to the IP-P.A.B.X	No	1		
5.6	Standard IP telephone instruments complete with telephone cord and termination blocks as described in the technical Specifications section F	No	25		
5.7	Executive IP telephone instruments complete with telephone cord and termination blocks as described in the technical Specifications section F	No	5		
5.8	Secretarial IP telephone instruments complete with telephone cord and termination blocks as described in the technical Specifications section F	No	1		
5.9	Telephone management system				
	(a) Telephone call management software	Item	1		
	(b) 1 No. desktop computer	No	1		
	(c) 1 No. medium duty laser printer.	No	1		
	(d) 1 No. medium duty UPS	No	1		
	TOTAL FOR FIBER LINKS, BACK BONE CORE SWITCH CARRIED FORWARD TO PRICE COLLECTION PAGE E/7				

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
6.0	**PRICE COLLECTION PAGE**				
6.1	TOTAL FOR GROUND FLOOR BROUGHT FORWARD FROM PAGE E/3				
6.2	TOTAL FOR FIRST FLOOR BROUGHT FORWARD FROM PAGE E/4				
6.3	TOTAL FOR FIBER LINKS, CORE BACK BONE SWITCH BROUGHT FORWARD FROM PAGE E/5				
6.4	TOTAL FOR FIBER LINKS, CORE BACK BONE SWITCH BROUGHT FORWARD FROM PAGE E/6				
	TOTAL FOR SUPPLY & INSTALLATION OF ITEMS FOR THE STRUCTURE CABLING CARRIED FORWARD TO PRICE SUMMARY PAGE E/11				

PRICE SUMMARY PAGE

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	TOTAL FOR PRELIMINARIES & GENERAL CONDITIONS				0.00
2	TOTAL FOR STRUCTURED CABLING BROUGHT FORWARD FROM PAGE H/10				
3	PROVIDE FOR CONTIGENCY AMOUNT				0.00
	TOTAL PROJECT COST TAKEN TO PRICE SUMMARY PAGE IN THE MAIN WORKS BILLS OF QUANTITIES				

APPENDIX TO BILLS OF QUANTITIES

APPENDIX "A"

LIST OF RECOMMENDED SPARE PARTS AS AN OPTIONAL EXTRA

(To be completed by Tenderer)

These are optional items, which the client may procure if desired. The items are to be priced but the sub-total of prices **MUST NOT** be carried to the price summary page.

Item	Description	Qty	Unit	Rate	Kshs	Cts
SUB-TOTAL *NOT TO BE* CARRIED TO PRICE SUMMARY PAGE						

APPENDIX TO BILLS OF QUANTITIES

APPENDIX "B"

LIST OF RECOMMENDED TOOLS AS AN OPTIONAL EXTRA

(To be completed by Tenderer)

These are optional items, which the client may procure if desired. The items are to be priced but the sub-total of prices **MUST NOT** be carried to the price summary page.

Item	Description	Qty	Unit	Rate	Kshs	Cts
SUB-TOTAL NOT TO BE CARRIED TO PRICE SUMMARY PAGE						

APPENDIX "C"

BREAKDOWN OF IMPORTED MATERIALS

ITEM	DESCRIPTION	UNIT	QTY	KSHS

Signed by Tenderer.....

Official Stamp.....

.....

APPENDIX TO BILLS OF QUANTITIES

APPENDIX "D"

BREAKDOWN OF LOCALLY PURCHASED MATERIALS

ITEM	DESCRIPTION	UNIT	QTY	KSHS

Signed by Tenderer.....

Official Stamp.....

.....

SECTION F

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.

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	Core switch		
2.0	Edge switch		
3.0	CAT 6A cables		
4.0	Patch panels		
5.0	Discase		
6.0	Fiber optic cable		
7.0	Cable managers		
8.0	UPSs		
9.0	Data Cabinets		
10.0	IP-P.A.B.X		
11.0	Telephone Instruments		

INTERNAL PLUMBING, DRAINAGE AND FIRE PROTECTION INSTALLATION WORKS

TEACHERS SERVICE COMMISSION

PROPOSED ERECTION AND COMPLETION OF TSC COUNTY OFFICES - BOMET

SPECIFICATIONS AND BILLS OF QUANTITIES

FOR

SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF

INTERNAL PLUMBING, DRAINAGE AND FIRE PROTECTION INSTALLATION WORKS

ARCHITECT
Chief Architect,
Ministry of Transport, Infrastructure,
Housing & Urban Development
P.O. Box 30743-00100
Nairobi

QUANTITY SURVEYOR
Chief Quantity Surveyor,
Ministry of Transport, Infrastructure,
Housing & Urban Development
P.O. Box 30743-00100
Nairobi

STRUCTURAL ENGINEER
Chief Engineer(Structural),
Ministry of Transport, Infrastructure,
Housing & Urban Development
P.O. Box 30743-00100
Nairobi

ELECTRICAL ENGINEER
Chief Engineer (Electrical),
Ministry of Transport, Infrastructure,
Housing & Urban Development
P.O. Box 41191-00100
Nairobi

MECHANICAL ENGINEER
Chief Engineer(Mechanical-BS)
Ministry of Transport, Infrastructure,
Housing & Urban Development
P.O. Box 41191-00100
Nairobi

CLIENT
The Chief Executive Officer/Secretary,
Teachers Service Commission,
Private Bag,
Nairobi

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DEFINITIONS

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

The Employer	The Government of the Republic of Kenya Represented by: The Chief Executive Officer/Secretary, Teachers Service Commission, Private Bag, Nairobi
Architect	Chief Architect Ministry of Transport, Infrastructure, Housing & Urban Development P.O. Box 30743-00100 NAIROBI
Engineer	Chief Engineer Mechanical (BS) Ministry of Transport, Infrastructure, Housing & Urban Development P.O. Box 41191-00100 NAIROBI
Electrical Engineer	Chief Engineer (Electrical) Ministry of Transport, Infrastructure, Housing & Urban Development P.O. Box 41191-00100 NAIROBI
Quantity Surveyor	Chief Quantity Surveyor Ministry of Transport, Infrastructure, Housing & Urban Development P.O. Box 30743-00100 NAIROBI
Structural Engineer	Chief Engineer (Structural) Ministry of Transport, Infrastructure, Housing & Urban Development P.O. Box 30743-00100 NAIROBI
Employer's representative	This shall mean the Project Manager and shall be Works Secretary, Ministry of Transport, Infrastructure, Housing & Urban Development P.O. Box 30743-00100 NAIROBI
Main contractor	The firm appointed to carry out the builders works.
Sub contractor	The firm appointed to carry out the supply, delivery, installation, testing and commissioning of internal plumbing, drainage and fire protection installation works.

SECTION B

GENERAL MECHANICAL SPECIFICATIONS

SECTION B

GENERAL MECHANICAL SPECIFICATION

SECTION B

GENERAL MECHANICAL SPECIFICATION

2.01 General

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

2.02 Quality of Materials

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

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

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

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

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

2.03 Regulations and Standards

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

a) The Kenya Government Regulations.

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

a) The United Kingdom Chartered Institute of Building Services Engineers (CIBSE) Guides.

d) British Standard and Codes of Practice as published by the British Standards Institution (BSI)

e) The Local Council By-laws.

f) The Electricity Supply Authority By-laws.

g) Local Authority By-laws.

h) The Kenya Building Code Regulations.

i) The Kenya Bureau of Standards

2.04 Electrical Requirements

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

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

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

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

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

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

2.05 Transport and Storage

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

On arrival at site all plant and equipment shall be examined and any damage to parts and protective priming coats made good before storage or installation.

Adequate measures shall be taken by the Sub-contractor to ensure that plant and equipment do not suffer any deterioration during storage.

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

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

2.06 Site Supervision

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

2.07 Installation

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

2.08 Testing

2.08.1 General

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

2.08.2 Material Tests

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

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

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

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

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

2.08.3 Manufactured Plant and Equipment – Work Tests

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

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

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

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

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

2.08.4 Pressure Testing

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

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

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

2.09 Colour Coding

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

2.10 Welding

2.10.1 Preparation

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

2.10.2 Method

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

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

2.10.3 Welding Code and Construction

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

a) Pipe Welding

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

b) General Welding

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

2.10.4 Welders Qualifications

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

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

SECTION C

PARTICULAR SPECIFICATIONS

SECTION C1

PARTICULAR PLUMBING AND DRAINAGE SPECIFICATIONS

3.1 GENERAL

This section specifies the general requirements for plant, equipment and materials forming part of the plumbing and drainage installations.

3.2 MATERIALS AND STANDARDS

3.2.1 Pipework and Fittings

Pipework materials are to be used as follows:

a) Galvanized Steel Pipework

Galvanized steel pipe work up to 65mm nominal bore shall be manufactured in accordance with B.S. 1387 Medium Grade, with tapered pipe threads in accordance with B.S. 21. All fittings shall be malleable iron and manufactured in accordance with B.S. 143.

Pipe joints shall be screwed and socketed and sufficient coupling unions shall be allowed so that fittings can be disconnected without cutting the pipe. Running nipples and long screws shall not be permitted unless exceptionally approved by the Engineer.

Galvanized steel pipe work, 80mm nominal bore up to 150mm nominal bore shall be manufactured to comply in all respects with the specification for 65mm pipe, except that screwed and bolted flanges shall replace unions and couplings for the jointing of pipes to valves and other items of plant. All flanges shall comply with the requirements of B.S. 10 to the relevant classifications contained hereinafter under Section 'C' of the Specification.

Galvanizing shall be carried out in accordance with the requirements of B.S. 1387 and B.S. 143 respectively.

b) Copper Tubing

All copper tubing shall be manufactured in accordance with B.S. 2871 from C.160 'Phosphorous De-oxidized Non-Arsenical Copper' in accordance with B.S. 1172.

Pipe joints shall be made with soldered capillary fittings and connections to equipment shall be with compression fittings manufactured in accordance with B.S. 864.

Short copper connection tubes between galvanized pipe work and sanitary fitments shall not be used because of the risk of galvanic action.

If, as may occur in certain circumstances, it is not possible to make the connection in any way than the use of copper tubing, then a brass straight connector shall be positioned between the galvanized pipe and the copper tube in order to prevent direct contact.

c) P.V.C. (Hard) Pressure Pipes and Fittings

All P.V.C. pipes and fittings shall be manufactured in accordance with B.S. 3505: 1968.

Jointing

The method of jointing to be employed shall be that of solvent welding, using the pipe and manufacturer's approved cement. Seal ring joint shall be introduced where it is necessary to accommodate thermal expansion.

Testing

Pipelines shall be tested in sections under an internal water pressure normally one and a half times the maximum allowable working pressure of the class of pipe used. Testing shall be carried out as soon as practical after laying and when the pipeline is adequately anchored. Precautions shall be taken to eliminate all air from the test section and to fill the pipe slowly to avoid risk of damage due to surge.

d) A.B.S. Waste System

Where indicated on the Drawings and Schedules, the Sub-contractor shall supply and fix A.B.S. waste pipes and fittings.

The pipes, traps and fittings shall be in accordance with the relevant British Standards, including B.S. 3943, and fixed generally in accordance with manufacturer's instructions and B.S. 5572: 1978.

Jointing of pipes shall be carried out by means of solvent welding, the manufacturer's instructions and B.S. 5572: 1978.

Jointing of pipes shall be carried out by means of solvent welding. The manufacturer's recommended method of joint preparation and fixing shall be followed.

Standard brackets, as supplied for use with this system, shall be used wherever possible. Where the building structure renders this impracticable the Sub-contractor shall provide purpose made supports, centers of which shall not exceed one meter.

Expansion joints shall be provided as indicated. Supporting brackets and pipe clips shall be fixed on each side of these joints.

e) PVC Soil System

The Sub-contractor shall supply and fix PVC soil pipes and fittings as indicated on the Drawings and Schedules.

Pipes and fittings shall be in accordance with relevant British Standards, including B.S. 4514 and fixed to the manufacturer's instructions and B.S. 5572.

The soil system shall incorporate synthetic rubber gaskets as provided by the manufacturer whose fixing instructions shall be strictly adhere to.

Connections to WC pans shall be effected by the use of a WC connector, gasket and cover, fixed to suit pan outlet.

Suitable supporting brackets and pipe clips shall be provided at maximum of one metre centres.

The Sub-contractor shall be responsible for the joint into the Gully Trap on Drain as indicated on the Drawings.

3.2.2 Valves

a) Draw-off Taps and Stop Valves (Up to 50mm Nominal Bore)

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

b) Gate Valves

All gate valves 80mm nominal bore and above, other than those required for fitting to buried water mains shall be of cast iron construction, in accordance with the requirements of B.S. 3464. All gate valves required for fitting to buried water mains shall be of cast iron construction in accordance with the requirements of B.S.1218.

All gate valves up to and including 65mm nominal bore shall be of bronze construction in accordance with the requirements of B.S. 1952.

The pressure classification of all valves shall depend upon the pressure conditions pertaining to the site of works.

c) Globe Valves

All globe valves up to and including 65mm nominal bore shall be of bronze construction in accordance with the requirements of B.S.3061.

The pressure classification of all globe valves shall depend upon the pressure conditions pertaining to the site of works.

3.2.3 Waste Fitment Traps

a) Standard and Deep Seal P & S Traps

Where standard or deep seal traps are specified they shall be manufactured in suitable non-ferrous materials in accordance with the full requirements of B.S.1184.

In certain circumstances, cast iron traps may be required for cast iron baths and in these instances bath traps shall be provided which are manufactured in accordance with the full requirements of B.S.1291.

b) Anti-Syphon Traps

Where anti-syphon traps are specified, these shall be similar or equal to the range of traps manufactured by Greenwood and Hughes Limited, Deacon Works Littleshampton, Sussex, England.

The trade name for traps manufactured by this company is ‘Grevak’.

3.2.4 **Pipe Supports**

a) General

This sub-clause deals with pipe supports securing pipes to the structure of buildings for above ground application.

The variety and type of support shall be kept to a minimum and their design shall be such as to facilitate quick and secure fixings to metal, concrete, masonry or wood.

Consideration shall be given, when designing supports, to the maintenance of desired pipe falls and the restraining of pipe movements to a longitudinal axial direction only.

The Sub-contractor shall supply and install all steelwork forming part of the pipe support assemblies and shall be responsible for making good damage to builders work associated with the pipe support installation.

The Sub-contractor shall submit all his proposals for pipe supports to the Engineer for approval before any erection works commence.

b) Steel and Copper Pipes and Tubes

Pipe runs shall be secured by clips connected to pipe angers, wall brackets, or trapeze type supports. 'U' bolts shall not be used as a substitute for pipe clips without the prior approval of the Engineer.

An approximate guide to the maximum permissible supports spacing in metres for steel and copper pipe and tube is given in the following table for horizontal runs.

Size Nominal Bores	Copper Tube to B.S. 659	Steel Tube to B.S. 1387
15mm	1.25m	2.0m
20mm	2.0m	2.5m
25mm	2.0m	2.5m
32mm	2.5m	3.0m
40mm	2.5m	3.0m
50mm	2.5m	3.0m
65mm	3.0m	3.5m
80mm	3.0m	3.5m
100mm	3.0m	4.0m
125mm	3.0m	4.5m
150mm	3.5m	4.5m

The support spacing for vertical runs shall not exceed one and a half times the distances given for horizontal runs.

c) Expansion Joints and Anchors

Where practicable, cold pipework systems shall be arranged with sufficient bends and changes of direction to absorb pipe expansion providing that the pipe stresses are contained within the working limits prescribed in the relevant B.S. specification.

Where piping anchors are supplied, they shall be fixed to the main structure only. Details of all anchor design proposals shall be submitted to the Engineer for approval before erection commences.

The Sub-contractor when arranging his piping shall ensure that no expansion movements are transmitted directly to connections and flanges on pumps or other items of plant.

The Sub-contractor shall supply flexible joints to prevent vibrations and other movements being transmitted from pumps to piping systems or vice versa.

3.2.5 Sanitary Appliances

All sanitary appliances supplied and installed as part of the Sub-contract works shall comply with the general requirements of B.S. Code of Practice 305 and the particular requirements of the latest B.S. Specifications.

3.2.6 Pipe Sleeves

Main runs of pipework are to be fitted with sleeves where they pass through walls and floors. Generally the sleeves shall be of P.V.C. except where they pass through the structure, where they shall be mild steel. The sleeves shall have 6mm – 12mm clearance all around the pipe or for insulated pipework all around the installation. The sleeve will then be packed with slag wool or similar.

3.3 INSTALLATION

3.3.1 General

Installation of all pipework, valves, fittings and equipment shall be carried out under adequate supervision from skilled staff to the relevant codes and standards as specified herein. The Sub-contractor shall be responsible to the Main Contractor for ensuring that all builders work associated with his piping installation is carried out in a satisfactory manner to the approval of the Engineer.

3.3.2 Above Ground Installation

a) Water Services

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

Where falls are not shown on the Contract Drawings or stated elsewhere in the Specification, pipework shall be installed parallel to the lines of the buildings and as close to the walls, ceilings, columns, etc., as is practicable.

All water systems shall be provided with sufficient drain points and automatic air vents to enable them to function correctly.

Valves and other user equipment shall be installed with adequate access for operation and maintenance. Where valves and other operational equipment are unavoidably installed beyond normal reach or in such position as to be difficult to reach from a small step ladder, extension spindles with floor or wall pedestals shall be provided.

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

Full allowances shall be made for the expansion and contraction of pipework, precautions being taken to ensure that any force produced by the pipe movements are not transmitted to valves, equipment or plant.
All screwed joints to piping and fittings shall be made with P.T.F.E. tape.
The test pressure shall be maintained by the pump for about one hour and if there is any leakage, it shall be measured by the quantity of water pumped into the main in that time. A general leakage of 4.5 litres per 25mm of diameter, per 1.6 kilometres per 24 hours per 30 metres head, may be considered reasonable but any visible individual leak shall be repaired.

b) Sanitary Services

Soil, waste and vent pipe system shall be installed in accordance with the best standard of modern practice as described in B.S. 5572 to the approval of the Engineer.

The Sub-contractor shall be responsible for ensuring that all ground waste fittings are discharged to a gully trap before passing to the sewer via a manhole.

The Sub-contractor shall provide all necessary rodding and inspection facilities within the draining system in positions where easy accessibility is available.

Where a branch requires rodding facilities in a position to which normal access is unobtainable, then that branch shall be extended so as to provide a suitable purpose made rodding eye in the nearest adjacent wall or floor to which easy access is available.

The vent stacks shall terminate above roof level and where stack passes through roof, a weather skirt shall be provided. The Sub-contractor shall be responsible for sealing the roof after installation of the stacks.

The open end of each stack shall be fitted with a plastic coated or galvanised steel wire guard.

Access for rodding and testing shall be provided at the foot of each stack.

c) Sanitary Appliances

All sanitary appliances associated with the Sub-contract works shall be installed in accordance with the best standard of modern practice as described in C.P. 305 to the approval of the Engineer.

1.1. **TESTING AND INSPECTION**

3.4.1 Site Tests – Pipework Systems

a) Above Ground Internal Water Services Installation

All water service pipe system installed above ground shall be tested hydraulically for a period of one hour to not less than one and half times to design working pressure.

If preferred, the Sub-contractor may test the pipelines in sections. Any such section found to be satisfactory need not be the subject of a further test when system has been completed, unless specifically requested by the Engineer.
During the test, each branch and joint shall be examined carefully for leaks and any defects revealed shall be made good by the Sub-contractor and the section re-tested.

The Sub-contractor shall take all necessary precautions to prevent damage occurring to special valves and fittings during the tests. Any item damaged shall be repaired or replaced at the Sub-contractor's expenses.

b) Above Ground Soil Waste and Ventilation System

All soil, waste and ventilating pipe system forming part of the above ground installation, shall be given appropriate test procedures as described in B.S. 5572, 1972.

Smoke tests on above ground soil, waste and ventilating pipe system shall not be permitted.

Pressure tests shall be carried out before any work which is to be concealed is finally enclosed.

In all respects, tests shall comply with the requirements of B.S. 5572.

3.4.2 Site Test – Performance

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

All hot water pipework shall be installed with pre-formed fibre glass lagging to a thickness of 25mm where the pipe runs above a false ceiling or in areas where the ambient temperature is higher than normal with the result that pipe "sweating", due
to condensation will cause nuisance.

All lagged pipes which run in a visible position after erection shall be given a canvas cover and prepared for painting as follows:

i) Apply a coating of suitable filler until the canvas weave disappears and allow to dry.

ii) Apply two coats of an approved paint and finish in suitable gloss enamel to colors approved by the Engineer.

All lagging for cold and hot water pipes erected in crawlways, ducts and above false ceiling which after erection are not visible from the corridors of rooms, shall be covered with a reinforced aluminium foil finish banded in colours to be approved by the Engineer.

In all respects, unless otherwise stated, the hot and cold water installation shall be carried out in accordance with the best standard of modern practice and described in C.P.342 and C.P.310 respectively to the approval of the Engineer.

The test pressure shall be applied by means of a manually operated test pump or, in the case of long main or mains of large diameter, by a power driven test pump which shall not be left unattended. In either case precautions shall be taken to ensure that the required pressure is not exceeded.

Pressure gauges should be recalibrated before the tests.

The Sub-contractor shall be deemed to have included in his price for all test pumps, and other equipment required under this specification.

The test pressure shall be one and a half times the maximum working pressure except where a pipe is manufactured from a material for which the relevant B.S. specification designates a maximum test pressure.

3.5 STERILISATION OF COLD WATER SYSTEM

All water distribution system shall be thoroughly sterilised and flushed out after the completion of all tests and before being fully commissioned for handover.

The sterilisation procedures shall be carried out by the Sub-contractor in accordance with the requirements of B.S. Code of Practice 301, Clause 409 and to the approval of the Engineer.

PARTICULAR SPECIFICATIONS FOR PORTABLE FIRE EXTINGUISHER AND HOSE REEL INSTALLATIONS

6.1 GENERAL

The particular specification details the requirements for the supply and installation and commissioning of the Portable Fire Extinguishers and Boosted Hose Reel System. The Sub-contractor shall include for all appurtenances and appliances not necessarily called for in this specification or shown on the contract drawings but which are necessary for the completion and satisfactory functioning of the works.

If in the opinion of the Sub-contractor there is a difference between the requirements of the Specifications and the Contract Drawings, he shall clarify these differences with the Engineer before tendering.

6.2 SCOPE OF WORKS

The Sub-contractor shall supply, deliver, erect, test and commission all the portable fire extinguishers and Hose Reel which are called for in these Specifications and as shown on the Contract Drawings.

6.3 WATER/CO2 EXTINGUISHERS

These shall be 9-litre water filled CO2 cartridge operated portable fire extinguishers and shall comply with B.S. 1382: 1948 and to the requirements of B.S.4523: 1977. Unless manufactured with stainless steel, bodies shall have all internal surfaces completely coated with either a lead tin, lead alloy or zinc applied by hot dipping. There shall be no visibly uncoated areas.

The extinguishers shall be clearly marked with the following:

a) Method of operation.

b) The words 'WATER TYPE' (GAS PRESSURE) in prominent letters.

c) Name and address of the manufacturer or responsible vendor.

d) The nominal charge of the liquid in imperial gallons and litres.

e) The liquid level to which the extinguisher is to be charged.

f) The year of manufacture.

g) A declaration to the effect that the extinguisher has been tested to a pressure of 24.1 bar (350 psi.).

h) The number of British Standard 'B.S' 1382 or B.S. 5423: 1977.

6.4 PORTABLE CARBON DIOXIDE FIRE EXTINGUISHERS

These shall be portable carbon dioxide fire extinguishers and shall comply with B.S. 3326: 1960 and B.S. 5423: 1977.

The body of extinguisher shall be a seamless steel cylinder manufactured to one of the following British Standards; B.S. 401 or B.S. 1288.

The filling ratio shall comply with B.S. 5355 with valves fittings for compressed gas cylinders to B.S.341. Where a hose is fitted it shall be flexible and have a minimum working pressure of
206.85 bar (3000 p.s.i.). The hose is not to be under internal pressure until the extinguisher is operated.

The nozzle shall be manufactured of brass gunmetal, aluminium or stainless steel and may be fitted with a suitable valve for temporarily stopping the discharge if such means are not incorporated in the operating head.

The discharge horn shall be designed and constructed so as to direct the discharge and limit the entrainment of air. It shall be constructed of electrically non-conductive material.

The following markings shall be applied to the extinguishers:-

a) The words "Carbon Dioxide Fire Extinguisher" and to include the appropriate nominal gas content.

b) Method of operation.

c) The words "Re-charge immediately after use".

d) Instructions for periodic checking.

e) The number of the British Standard B.S. 3326: 1960 or B.S. 5423.

f) The manufacturers name or identification markings

DRY CHEMICAL POWDER PORTABLE FIRE EXTINGUISHER

The portable dry powder fire extinguishers shall comply with BS3465: 1962 and BS 5423. The body shall be constructed to steel not less than the requirements of BS 1449 or aluminium to BS 1470 : 1972 and shall be suitably protected against corrosion.

The dry powder charge shall be not-toxic and retain it s free flowing properties under normal storage conditions. Any pressurizing agent used as an expellant shall be in dry state; in particular compressed air.

The discharge tube and gas tube if either is fitted shall be made of steel, brass, copper or other not less suitable material. Where a hose is provided it shall not exceed 1,060mm and shall be acid and alkali resistant. Provision shall be made for securing the nozzle when not in use.

The extinguisher shall be clearly marked with the following information

a) The word "Dry Powder Fire Extinguisher"

b) Method of operation in prominent letters.

c) The working pressure and the weight of the powder charge in Kilogramme.

d) Manufacturers name or identification mark

e) The words "RECHARGE AFTER USE" if rechargeable type.

f) Instructions to regularly check the weight of the pressure container (gas Cartridge) or inspect the pressure indicator on stored pressure types when fitted, and remedy any loss indicated by either.

g) The year of manufacture.

h) The Pressure to which the extinguisher was tested.

i) The number of this British Standard BS 3465 or BS 5423: 1977.

j) When appropriate complete instructions for charging the extinguisher shall be clearly marked on the extinguisher or otherwise be supplied with the refill.

6.6 AIR FOAM FIRE EXTINGUISHER

These shall be of 9 litres capacity complete with refills cartridges and wall fixing brackets and complying with B.S. 5423 with the following specifications:-

Cylinder: to B.S. 1449

Necking: to be 76mm outside diameter steel EN 3A $2^{3}/_{4}$ X 8TPI female thread**.**

Head cap: to be plastic moulding acetyl resin.

CO_2 Cylinder: to be 75gm P.V.C coated.

Internal Finish: to be polythene lining on phosphate coating.

External finish: to be phosphated - One coat primer paint and one coat stove enamel B.S. 381 C.

6.7 FIRE BLANKET

The fire blanket shall be made from cloth woven with pre-asbestos yarn or any other fire proof material and to measure 1800 x 1210 mm and shall be fitted with special tapes folded so as to offer instantaneous single action to release blanket from storing jacket.

6.8 BOOSTED HOSE REEL SYSTEM

6.8.1 General

The Particular Specification details the requirements for the supply, installation and commissioning of the hose reel installation. The hose reel installation shall comply in all respects to the requirements set out in C.O.P 5306 Part 1: 1976, B.S 5041 and B.S 5274. The System shall comprise of a pumped system.

6.8.2 Hose Reel Pumps

The fire hose reel pumps shall consist of a duplicate set of multi-line centrifugal pumps from approved manufacturers. The pumps shall be capable of delivering 2.1 lit/sec at a running pressure of 2 bars.

The pump casing shall be of cast iron construction with the impeller shaft of stainless steel with mechanical seal.

6.8.3 Control Panel

The control panel shall be constructed of mild steel 1.0mm thick sheet, be moisture, insect and rodent proof and shall be provided complete with circuit breakers and a wiring diagram enclosed in plastic laminate.

The pump shall be controlled by a flow switch therefore, the control panel shall include the following facilities:

(a) 'On' push button for setting the control panel to live.

(b) Green indicator light for indicating control panel live.

(c) Duty / Stand-by pump auto change over.

(d) Duty pump run green indicator light.

(e) Stand-by pump run green indicator light.

(f) Duty pump fail red indicator light.

(g) Stand-by pump fail red indicator light.

(h) Low water condition pump cut-out with red indicator light.

The pumps are to be protected by a low level cut-out switch to prevent dry pump run when low level water conditions occur in the water storage tank.

6.8.4 Hose Reel

The hose reel to the installation shall consist of a recessed, swing-type hose reel as Angus Fire Armour Model III or from other approved manufacturers.

The hose reel shall comply with B.S. 5274: 1975 and B.S 3161: 1970 and is to be installed to the requirements of C.P. 5306 Part 1: 1976.

The hose reel shall be supplied and installed complete with a first-aid Non-kinking hose 30 meters long with a nylon spray / jet / shut-off nozzle fitted. A screw down chrome - plated globe valve to B.S 1010 to the inlet to the reel is to be supplied.

The orifice to the nozzle is to be not less than 4.8mm to maintain a minimum flow of 0.4 lit / sec to jet.

The hose reels shall be installed complete with electro-galvanised cabinet recessed on the wall.

The hose reels shall be installed at 1.5 metres centre above the finished floor level in locations shown in the contract drawings.

6.8.5 Pipe Work

The pipe work for the hose reel installation shall be galvanised wrought steel tubing heavy grade Class C to B.S 1387: 1967 with pipe threads to B.S 21. The pipe work and all associated fittings shall be in approved colour for fire fittings.

6.8.6 Pipe Fittings

The pipe fittings shall be wrought steel pipe fittings, welded or seamless fittings conforming to B.S. 1740 or malleable iron fittings to B.S 143.
All changes in direction will be with standard bends or long radius fittings. No elbows will be provided.

6.8.7 Non-return Valves

The non-return valves up to and including 80mm diameter shall be to B.S. 5153: 1974. The valves shall be of cast iron construction with gunmetal seat and bronze hinge pin.

6.8.8 Gate Valves

The gate valves up to and including 80mm diameter shall be non-rising stem and wedge disc to B.S 5154: 1974 with screwed threads to B.S. 21 tapes thread

6.8.9 Sleeves

Where pipe work passes through walls, floors or ceilings, a sleeve shall be provided one diameter larger than the diameter of the pipe, the space between them to be packed with mineral wool, to the Engineer's approval.

6.8.10 Earthing

The hose reel installation shall be electrically earthed by a direct earth connection. The installation of the earthing shall be carried out by the Electrical Sub- contractor.

6.8.11 Finish Painting

Upon completion of testing and commissioning the hose reel installation, the pipework shall be primed and finish painted with 2 No. coats of paints to the Engineer's requirements.

6.8.12 Testing and Commissioning

The hose reel installation shall be flushed out before testing to ensure that no builder's debris has entered the system. The installation is to be then tested to one and half times the working pressure of the installation to the approval of the Engineer. Simulated fault conditions of the pumping equipment are to be carried out before acceptance of the System by the Engineer.

6.8.13 Instruction Period

The Sub-contractor shall allow in his contract sum for instructing of the use of the equipment to the Client's maintenance staff. The period of instruction may be within the contract period but may also be required after the contract period has expired.

The period of time required shall be stipulated by the Client but will not exceed two days in which time the Client's staff shall be instructed on the operation and maintenance of the equipment.

6.8.14 Signage-Fire Instruction /Fire Exit

6.8.14.1Fire Instruction Notice

Print fire instruction on the Perspex plates with White Colour
Background measuring 510mm length x 380mm width x 4mm thick as follows;

FIRE INSTRUCTION NOTICE

In the event of fire;

1. Raise the alarm by actuating the nearest alarm system point, Sound Siren /gong or **Shout Fire**

2. Attack fire using the nearest available equipment

3. Call nearest fire Brigade or Police 999 and inform your switchboard (PABX) Operator

4. Ensure that all personnel not involved in fire fighting evacuation to safety outside the building.

5. Close but **DO NOT LOCK** doors behind as you leave.

6. Evacuate the building using stairs or fire escapes. Do not use Lifts/escalators. Walk calmly. Avoid panic. Do not stop or return for personal belongings.

7. Assemble as per floor outside the building for roll call.

6.8.14.2 Fire Exit Sign

Print Fire Exit signs on the Perspex plate, 4mm thick, with white colour background as follows:-

1. Lettering **IN RED COLOUR** of not less than 50mm in height.
2. A pendant sign bearing words, **FIRE EXIT** and with a directional arrow.

The sign must be capable of being read from both approaches to exit and so is double sided.

6.8.14.3 Hose Reel Label

Print Fire Exit signs on the Perspex plate, 4mm thick, with white colour background as follows:-

1. Lettering **IN RED COLOUR** of not less than 50mm in height.
2. A pendant sign bearing words, **HOSE REEL** and with a directional arrow.

The sign must be capable of being read from both approaches to exit and so is double sided.

SECTION D

BILLS OF QUANTITIES

AND

SCHEDULE OF UNIT RATES

BILLS OF QUANTITIES AND SCHEDULE OF UNIT RATES

CONTENTS

GENERAL NOTES TO TENDERERS

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

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

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

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

4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere. Otherwise alternative brands of **equal** and **approved** quality will be accepted.

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

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

1. Statement of Compliance

a) I confirm compliance of all clauses of the General Conditions, General Specifications and Particular Specifications in this tender.

b) I confirm I have not made and will not make any payment to any person, which can be perceived as an inducement to win this tender.

Signed: ……*for and on behalf of the Tenderer*

Date: ……..

Official Rubber Stamp: ……

BILLS No. 1

A) PRICING OF PRELIMINARIES ITEMS.

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

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

Preliminaries – Bill 1

Sub-contractors preliminaries are as per those described in section C – sub-contractor preliminaries and conditions of contractor. The sub-contractor shall study the conditions and make provision to cover their cost in this Bill. The number of preliminary items to be priced by the Tenderer have been limited to tangible items such as site office, temporary works and others. However the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.
Installation Items – Other Bills
The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the contract Drawings, conditions of contract and specifications.
The unit of measurements and observations are as per those described in clause 1.05 of the section C.

(c) Summary

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

Bill No 1:Sanitary Fittings

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	SANITARY APPLIANCES Supply, deliver, install, test and commission the following sanitary appliances complete with all the accessories including all connections to the services, waste, jointing to water supply overflows, supports and all plugging and screwing to walls and floors. (i) All sanitary fittings shall be in approved colour. (ii) The Model and Ref No. indicated is only a guide to the type and quality of fittings. (iii)Equivalent and Approved models may be acceptable.				
A	**Water Closet (WC) pan** Close-coupled WC pan with 'P'-trap in approved colour complete with horizontal outlet to BS 3402 with heavy plastic seat and cover with metal top fixed (chrome plated) hinges. All to be as Duravit D-Code (Horizontal outlet) CAT No. 2111090000 water closet or equal and approved.	7	No.		
B	**Water closet Flush Valves** 32mm water closet flush valve for the above water closets complete with, back entry with integral vacuum breaker, non-hold-open features and non-return valve, inlet control stop and wall plate comprising flush valve, bent chrome plated flush pipe and rubber pipe connector. The flush valve to be push button type. The fittings shall be as Cobra or equal and approved.	7	No		
C	**Wash hand basin (WHB)-Pedestal** Pedestal wash hand basin size 650 x 500mm with one tap hole, 32mm diameter chrome plated waste, pedestal and heavy duty plastic bottle trap (32mm 'P' trap) with 75mm seal. To be as Duravit D-Code CAT No. 0863270000 or equal and approved.	9	No.		
D	Chrome plated non-conculsive time delay press action pillar tap as TAPIS or equal or approved.	9	No.		
E	**Toilet Roll Holder** Fully recessed toilet roll holder in Vitreous China of size 165 x 165mm in approved colour as Twyfords or equal and approved.	9	No.		
	Total Carried Forward to Collection Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Toilet Brush and Holder				
A	Wall mounted toilet brush holder and brush of approved colour as GROHE "Atrio accessories Tier:G5 Prestige" Model- 40 314 toilet brush set or approved equivalent.	9	No.		
	Mirror				
B	6mm thick polished plate glass silver backed mirror with bevelled edges, size 610 x 610mm, Plugged and screwed to wall with 4No. chrome plated dome capped screws. The mirror shall rest against a layer of 5mm thick foam.	11	No.		
	Soap Dispenser				
C	Wall mounted soap dispenser with a capacity of about one litre having a press action soap release mechanism complete with fixing screws. Allow for initial soap supply. To be as Starmix or approved equivalent.	7	No.		
	Hand Driers				
D	Automatic hand drier in white colour, operating on an infra-red automatic sensing system with heating element safety cut-out complete with a 30 seconds safety timer, plastic rawl plugs and fixing screws. The hand drier to have a heating capacity of 2.1kw and performance flow rate of 135cfm (3.82m3/min) and to be of size 270x264x143mm deep It shall have a noise level below 72.5 dBA at 1.5m. It shall be as Medclinic or approved equivalent.	7	No.		
	Urinals bowls				
E	Ceramic urinal bowl complete with 40mm heavy duty plastic bottle trap and 40mm diameter chrome plated outlet with grating firmly fixed on the wall with chrome plated screws. The fittings shall be as Twyfords or equal and approved.	6	No		
	Urinal Bowl Divisions				
F	Ceramic urinal bowl divisions separating the above described urinal bowls fixed firmly on the wall. The fittings shall be as Twyfords or equal and approved.	6	No		
	Urinal Bowl Flush Valves				
G	25mm urinal bowl flush valve for the above urinal bowls complete with, back entry with integral vacuum breaker, non-hold-open features and non-return valve, inlet control stop and wall plate comprising flush valve, bent chrome plated flush pipe and rubber pipe connector. The flush valve to be push button type. The fittings shall be as Docol or equal and approved.	6	No		
	Total Carried Forward to Collection Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**Kitchen Sink (DBDD)** Double bowl, double drainer stainless steel kitchen sink of size 1800 x 500mm as manufactured by ASL 159 or equal and approved. The bowl size to be 370 x 340 x 200mm deep complete with chrome plated 40mm waste fittings, plugs, chain stays, overflow, 1No. 15mm diameter chrome plated sink mixer with over-arm swivel spout as Cobra model 166/04 with carina handles, chrome plated bottle trap with 75mm deep seal and chain waste fitting.	1	No.		
B	**Cleaner Sink** Heavy duty sink size 465 x 410 x 285mm deep in enamelled fireclay complete with hardwood pad on the front edge and fitted bucket stainless steel grating and 20mm chrome plated wall mounted inclined bricon tap, chrome plate chain and rubber stopper and heavy gauge 40mmn chrome plated bottle trap, stainless steel legs and bearers and 40mm grid waste fitting. All as Twyfords "cleaners sink" or approved equivalent.	1	No.		
C	**Disabled Persons Water Closet and Wash Hand Basin Facility** Wheel chair accessible W.C facility Comprising of the following:- **i**) Close coupled W.C with 7.5 litre cistern with bottom inlet and overflow.The bowl shall be of size 375x560x420mm high.The bowl and cistern shall be manufactured from vitreous china complying with B.S 3402 .The unit shall be complete with valveless cistern fittings including syphon, 1 /2" side inlet ballvalve, 3 /4" side overflow, plastics flushbend, inlet connector and reversible metallic chrome plated cistern lever.There shall also be a heavy duty seat(25mmhigh) and cover with chrome plated metal hinges, toilet roll holder, 610 x 610 x 6mm thick mirror and robe hook.				
	ii) Semi pedestal wall mounted W.H.B of size 600x500x545mm high with flexible connectors to waste and taps. The basin shall be manufactured from vitreous china complying with B.S 3402.It shall have one L/H tap hole with 1/2" chrome plated lever action pillar tap, chrome plated waste with height adjustable trap, pedestal and wall fixing bolts.	2	Set		
	iii) Hinged support rail with toilet roll holder 770mm long manufactured in nylon coated aluminium and mounted on a wall fixing plate plate size 230x100 mm, 4No 600mm grab rails with covered wall plates. The set shall be as Twyfords DOC.M wheelchair accessible W.C. facility or approved equivalent.				
	Total Carried Forward to Collection Page				

COLLECTION PAGE

Item	Description	Amount (Kshs)
1	Total carried forward from page D-4	
2	Total carried forward from page D-5	
3	Total carried forward from page D-6	
Total Carried Forward to Summary Page D-25		

Bill No. 2:Plumbing and drainage

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	INTERNAL PLUMBING				
	PPR Pipes				
	Supply, deliver and install Polypropylene Random (PP - R) 20 pipework to DIN 8077 with joints, couplings, reducers, tees, adaptors, pipe fixing clips etc all to DIN 16962 and DIN 16928 .Pipe jointing shall be by polyfusion or use of electric coupling. Where pipework is not chased proper anchoring using approved fixtures shall be done. No pipework shall be left exposed to the sun. Rates must allow for all Metal/plastic threaded adaptors where required for the connection of sanitary fixtures, valves, sockets, sliding and fixed joints, support raceways, isolating sheaths, elastic materials, expansion arms and bends, crossovers, couplings, clippings, connectors, joints etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system.				
	Pipe work-PPR PIPES				
A	20mm diameter pipework	90	Lm		
B	25mm diameter pipework	90	Lm		
C	32mm diameter pipework	220	Lm		
D	40mm diameter pipework	120	Lm		
E	50mm diameter pipework	65	Lm		
F	65mm diameter pipework	25	Lm		
	Bends				
G	20mm diameter bend	50	No.		
H	25mm diameter bend	45	No.		
I	32mm diameter bend	30	No.		
J	40mm diameter bend	12	No.		
K	50mm diameter bend	12	No.		
	Total Carried Forward				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Tees				
A	25mm equal tee	25	No.		
B	32mm equal tee	25	No.		
C	40mm equal tee	15	No.		
D	50mm equal tee	3	No.		
	Reducers				
E	25 x 20mm diameter reducer	40	No.		
F	32 x 20mm diameter reducer	25	No.		
G	32 x 25mm diameter reducer	30	No.		
H	40 x 25mm diameter reducer	10	No.		
I	40 x 32mm diameter reducer	10	No.		
J	50 x 32mm diameter reducer	5	No.		
K	50 x 40mm diameter reducer	5	No.		
	Male/Female Adapters (Brass threaded)				
L	20mm brass threaded adapter	40	No.		
M	25mm brass threaded adapter	25	No.		
N	32mm brass threaded adapter	15	No.		
O	40mm brass threaded adapter	25	No.		
P	50mm brass threaded adapter	3	No.		
	Male/Female Bend (Brass threaded)				
Q	20mm brass threaded bend	10	No.		
R	25mm brass threaded bend	10	No.		
S	32mm brass threaded bend	15	No.		
T	40mm brass threaded bend	15	No.		
	Total Carried Forward				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	50mm brass threaded bend	3	No.		
	Flexible Tubing				
B	15mm diameter x 300mm long flexible connectors complete with integral chrome plated angle valve as Cobra or equal and approved.	20	No.		
	Threaded Brass Coupling				
C	25mm threaded brass coupling	8	No.		
D	32mm threaded brass coupling	20	No.		
E	40mm threaded brass coupling	8	No.		
F	50mm threaded brass coupling	1	No.		
	Valves				
G	25mm gate valve	1	No.		
H	32mm gate valve	2	No.		
I	40mm gate valve	1	No.		
J	50mm gate valve	5	No.		
	Unions				
K	25mm diameter pipe union	1	No.		
L	32mm diameter pipe union	2	No.		
M	40mm diameter pipe union	1	No.		
N	50mm diameter pipe union	5	No.		
	Pipe Sleeves				
O	100mm diameter heavy duty PVC pipe sleeves for crossing over columns and beams.	15	Lm		
	Total Carried Forward				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	FOUL WATER INTERNAL DRAINAGE Supply ,deliver and install the following UPVC, MUPVC, soil and waste systems respectively to B.S 5255 with fittings fixed to Manufactures Printed instructions and manufactured by reputable manufacturers. Tenderers must allow in their pipework prices for all the couplings, clippings, connectors, joints etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system. **MuPVC and uPVC Waste and Soil pipework**				
A	100mm diameter heavy gauge golden brown UPVC pipe	40	Lm		
B	100mm diameter heavy gauge grey mUPVC pipe	60	Lm		
C	50mm diameter waste pipe	50	Lm		
D	40mm diameter waste pipe	30	Lm		
E	32mm diameter waste pipe	40	Lm		
	Bends				
F	100mm diameter long radius bend	10	No.		
G	100mm diameter short radius bend	20	No.		
H	100mm diameter bend with access	20	No.		
I	100mm diameter sweep bend	20	No.		
J	50mm diameter sweep bend	10	No.		
K	40mm diameter sweep bend	10	No.		
L	32mm diameter sweep bend	15	No.		
	Tees				
M	100mm diameter sweep tee	5	No.		
N	50mm diameter sweep tee	6	No.		
O	40mm diameter sweep tee	2	No.		
P	32mm diameter sweep tee	5	No.		
	Total Carried Forward				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Access Caps				
A	100mm diameter access cap	5	No.		
B	50mm diameter access cap	5	No.		
C	40mm diameter access cap	3	No.		
D	32mm diameter access cap	5	No.		
	Boss Connectors				
E	100 x 50mm diameter boss connector	6	No.		
F	100 x 40mm diameter boss connector	6	No.		
	Single Branches				
G	100mm diameter single branch	6	No.		
	WC Connectors				
H	100mm diameter WC connector	7	No.		
	Traps				
I	100 x 50mm diameter floor trap and grating	7	No.		
	Supporting Brackets				
J	Allow for suitable supporting steel brackets for anchoring and supporting drainage pipes bends on the lower floor. To be painted to match the walling colour.	4	No.		
	Testing and Commissioning				
K	Allow for testing and commissioning of the plumbing and drainage installations to the satisfaction of the Engineer.	1	Item		
	Total Carried Forward				

COLLECTION PAGE

Item	Description	Amount (Kshs)
1	Total carried forward from page D-8	
2	Total carried forward from page D-9	
3	Total carried forward from page D-10	
4	Total carried forward from page D-11	
5	Total carried forward from page D-12	
Total Carried Forward to D-15		

COMMON ITEMS ON ALL FLOORS

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	Allow for a standard 300 x 300 x 450mm masonry gully trap complete with concrete cover.	5	No.		
	Plumbing drop pipes and roof pipework				
B	GMS 50mm diameter pipework from the roof storage to form a ring manifold around the tanks	100	Lm		
	MuPVC and uPVC Waste and Soil pipework (SVP drops)				
C	100mm diameter heavy gauge golden brown UPVC pipe	100	Lm		
D	100mm diameter heavy gauge grey MUPVC pipe	100	Lm		
	Weathering Slates and Vent Cowls				
E	100mm diameter weathering slate and apron.	10	No.		
F	100mm diameter vent cowl	10	No.		
	Supporting Brackets				
G	Allow for suitable supporting steel brackets for anchoring and supporting drainage pipes bends on the lower floor. To be painted to match the walling colour.	5	No.		
	Rainwater drainage				
H	100mm diameter heavy gauge grey mUPVC down pipes	160	Lm		
I	100mm diameter 45^0 bend	16	No.		
J	100mm diameter sweep bend	16	No.		
K	50mm diameter bend	16	No.		
L	100mm diameter tee	16	No.		
M	100mm diameter cast iron fulbora	16	No.		
	Testing and Commissioning				
N	Allow for testing and commissioning of the plumbing and drainage installations to the satisfaction of the Engineer.	1	Item		
	Total Carried Forward to Page D-15				

COLLECTION PAGE

Item	Description	Amount (Kshs)
1	Total cost from page D-13	
2	Total cost for common items from page D-14	
Total Carried Forward to summary Page D-25		

Bill No 3:Water Reticulation					
Item	**Description**	**Qty**	**Unit**	**Rate (Kshs)**	**Amount (Kshs)**
A	25mm diameter pipework	100	Lm		
B	50mm diameter pipework	100	Lm		
	Bends				
C	25mm diameter bend	45	No.		
D	50mm diameter bend	12	No.		
	Tees				
E	50mm equal tee	3	No.		
	Reducers				
F	50 x 25mm diameter reducer	4	No.		
	Male/Female Adapters (Brass threaded)				
G	25mm brass threaded adapter	4	No.		
H	50mm brass threaded adapter	1	No.		
	Valves				
I	25mm gate valve	1	No.		
J	50mm gate valve	2	No.		
	Unions				
K	25mm diameter pipe union	1	No.		
L	50mm diameter pipe union	2	No.		
	Pipe Sleeves				
	M 100mm diameter heavy duty PVC pipe sleeves for crossing overcolumnsandbeams.	15	Lm		
	Excavations				
N	Excavate trench in hard soil/murram 600mm wide and depth not exceeding 1000mm deep and average 850mm deep, prepare bed with red soil/murram of particle size not more than 20 mm to a depth of 750mm. Bed shall be approved by Engineer before laying of pipes. Fill with same material as above and compact in layers of 75 mm. Cart away surplus soil.	200	LM		
	Total carried forward to Page D-18				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Valve Chamber				
A	Standard precast concrete valve chamber of size 450 x 450 x 450mm deep made of concrete (1:3:6) base, including formwork, excavations backfilling and disposal.	1	No		
	Stand Pipe				
B	15mm diameter hose bib tap suitable for connecting hose pipe complete with threaded adaptors. The tap to be complete with 5meter long 15mm diameter GMS pipe, bends support, etc. The chrome plated bib tap to be as Cobra ref.108 hose bib taps or equal and approved.	4	No		
	Gate Valve Indicator Plates				
C	Standard precast concrete Sluice valve marker post marked 'GV' set in concrete (1:3:6) base, including formwork, excavations backfilling and disposal. The plate to be painted with blue gloss oil paint.	2	No		
	Water Line Markers				
D	Standard precast concrete water line marker, post marked 'WL' set in concrete (1:3:6) base, including formwork, excavations backfilling and disposal. The plate to be painted with blue gloss oil paint.	4	No		
	Water meter				
E	100mm bulk water meter as 'Kent' or equal and approved equivalent for the connection to the water main supply to site	1	Sum		
	Water meter council connection				
F	Application for connection to the council water meter	1	Sum		
	Sterilization				
G	Allow for flushing out and sterilizing the whole system with chlorine to the satisfaction of the engineer	1	Sum		
	Testing and Commissioning				
H	Allow for setting to work, testing and commissioning of the whole water reticulation system to the satisfaction of the Engineer.	1	Item		
Total Carried Forward to Page D-18					

COLLECTION PAGE FOR WATER RETICULATION

Item	Description	Amount (Kshs)
1	Total carried forward from page D-16	
2	Total carried forward from page D-17	
Total for Water Reticulation Carried to Summary Page D-25		

Bill No 4: Fire Fighting Protection

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Fire Fighting Supply, deliver and install the following fire fighting equipment in positions indicated on the contract drawings or as shall be instructed by the Engineer.				
	Hose Reel System				
	Hose Reel				
A	Swinging type hosereel fitted with 30 metres long, 20 mm diameter reinforced non-kink rubber hose with 5/6 mm lever operated shut-off nozzle, mild steel feed pipe, isolation valve, guide and all other accessories as 'Angus Fire Armour' or equal and approved.	4	No.		
	GMS Pipes				
B	25mm diameter GMS pipework	20	Lm		
C	50mm diameter GMS pipework	120	Lm		
	Bends				
D	25mm diameter bend	32	No.		
E	50mm diameter bend	16	No.		
	Tees				
F	50mm diameter equal Tee	8	No.		
	Reducers				
G	50 x 25 mm diameter reducer	8	No.		
	Valves				
H	25mm diameter approved medium pressure screw down full way non-rising stem wedge gate valve to BS 1952, with wheel and head joints to steel tubing. The gate valve to be as PEGLER or approved equivalent.	8	No.		
I	50mm diameter ditto	3	No.		
	Unions				
J	25mm diameter pipe unions	8	No.		
K	50mm diameter pipe unions	3	No.		
	Total Carried Forward				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Control Panel				
A	Control panel for the above pumps with contactors, over voltage and under voltage protection relays, MCBs, start/stop push buttons and indicators lights. All this shall be housed in a lockable cabinet (with integral isolator) made from SWG 18stainless steel sheet that is oven powder coated. The controls shall also include a float switch or flow switch for prevention against dry running complete with its cable.	1	Item		
	Water Fire Extinguisher				
B	9 litres water portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	5	No		
	Carbon Dioxide Gas Fire Extinguisher				
C	9 litres carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	5	No		
	DCP Fire Extinguisher				
D	Dry Chemical Powder fire extinguisher complete with initial charge and mounting brackets.	5	No		
E	**Manual** **Bell** Manual Bell	4	No		
	Hosereel Pumpset				
F	Hose reel pumpset, one duty, the other standby mounted on a frame with a stainless steel base plate. Each pump shall have a duty $5m^3$/hr. against 25m head as Grundfos model or approved equivalent. In addition, there shall be a 60 litres diaphragm pressure vessel (as Varem or approved equivalent), pressure switches, a switch to protect dry run, 65mm foot valve and strainer, tank connections, gate valves and non-return valves. The pressure set to be as Dayliff SGM2/40Por equal and approved.Control shall be effected via a pressure switch through a pre-wired control panel which shall give automatic change-over from duty to standby pump within 5 seconds should the duty pump fail to deliver for any reason. The pumpset shall include all non-returns valves, timer, isolating valves and pipe connections.	1	Set		
E	Allow for painting of the hose reel pipework as per particular specifications.	1	Item		
G	Allow for fire cabinets 300x800x600mm for the above extinguishers to engineers approval		No		
H	Allow for fire hosereel cabinets 300x800x800mm for the above hosereels to engineers approval	4	No		
I	Allow for fire signage for the hose reel system, fire		No		
	Total Carried Forward				

COLLECTION PAGE FOR FIRE FIGHTING PROTECTION WORKS

Item	Description		Amount (Kshs)
1	Total from page D-19		
2	Total from page D-20		
Total cost carried forward to Page D-25			

Bill No 5:Water Tanks					
Item	**Description**	**Qty**	**Unit**	**Rate (Kshs)**	**Amount (Kshs)**
	Roof Level Water Tanks				
A	Supply, deliver and install a Plastic cylindrical roof water tank, capacity of tank to be 2500 litres and of preferred diameter 1600mm x 1200mm high. The tank to come complete with tank cover, mosquito proof inspection vent and to rest on wooden platform.	6	No.		
	Ground Level Water Tanks				
B	Supply, deliver and install a Plastic cylindrical roof water tank, capacity of tank to be 5000 litres and of preferred diameter 1600mm x 1200mm high. The tank to come complete with tank cover, mosquito proof inspection vent and to rest on wooden platform.	2	No.		
	Booster Pumps				
C	Set of automatic electrically driven twin hosereel pumps. One duty and the other one standby with automatic changeover, capable of delivering 4 metres per hour against a head of 20 meters. The pumpset shall be complete with 60 litres pressure vessel (as Dayliff pressure set or equal and approved) and all accessories required for proper and satisfactory operation. It includes pressure switches, time delay switch, a swit ch to protect against dry run, timer, gate valves and non-return valves. The pump to be as GRUNDFOS CM3 4 or approved equivalent. Pump to be installed on mild steel platform.	1	Set		
	Control Panel				
D	Control panel for above pumps with contactors, over voltage and under voltage protection relays, MCBs, timer, start/stop push buttons, internal buttons with automatic changeover, 'running' and 'trip' neon lights control system and button for for change from automatic to manual operation. All these shall be housed in a lockable cabinet (with integral isolator) made from SWG 18 mild steel sheet that is oven powder coated . There shall also be an adjustable time delay switch to ensure pumping cycles are controlled to not more than 6 per hour, cables, low level cut-out switch in low level tank and regulator. Each pump should run for twelve hours per day.	1	Item		
Total Carried Forward					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	ASSOCIATED PIPEWORK Supply, deliver and install galvanized mild steel pipes to BS 1387 class 'B' with screwed and socketed joints to BS 134 and 1256 and of approved manufacturer with galvanizing to BS 729. Tenderers must allow in their pipe work prices for all the couplings, unions, connectors joints, holder bats, reducers etc. as required in the running length of the pipework and also where necessary for pipe fixing clips, plugged and screwed.				
A	40mm GMS pipe riser pipe to tanks	30	Lm		
B	40mm GMS pipe drop pipe for overflow	10	Lm		
	Gate Valve				
C	100mm diameter Gate Valve	1	No		
	Non Return Valve				
D	100mm diameter approved high pressure non-return valve to BS 1952. The non-return valve to be as "Pegler" or approved equivalent.	1	No		
	Tees				
E	100mm diameter equal tee	2	No		
	Bends/Elbows				
F	100mm diameter bend/elbows	4	No		
G	Hard disk of 2Terabyte as Toshiba	3	No		
H	A4 Paper ream white	5	No		
I	HP Toner catridge Q7553A	2	No		
	Valve Chamber				
J	Valve chamber size 750 x 750 x 600mm deep with 100mm concrete (1: 3: 6) base 100mm block sides rendered all round in cement and sand (1:4) and with approved hinged and flanged cast iron cover and frame including all necessary excavation, disposal and form work.	1	No		
Total Carried Forward to Page D-24					

COLLECTION PAGE FOR WATER TANKS		
ITEM	**DESCRIPTION**	**Amount (Ksh.)**
A	Total carried from Page D-22	
B	Total carried from Page D-23	
Total amount for Water Storage Tanks carried to Summary page D-25		

SUMMARY PAGE

Item	Description	Amount (Ksh)
1	Preliminaries	**0.00**
2	Total for sanitary fittings Installation Works from Page D-7	
3	Total for plumbing and drainage Installation Works Page D -15	
4	Total for water reticulation Installation Works from Page D-18	
5	Total for firefighting protection Works From Page D-21	
6	Total for water tanks installation Works from Page D-24	
7	**Contingency provision for the above works**	**0.00**
	Totals for Plumbing and Drainage Installation Works Carried to Grand Summary Page GS/1	

Amount in words .....

.....

Tenderer's Name and Stamp

.....

.....

Address .....

.....

Period To Execute The Works .....

Telephone No .....

Mobile Phone No. .....

Tenderer's V.A.T No

Tenderer's P.I.N No .....

Tenderer's Signature..... Date .....

Witness Signature Date

SECTION E

TECHNICAL SCHEDULE OF ITEMS TO BE SUPPLIED

CONTENTS

TECHNICAL SCHEDULE

1. General Notes to the Tenderer

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

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

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

TECHNICAL SCHEDULE

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

ITEM	DESCRIPTION	MANUFACTURER	COUNTRY OF ORIGIN	REMARKS (Catalogue No. etc.)
1	Water closet			
2.	Wash hand basin			
3.	Urinal valves			
4.	Gate valves			
5.	Fire extinguisher			
6.	Hand drier			
7.	Soap dispenser			
8.	Water Booster pump			
9.	Fire booster pump			
10.	Hosereel			
11.	Plastic Water tank			
12.				
13.				
14.				
15.				
16.				
17.				

The tenderer shall also submit separate comprehensive descriptive and performance details for all plant apparatus and fittings, as described in the technical schedule.

SECTION F:

DRAWING SCHEDULE

CONTENTS

DRAWING SCHEDULE:

As shall be provided during project implementation.

PROVISIONAL SUMS

ITEM	DESCRIPTION	QTY	UNIT	RATE	KSHS
	PROVISIONAL SUMS The following provisional sums are to be measured on completion and priced in accordance with the rates contained in these bills of quantities or prorata thereto or deducted in whole if not required Allow provisional sum for Contingencies as follows:				
A	Builders works				2,000,000.00
B	Electrical Installation works				250,000.00
C	Structured Cabling and IP-PABX				250,000.00
D	Internal plumbing & drainage, saitary fitting and fire protection works				250,000.00
	TOTAL FOR PROVISIONAL SUMS CARRIED TO GRAND SUMMARY GS/1				**2,750,000.00**

GRAND SUMMARY

THE PROPOSED COMPLETION OF DOUBLE STOREY OFFICE BLOCK AT BOMET FOR TEACHERS SERVICE COMMISSION

ITEM	DESCRIPTION	Page No.	FOR TENDERER USE ONLY	FOR OFFICIAL USE ONLY
			K.SHS.	K.SHS.
	GRAND SUMMARY			
A	PARTICULAR PRELIMINARIES	PP/5		
B	GENERAL PRELIMINARIES	GP/10		
C	BUILDERS WORK	BW/15		
D	CIVIL/EXTERNAL WORKS	CIV8		
E	ELECTRICAL INSTALLATION WORKS	F/23		
F	STRUCTURED CABLING AND IP-PABX	E/8		
G	INTERNAL PLUMBING, DRAINAGE AND FIRE PROTECTION INSTALLATION WORKS	D-25		
H	PROVISIONAL SUMS	PS/1		
	TOTAL CARRIED TO FORM OF TENDER (V.A.T INCLUSIVE)			

AMOUNT IN WORDS: KENYA SHILLINGS .....

.....

.....CENTS .....

TENDERER'S NAME .....

ADDRESS .....

DATE .....

TENDERER'S SIGNATURE .....

WITNESS'S NAME .....

ADDRESS .....

DATE .....

WITNESS SIGNATURE.....

PROVISIONAL SUMS

ITEM	DESCRIPTION	QTY	UNIT	RATE	KSHS
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AMOUNT IN WORDS : KENYA SHILLINGS……

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……..CENTS ……

TENDERER'S NAME ……..……

ADDRESS ……

DATE ……..

TENDERER'S SIGNATURE ……..

WITNESS'S NAME ……..

ADDRESS ……

DATE ……..

WITNESS SIGNATURE……..