ALUPE UNIVERSITY COLLEGE

(A Constituent College of Moi University)

PROPOSED CONSTRUCTION OF ADMINISTRATION BLOCK PHASE 11 AT ALUPE UNIVERSITY COLLEGE BUSIA

TENDER DOCUMENT

TENDER NO. AUC/ONT/03/2020-2021

PROJECT MANAGER
WORKS SECRETARY
STATE DEPARTMENT OF PUBLIC WORKS
P.O. BOX 30743-00100
NAIROBI

ARCHITECTS
CHIEF ARCHITECT
M.T.I.P.W.H.U.D
P.O. BOX 30743-00100
NAIROBI

CLIENT
ALUPE UNIVERSITY COLLEGE
P.O BOX 845--50400
BUSIA

ELECTRICAL ENGINEERS (B.S)
CHIEF ENGINEER ELECTRICAL (BS)
M.T.I.P.W.H.U.D
P.O. BOX 30743-00100
NAIROBI

QUANTITY SURVEYORS
CHIEF QUANTITY SURVEYOR
M.T.I.P.W.H.U.D
P.O. BOX 30743-00100
NAIROBI

MECHANICAL ENGINEERS (B.S)
CHIEF ENGINEER MECHANICAL (BS)
M.T.I.P.W.H.U.D
P.O. BOX 30743-00100
NAIROBI

STRUCTURAL ENGINEER
CHIEF ENGINEER (STRUCTURAL)
M.T.I.P.W.H.U.D
P.O. BOX 30743-00100
NAIROBI

NOVEMBER, 2020

REPUBLIC OF KENYA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

PROPOSED CONSTRUCTION OF ADMINISTRATION BLOCK PHASE 11 AT ALUPE UNIVERSITY COLLEGE BUSIA

W.P. ITEM NO. D106/NE/BSA JOB NO.10142B

TENDER DOCUMENTS

Consisting

REPUBLIC OF KENYA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

PROPOSED CONSTRUCTION OF ADMINISTRATION BLOCK PHASE 11 AT ALUPE UNIVERSITY COLLEGE BUSIA

TENDER DOCUMENTS

Supplied as part of the Contract No. **W.P. ITEM NO. D106/NE/BSA JOB NO.10142B**

Issued by:-
Quantities and Contract Department Ministry of Transport, Infrastructure, Public **Works, Housing and Urban Development P O Box 30743**
NAIROBI

The contract for the above mentioned works entered into this …… day of..... 2020 by the undersigned refers to these Bills of Quantities and the Ministry of Public Works General Specification dated March 1976 (together with any amendments issued thereto) shall be read and construed as part of the said contract.

……	……
C O N T R A C T O R	**THE PRINCIPAL** **ALUPE UNIVERSITY COLLEGE.**
Date: ……	Date: ……

SPECIAL NOTES

The Contractor is required to check the numbers of the pages of these Bills of Quantities and should he find any missing or in duplicate or figures indistinct he must inform the Principal Secretary for State Department Of Public Works, Head Office, Ngong Road, Nairobi at once and have the same rectified.

Should the Contractor be in doubt about the precise meaning of any item or figure for any reason whatsoever, he must inform the Principal Secretary, State Department of Public Works, Head Office in order that the correct meaning may be decided before the date for submission of tenders.

No liability will be admitted nor claim allowed in respect of errors in the Contractor's Tender due to mistakes in the Specifications which should have been rectified in the manner described above.

SIGNATURE PAGE AND NOTES

REPUBLIC OF KENYA

STANDARD TENDER DOCUMENT

FOR

PROCUREMENT OF WORKS

(BUILDING AND ASSOCIATED CIVIL ENGINEERING WORKS)

PUBLIC PROCUREMENT REGURATORY AUTHORITY (PPRA)
P.O. BOX 88535 - 00200 NAIROBI.

(REVISED DECEMBER 2015)

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SECTION I

INVITATION FOR TENDERS

Tender reference No. (as per tender document)

Tender Name (as per tender document)

1.1 The ***Alupe University College*** invites sealed tenders for the Construction of **Administration block Phase11** including all services, **Electrical,Mechanical and Civil works**

1.2 Interested eligible candidates may obtain further information and inspect tender documents at ***Alupe university college*** **offices in Busia during normal working hours.**

1.3 A complete set of tender documents may be obtained by interested candidates upon payment of a non-refundable fees of ***Kshs.1000*** in cash or Bankers Cheque payable to ***Accounts Office Alupe University College Busia or downloaded for free from Alupe University College website:www.auc.ac.ke***

1.4 Prices quoted should be net inclusive of all taxes, must be in Kenya shillings and shall remain valid for (***120***) days from the closing date of tender.

1.5 Completed tender documents are to be enclosed in plain sealed envelopes marked with Tender name and reference number and deposited in the **Tender Box located at the Administration Block** or to be addressed to The Principal Alupe University College so as to be received on or before **21st Tuesday December 2020 at 11:00am.**

1.6 Tenders will be opened immediately thereafter in the presence of the candidates or their representatives who choose to attend at **Alupe University College.**

_____

For *(Accounting Officer/Procuring Entity)*

SECTION II

INSTRUCTIONS TO TENDERERS

TABLE OF CONTENTS PAGE

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,

2.

2.1 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.

2.2 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.

2.3 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.

2.4 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 cashflow 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.

2.5 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.

2.6 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.

2.7 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.

2.8 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.

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

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

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

3. Tender Documents

3.1 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

3.2 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.

3.3 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.

3.4 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.

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3.5 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.

4. Preparation of Tenders

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

4.2 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.

4.3 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.

4.4 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.

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

4.6 Tenders shall remain valid for a period of sixty (60) 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.

4.7 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

4.8 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.

4.9 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 "… ……".

4.10 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.

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

4.12 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.

4.13 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.

4.14 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.

4.15 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 authorised 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 initialled by the person or persons signing the tender.

4.16 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.

4.17 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.

4.18 The tender security shall be in the amount of 0.5 – 2 per cent of the tender price.

5. Submission of Tenders

5.1 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.

5.2 Tenders shall be delivered to the Employer at the address specified above not later than the time and date specified in the invitation to tender. 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.

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

5.4 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.

5.5 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.

5.6 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.

6. Tender Opening and Evaluation

6.1 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 at the time and in the place specified in the invitation to tender. 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.

6.2 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.

6.3 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.

6.4 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.

6.5 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.

6.6 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.

6.7 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.

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

6.9 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 Dayworks 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

6.10 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.

6.11 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.

6.12 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.

7. Award of Contract

7.1 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.

7.2 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.

7.3 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.

7.4 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.

7.5 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

7.6 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.

7.7 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.

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

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

7.10 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.

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

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

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

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

7.15 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.

7.16 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.

8. 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 clauses shall be amended as follows;

Clause 1.4: Delete the entire clause

Clause 1.5: a) Delete the entire subclause and substitute with the words "a copy of the current registration certificate with the Relevant Statutory body and NCA under the relevant category".

d) Delete the word 'Major' and substitute with the word 'Relevant'

Clause 1.7: d) Delete the words 'contract manager' and 'manager' at the beginning and end of the subclause and substitute with the words 'general foreman' and 'foreman' respectively

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

Clause 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'

Clause 3.14: Delete the entire clause and substitute with the following;

The tenderer shall prepare one original of the volume of **tender documents** comprising the documents as described in clause 3.2 of these instructions and clearly marked **'ORIGINAL'**

Clause 3.15: Delete the words 'original and all copies' and insert the word 'original' after the word 'the'

Clause 4.1: Delete the first paragraph and insert the words 'The tenderer shall seal the original of the tender documents in one envelop duly marked original'

Clause 6.12: Delete 15% and substitute with 25%

APPENDIX TO INSTRUCTIONS TO TENDERERS

Change Instruction 1.5: To read "This invitation to tender is "open to all eligible tenderers as per the tender invitation notice"

Add to Instruction 3.3: The rates and prices set down by the tenderer against the items in the Bills of Quantities are to be the full inclusive value of the finished work described thereunder and are to include for profits, taxes and all obligations and liabilities of every kind which under the contract are to be borne by the Contractor. The tenderer's attention is particularly drawn to the Preliminaries section, where provision is made for the pricing of the contractor's general obligations. Any item not priced either in this section or elsewhere in the Bills of Quantities will be deemed to have been allowed for the prices inserted against other items in the Bills of Quantities.

The pricing should be inclusive of VAT; the contractor shall include his/her allowance for VAT in the all-in rates for individual items. The VAT should not be added as a separate item on the GRAND SUMMARY page.

Add to Instruction 6.5: The amount of Performance Security shall be five percent (5%) of the contract price and shall be in form of a Bank Guarantee

Modify instruction 5.8 & 5.9: The Tender Evaluation Criteria shall be as follows: -

TENDER EVALUATION CRITERIA

After tender opening, the tenders will be evaluated in 3 stages, namely:

i. Preliminary evaluation
ii. Technical Evaluation; and
iii. Financial Evaluation.

6.1 PRELIMINARY EVALUATION

i. Preliminary evaluation to open tenders

Tenders shall be subjected to a preliminary evaluation to determine weather:-

a. The tender has been submitted in the required format as per the advertisement and tender instructions
b. Any tender security submitted is in the required form, amount and validity period (120 days); only From a Bank or an Insurance Company approved by the PPRA.
c. The tender has been signed by the persons lawfully authorized to do so (signed and stamped form of tender);
d. The required number of copies of the tender has been submitted as per the advertisement and tender instructions.
e. The tender is valid for the period required.

ii. Mandatory /Statutory requirements

a) Certificate of company / Firm Registration
b) List of directors with respect to shareholding & details of citizenship.
c) Valid tax compliance certificate;
d) Audited accounts for each of the last three years (**i.e. 2017-2018**).
e) Registration certificate in relevant categories from the National Construction Authority (**category 6 and above**) and current annual practicing licence for the sub-contractors.
f) Contractor's annual practicing license from the NCA for current year.
g) Bid Bond of **2% of tender sum** in form of a guarantee from reputable bank or Insurance Company approved by PPRA and located in Kenya and valid for 150 days from the closing date of the tender.
h) Power of attorney (of Tender signatory).
i) Signed and stamped statement of Verification that not debarred in matters of Public procurement and Disposal Act. ;(form attached)
j) Dully filled and signed tender questionnaire.
k) Dully filled business questionnaire

l) Tenderers who fail to attend the mandatory pre-tender conference shall also be considered non-responsive. Attendance register shall be signed on the material date and the pretender conference form (*to be availed during the said conference*)

m) Tenderers who have incomplete projects and do not have approved extension of time or have received default notices / warnings are not responsive

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

Tenderers who do not satisfy any of the above requirements shall be considered NON-RESPONSIVE and their tenders will not be evaluated further.

6.2 TECHNICAL EVALUATION

Award of points for the **Technical Evaluation** will be as follows: -

Parameter	**Maximum Points**
(1) Key personnel	15
(2) Registration of sub-contractors…	15
(3) Contracts completed in the last five (5) years	15
(4) Schedules of on-going projects	10
(5) Schedules of contractor's equipment	10
(6) Audited Financial Report for the for the last 3 years	15
(7) Evidence of Financial Resources	15
(8) Litigation History	5
Total	**100**

The detailed scoring plan shall be as shown in Table 1 overleaf:-

Table 1: Scores for the Technical Evaluation

Item	Description	Points Scored	Max. Points
1	**Key Personnel (Attach evidence)**		
	Director of the firm • Holder of degree or diploma in a 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		5
	At least 1 No. degree/diploma of the key personnel in relevant Engineering field • With over 10 years relevant experience---------- 5 • With over 5 years relevant experience .....3 • With under 5 years relevant experience----------2		5
	At least 2No. certificate holder of key personnel in relevant Engineering field • With over 10 years relevant experience----------5marks • With over 5 years relevant experience .....3marks • With under 5 years relevant experience----------2marks		5
			15
2	**Registration of Domestic sub-contractors** Electrical sub-contractor NCA registration----5marks Mechanical sub contractor (Plumbing etc.)....5marks Mechanical sub-contractor (Water Tanks).....5marks		**5** **5** **5**
			15

3	**Contract completed in the last five (5) years; a max of 3 No. projects** • Project of similar nature, complexity and magnitude using the proposed ABMT---------- 5marks each • Project of similar nature, complexity and magnitude using conventional materials ---------- 3marks each • Project of similar nature but of lower value than the one in consideration ---------- 2 marks each • Project of similar magnitude ---------- 1 mark each • No completed project of similar nature 0 marks		
			15
4	**On-going projects (A max of 5 No. projects)** • Project of similar nature, complexity and magnitude ---------- 2 marks each • Project of similar nature conventional system, complexity and magnitude ---------- 1.0 marks each • Project of similar nature but of lower value than the one in consideration ---------- 0.5 marks each • No ongoing project of similar nature ---- 0 marks		
			10
5	**Schedules of contractor's equipment** For each specific equipment required in the construction work being tendered for. (Maximum No. of equipment to be considered – 5 No.)---------- 2 marks each		
			10

Table 1: Scores for the Technical Evaluation (Cont'd)

6	**Financial report** **Audited financial report (last three [3] years)** • Turn over greater or equal to 3 times the cost of the project ----------.....15 • Turn over greater or equal to 2 times the cost of the project ----------.....6 • Turn over greater or equal to the cost of the project .....4 • Turn over below the cost of the project 2		
			15
6	**Evidence of financial resources (cash in hand, lines of credit, over draft facility etc)** • Has financial resources equal or above the cost of the project ---------- 15marks • Has financial resources below the cost of the project, but over 50% of the cost of the project ..... -------- 10marks • Has financial resources below 50% of the cost of the project or has not given evidence for the financial resources ---------- 0marks		
			15
7	**Litigation History** • Has *no* construction-related litigation or arbitration case in the last five years.....5 • Has *not more than three* construction-related litigation or arbitration cases in the last five years ----------.....2 • Has *more than three* construction-related litigation or arbitration cases in the last five years 0		
			5
	TOTAL		**100**

Any bidder who scores 70 points and above in this Technical Evaluation shall be considered for further evaluation

6.3 FINANCIAL EVALUATION

Bids that pass the Technical Evaluation shall be subjected to the Financial Evaluation in two stages, as follows: -

(1) Tender Sums; and

(2) Tender Rates and arithmetic Errors.

6.3.1 Tender Sums

The average of the submitted responsive tender sums will be worked out. The *mean* of this average and the quantity surveyor's total cost estimate will form the basis for evaluating the extent of deviation of the tender sums, for further evaluation. Bids found to be ±10% of this mean shall be considered uncompetitive and will not be considered for further evaluation.

6.3.2 Tender Rates

Evaluation of the tender rates will constitute examination of (i) pricing consistency (same rates for similar items, price distribution amongst sections, etc); (ii) reasonableness of pricing (comparison with prevailing market levels, inclusion of taxes [VAT, etc] in the rates); and (iii) arithmetic errors.

The bidders who pass the test of price consistency and reasonableness, and accept their arithmetic errors (if any) shall finally be graded in terms of their submitted tender sums. The lowest bid in this group shall be the lowest evaluated price as per Section 66(4) of the Public Procurement & Disposal Act and section 6.1 of the instructions to tenderers herein.

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.

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

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

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

"The Intended Completion Date" is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or 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 an 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 authorised 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 favour
or disfavour to any person in relation to this or any other contract for the Employer.

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

Any breach of this Condition by the Contractor or by anyone employed by 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:

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

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

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

37.5.1.4 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: **ALUPE UNIVERSITY COLLEGE**
Address: P.O. BOX 845-50400, BUSIA.

Name of Authorised Representative: THE PRINCIPAL
Address P.O. BOX 845-50400, BUSIA.

The Project Manager is;

Name: WORKS SECRETARY, MINISTRY OF TRANSPORT, INFRASTRUCTURE,PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT (STATE DEPARTMENT OF PUBLIC WORKS)

Address: P.O. BOX 30743-00100 NAIROBI
Telephone: 2723101
Email: www.publicworks.go.ke

The name (and identification number) of the Contract is **PROPOSED CONSTRUCTION OF ADMINISTRATIONBLOCK.**

W.P. ITEM NO. D106/NE/BSA JOB NO.10142B
The Works consist of: **Construction of ADMINISTRATION BLOCK**

Electrical works include electrical wiring, fittings and, Mechanical works are water reticulation, piping within the building, sanitary fittings

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

The Intended Completion Date for the whole of the Works shall be
24 WEEKS FROM DATE OF POSSESSION

The following documents also form part of the Contract:
AS LISTED IN CLAUSE 2.3 OF CONDITIONS OF CONTRACT
The Contractor shall submit a revised program for the Works within SEVEN **(7)** days of delivery of the Letter of Acceptance.
The Site Possession Date shall be **AGREED WITH THE PROJECT MANAGER**

The Site is located Located **at Alupe University College**

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. **PLUMBING AND DRAINAGE WORKS**
2. **ELECTRICAL WORKS**

The minimum insurance covers shall be;

2. The minimum cover for insurance of the Works and of Plant and Materials in respect of the Contractor's faulty design is; **N/A**

3. The minimum cover for loss or damage to Equipment is; **------NIL----**

4. The minimum for insurance of other property is; **Kshs 500,000.00**

5. The minimum cover for personal injury or death insurance

   - For the Contractor's employees is; **Kshs 1,000,000.00**
   - And for other people is; **Kshs 1,000,000.00**

The following events shall also be Compensation Events:
NONE (ONLY AS LISTED IN CLAUSE 24 OF THE CONDITIONS OF CONTRACT

The period between Program updates is **30** days.

The amount to be withheld for late submission of an updated Program is;
FULL CERTIFICATE

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

Price Adjustment Clause **SHALL** apply

Advance Payment_____**shall**___**Not**_____be granted

The liquidated damages for the whole of the Works is Kshs. **50,000/=**(per week)

The **Performance Security** shall be **5 percent (%)** of the Contract Price. The

Completion Period for the Works is **24 WEEKS**.

The rate of exchange for calculation of foreign currency payments is **not applicable**

SECTION V - DRAWINGS

1. Architectural drawings (see Appendix B)

2. Electrical and mechanical drawings

SECTION VI – 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
(xi) Confidential Business Questionnaire
(x) Statement of Foreign Currency Requirement
(xi) Details of Sub-Contractors

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,

_____Authorised Signature

_____ *Name and Title*

FORM OF TENDER

TO: ……..
……
……

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 ***KENYA SHILLINGS*** …….....
……
……..***(kshs .....)***
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 recognised 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 and year of completion	Value of Contract
_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____

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 Licence 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: Tender No._____

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 from the 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 entitity) 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

PARTICULAR PRELIMINARIES

ITEM	DESCRIPTION	KSHS
	PARTICULAR PRELIMINARIES	
A	**PRICING OF ITEMS OF PRELIMINARIES AND PREAMBLES**	
	Preliminaries to the contract are mandatory conditions and responsibilities the contractor is required to fulfill for the complete and proper execution of the contract. The contractor is advised to read and understand all his obligations under preliminaries. Should he find that fulfillment of any of the items will lead to him incurring any cost not covered under measured works he shall price such works accordingly otherwise failure to price any item will be construed to mean that the tenderer has included it in other priced items in the bills of quantities.	
	NB: VAT SHALL be inclusive in all rates	
B	**ABBREVIATIONS** Throughout these Bills, units of measurement and terms are abbreviated and shall be interpreted as follows;	
	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 Starndands Institution, 2 park Street, London W.I.	
	Ditto Shall mean the whole of the preceding description except as qualified in	
	m.s. Shall mean measured separately.	
	a.b.d Shall mean as before described.	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**EMPLOYER** The Employer is Principal Secretary, Ministry of Education and Technology The term "Employer" and "Government" wherever used in the contract document shall be synonymous	
B	**CONTRACTOR** The term "Contractor" refers to the person whose or corporate body that's tender to carry out the Works has been accepted by the Employer	
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 or such person or persons as may be duly authorised to represent him on behalf of the Government.	
D	**ARCHITECT** The term "Architect" shall be deemed to mean "The P.M." as defined above whose address unless otherwise notified is Ministry Transport,Infrastructure, Public works Housing and Urban Development P.O. Box 30743, 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 Ministry Transport,Infrastructure, Public works Housing and Urban Development, P.O. Box 30743, 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 Ministry Transport,Infrastructure, Public works Housing and Urban Development, P.O. Box 30743, 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 Ministry Transport,Infrastructure, Public works Housing and Urban Development, P.O. Box 30743, NAIROBI.	
H	**STRUCTURAL ENGINEER** The term "Structural Engineer" shall be deemed to mean "The P.M." as defined above whose address unless otherwise notified is Ministry Transport,Infrastructure, Public works Housing and Urban Development, P.O. Box 30743, NAIROBI.	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**DESCRIPTION OF THE WORKS AND SCOPE OF CONTRACT** These are works of **Construction of aministration block as in detailed bills of quantities**. The scope of contract generally comprises the of provision of Materiasl, Labour, tools, site management and all accessories necessary in the excavations, concretework, walling, roofing, windows and doors, finishes, fittings and associated electrical installation ,Mechanical works and Civil works	
B	**LOCATION OF SITE** The site of the proposed office partitioning works at Alupe University**.** The Contractor is advised to visit the site to familiarize himself with the nature and position of the site. No claims arising from the Contractor's failure to do so will be entertained.	
C	**FORM OF CONTRACT** The form of contract will be the one included in the Republic of Kenya Standard Tender Document for Procurement of Works (Building and Associated Civil Engineering) (2006 Edition) hereby attached and Conditions of Contract are those attached thereto. If the Contractor considers that compliance with any of the Conditions of Contract involves any expenses distribute them among his rates for the various items in the Bills of Quantities. No claim shall be allowed arising from the Contractors compliance with any of the Conditions of Contract. These are numbered from 1 to 37 as set out on pages 16 to 35 of these tender documents. Particulars of the insertion to be made in the Appendix of the Appendix of the Contract Agreement will be found in the Particular Preliminaries of these Bills of Quantities.	
D	**PERFORMANCE BOND.** The Contractor shall find and submit on the Form of Tender the name of one surety who shall be an approved bank or approved fidelity insurance company and who will be willing to be bound to the Employer in an amount of Five per cent (5%) of the Contract amount for the due performance of the contract up to the date of completion as certified by the "Employer's Representative" and who will when and if called upon, sign a Bond to that effect on Ministry of Roads Public works and Housing Form No 118 (without the addition of any limitations) on the same day as the Contract Agreement is signed. In the event of the surety named in the form of tender not being approved by the Employert,the Contractor shall furnish within seven days another Surety to the approval of the Government.	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**METHOD OF MEASUREMENT** The Bills of quantities have been prepared in accordance with the general principles of the standard Method of Measurement of Building Works of East Africa - Second Edition (Metric), published in January, 1987 by the Architectural Association of Kenya, Chapter of Quantity Surveyors.	
B	**SUFFICIENCY OF TENDER** The Contractor be deemed to have satisfied himself before tendering as to the correctness and sufficiency of the Tender for the Works and of the rates and prices stated in the priced Bills of Quantities which rates and prices shall cover all his obligations under the Contract and all matter and things necessary for the proper completion and maintenance of the work	
C	**BID SECURITY** The Bidder shall furnish, as part of his bid, a security as specified in the tender advertisement. The bid security shall, at the bidder's option, be in the form of a certified cheque, bank draft, standby letter of credit or guarantee from a reputable bank located in Kenya or foreign bank which has been determined by the bidder to be acceptable to the Government. The format of the bank guarantee shall be in accordance with the sample forms of bid security included in the post qualification forms, other formats may be permitted, subject to the prior approval of the Government. Letters of credit, bank guarantees issued as surety for the bid shall be valid for a period of One Hundred and Twenty (120) days from the date of Tender Opening. 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	**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"	
E	**ADJOINING PROPERTY** Take all necessary precautions to prevent damage to adjoining property. Any damage occurring must be made good to the satisfaction of the "PROJECT MANAGER" and/or owner(s) of the adjoining property at the contractor's expense.	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**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"	
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 claim or intent to claim notice to the "PROJECT MANAGER" within fourteen days after the event giving rise to the claim has first arisen. The claim shall be submitted within fourteen days thereafter. No claims shall be entertained if the contractor has not complied with these conditions.	
C	**OFFICE FOR THE "PROJECT MANAGER"** The contractor shall provide, erect and maintain where directed on site and afterwards dismantle the Site Office of the type noted in the particular preliminaries, complete with furniture. He shall also provide a strong matal trunk complete with strong hasp and staple fastening and two keys. He shall provide, erect maintain a lock-up pedestral type water or bucket closet for the sole use of the "ER" including making temporary connections to the drain where applicable to the satisfaction Government and Medical Officer of Health and pay the services of a cleaner and pay all conservancy charges and keep both office and closet in a clean and sanitary condition from commencemet to the completion of the works and dismantle and make good disturbed surfaces. The office and closet shall be complete before the contractor is permitted to commence the works. The Contractor shall make available on site as and when required by the"PROJECT MANAGER" a modern and accurate level together with levelling staff, ranging rods and 50 metre metallic linen tape.	
D	**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 "Employer's Representative" and a further copy to be retained site. Progress to be recorded and chart to be amended as necessary as the work proceeds.	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**FIRM PRICE CONTRACT** This is a ***Firm price contract*** and, therefore the tenderer shall not be reimbursed for any increases in the costs of materials and/or labour in the execution of the works except as provided under the fluctuations clause.	
B	**PRICING RATES** The tenderer shall include for all costs in executing the whole of the works, including supply of Materials, Labour, tools, equipment and site management , replacing damaged items, fixing, , taxes, all to comply with the said Conditions of Contract.	
C	**PAYMENTS** The tenderer's attention is drawn to the fact that the Employer shall only pay for the work done 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	**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 should allow for any costs he may incur by having to complete the works within the stipulated contract period.	
E	**SIGN BOARD** Allow for providing, erecting and maintaining through out the course of the contract and afterwards clearing away a sign board in accordance with the details to be obtained from the "PROJECT MANAGER"	
F	**VIEWING OF DRAWINGS** Any tenderer interested in viewing the drawings related to this project before submission of the tenders may do so by contacting the "PROJECT MANAGER"	
G	**USE OF SITE** Do not use the site for any other purpose other than carrying out the works. Do not permit or display any advertisement without the consent of the "PROJECT MANAGER"	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**V.A.T DEDUCTIONS** The tenderer is advised that in accordance with Government public notice No. 35 &36 Dated 11th September 2003 operational from 1st October 2003, withholding VAT will be levied against the contract sum by the Employer and remitted to the Commissioner of VAT through all interim certificates. It should however be noted that this is not additional tax but a new mode of payment of VAT, any excess payment will be refundable once the Contractor has submitted monthly returns to the Commissioner of VAT who will do the refunds when satisfied that the VAT regulations have been complied with. **NB**: VAT **SHALL** be inclusive in all rates	
B	**PLANT AND LABOUR RETURNS** The Contractor shall prepare and deliver to the Architect or his representative detailed returns showing the number and category of his supervisors, numbers of the several classes of labour and plant employed on the works together with those of all his Sub – Contractors. The Contractor shall keep a visitors book on the site and shall ensure that the names of all visitors to the site are duly recorded.	
C	**TRANSPORT TO AND FROM THE SITE** The Contractor shall include in his tender price for the transport of materials, workmen, etc., to and from the site of the proposed works, at such hours and by such routes as are permitted by the competent Authorities.	
D	**WATER FOR WORKS** The Contractor shall provide at his own risk and cost all necessary arrangements for clean and fresh water for the works including that required by the Sub-contractors on site. He must provide for any temporary plumbing, meter , payment of all water bills, storage facilities and clear away after completion and make good works disturbed. No guarantee is given or implied that sufficient water will be available from the mains and the Contractor must make his own arrangements for augmenting this supply at his own cost as necessary. Nominated Sub-Contractors are to be made liable for the cost of any water used or any installation specially provided for their own use.	
E	**LOCAL REGULATIONS AND BY – LAWS** The Contractor is to comply with all local regulations and by – laws of the local Authority including serving of notices, paying of fees including all stamp charges.	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**NEMA EIA REGULATION** The Contractor's attention is drawn to Legal Notice No 121 of 2003 on the payment of EIA fees for any construction work, payable to the Authority at a rate 0.01 % of the project cost.	
B	**NATIONAL CONSTRUCTION AUTHORITY (NCA) REGULATIONS** The Contractor's attention is drawn to regulation No 25 of NCA on the payment of contruction levy for any construction work whose construction Value exceed five Millions payable to the Authority at a rate 0.5 % of project cost.	
C	**POLICE REGULATIONS** The Contractor shall at all times observe police and traffic Regulations including those regarding the loading or unloading of or waiting vehicles on the Public Highways and the Contract Sum shall be deemed to include for strict compliance therewith.	
D	**LIGHTING AND POWER FOR THE WORKS** The Contractor shall provide at his own risk and cost the required electricity supply for the works including that required by Sub-Contractors and others on site, and pay all fees and obtain all permits in connection therewith. Nominated Sub-Contractors are to be made liable for the cost of any electrical power used and for any installations provided specifically for their own use.	
E	**DAY WORKS** The Project Manager may, if in his opinion deems it necessary or desirable, order in writing that any additional or substituted work shall be executed on a day work basis. The contractor shall then be paid for such work in accordance with day work rates and percentage additions to be agreed with the Project Quantity Surveyor. The contractor shall furnish to the Architect all receipts or vouchers as may be necessary to prove the amounts paid and before ordering materials shall submit to the Architect quotations for the same for his approval. The contractor shall furnish to the Architect all receipts or vouchers as may be necessary to prove the amounts paid and before ordering materials shall submit to the Architect quotations for the same for his approval. In respect of all works executed on a day work basis the contractor shall during the continuance of such works, deliver each day to the Project Manager a list in duplicate of names, occupation and time of all work men employed on such work and a statement also in duplicate showing the description and the quantity of all materials and plant used therein or there of. (other than plant which is included in the percentage addition on net amount of wages) One copy of each list and statement will, if correct or when agreed, be signed by theProject Manager and returned to the Contractor.	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**TELEPHONE** A telephone will be provided on site by the contactor. He must allow for footing all bills incurred by him and the design team during the entire contract period.	
B	**CONTRACTOR'S SUPERINTENDENT / 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 Architect and such directions shall be deemed to have been given to the Contractor in accordance with the Conditions of Contract.	
C	**LABOUR** No labour may be housed on site with the exception of watchmen. The Contractor shall provide, erect and maintain satisfactory housing for the watchmen and shall remove the same on completion of the works. Unless the Project Manager otherwise agrees the Contractor is to recruit locally all his unskilled labour and as much as possible of his skilled labour.	
D	**HOARDING** The contractor shall enclose the site or part of the works under construction with a hoarding 2400 mm high consisting of iron sheets on 100 x 50 mm timber posts firmly secured at 1800 mm centres with two 75 x 50 mm timber rails. The Contractor is in addition required to take all precautions necessary for the safe custody of the works, materials, plant, public and Employer's property on the site.	
E	**PROTECTION OF THE WORKS** The Contractor shall protect or cover-up all finished work liable to damage including provision of temporary roofs, gutters, drain etc. during the progress of the works and until the completion of the works. Any damage occurring to the works, materials, drains, paths or other works due to weather or want of protection during the progress of the works shall be made good by the Contractor at no extra cost.	
F	**CONCRETE CUBE TESTS** The Contractor shall allow for the cost of preparing, delivery and testing of concrete samples required by the Engineers and shall obtain test Certificates of concrete test tubes, each cube size 150 x 150 x 150 mm or such other size as may be directed by the Engineer. A set of 3No x 50 Tests @ ……= Kshs……	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**PROGRAMME / PROGRESS CHART** Within seven (14) days of signing the Contract, the Contractor shall prepare a full detailed programme and progress chart in the form of bar chart, precedence diagram or network analysis showing completion dates of various sections of work and resource requirement to the approval of the Project Manager. If the Contractor proposes sectional completion of the works he must plan this detail including access roads and services and this programme shall be reflected on the chart. Upon letting of the Sub-contract works the Contractor shall incorporate times and details of each Sub-contractor's work – which information is to be agreed with the Sub-contractor concerned and the chart shall be so designed to accommodate this information. At the end of each week the Contractor shall mark on the chart in a different colour the actual time taken to complete the respective stages and section of the works. The Contractor shall also show upon the chart the anticipated weekly labour strength required, divided into labourers and craftmen, and shall similarly mark up the actual numbers employed. The Contractor shall supply approved copies of the chart to the Project Manager. The Contractor shall liaise with the Project Manager, Nominated Sub-contractors and Nominated Suppliers to ensure that Contract Completion date remains unchanged.	
B	**TRAINING LEVY** The Contractor's attention is drawn to legal Notice No. 237 of October, 1971, (or such subsequent edition as may be current) together with the latest amendments (if any) which requires payment by the Contractor of a Training Levy at the rate of ¼% (one quarter per cent) of the Contract Sum on all Contracts of more than Ksh. 50,000.00 in value and his tender must include for all costs arising or resulting therefrom. Proof of Payment of this levy will be required.	
C	**VALUE ADDED TAX** The Contractor's attention is drawn to the Provisions of the Finance Bill, 1999 which requires payment by the Contractor of Value Added Tax (VAT) on construction services rendered. **The Contractor will included VAT in his rates**	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**WITHHOLDING TAX ON CONSULTANCY, AGENCY FEES AND CONTRACTUAL PAYMENTS SECTION 35 (3) (f) (i) (ii)** The Contractor's attention is drawn to the Kenya Revenue Authority (K.R.A.) Public and any other amendments thereafter Notice notifying the Tax paying public that with effect from 1st July, 2000, 2 % withholding tax is applicable to all payments made to residents persons in respect of Consultancy, Agency or Contractual Payments as follows ; i) To individuals recipients without a registered business name or without a Personal Identification Number (PIN) if the amount is Kshs. 24,000 or more per month ii) The recipient is a person working under a registered business name of having a Personal Identification Number (PIN) if the amount is Kshs. 200,000.00 or more in a month ….. In this case the payer should advice the commissioner of Income Tax of payments paid in writing immediately.	
B	**STANDARD LEVY** The Contractor's attention is drawn to Legal Notice No. 267 of 1990 (or such subsequent edition as may be current) together with the latest amendments (if any), which requires payment by all Contractor's Standards levy at the rate of 1/5% (one fifth per cent) of the ex-factory price in respect of manufacture during this each month subsequent to a ceiling of Ksh. 200,000.00 per Annum. The tenderer must allow for all cost arising or resulting therefrom. Proof of Payment of this levy will be required	
C	**SAFETY** The Contractor shall comply all times with the requirements of the Factory Act (Cap 514), Building Construction Rules, Supplement 18, Legal Notice No. 40 dated 5th April, 1984 to ensure that the safety of his workpeople and authorized visitors to the site is protected at all times. In particular, there shall be proper provision of planked footways and guardrails scaffolding, etc., protection against falling materials and tools and the site shall be kept tidy and clear of dangerous rubbish. The Contractor shall appoint a **Safety Officer** as required by the Factory Act and notify the Factory inspector of his name. The safety officer shall be on site at all times and all directions given by the Architect to the safety officer shall be deemed to be Architect's instructions, and shall be complied with promptly without additional cost to the Contract.	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
A	**PROTECTIVE CLOTHING** The Contractor shall provide all protective or any other special clothing or equipment for his employees that may be necessary. This shall include, inter-alia, safety helmets, gloves, goggles, earmuffs, gum boots, overall etc., according to the type of work. The Contractor shall ensure that safety helmets are worn by all Staff on site at all times.	
B	**PROPRIETARY MATERIALS** Where proprietary materials are specified here-in-after, the Contractor may propose the use of materials of other manufacture but of equal quality for approval by the Project Manager. All materials and goods where specified to be obtained from a particular manufacturer or supplier are to be used in accordance with their instructions.	
C	**STANDARD FORMS** Any tender with standard forms not filled as appropriate will be treated as non-responsive.	
D	**TENDER VALIDITY** Clause 3.6 of the Instructions to Tenderers has been amended to read: **Tenders shall remain valid for a period of One Hundred and Twenty (120) days from the date of Tender Opening and not Sixty (60) days.** All Tenderers are advised to note this amendment when filling the Form of Tender".	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
	PROJECT MANAGEMENT EXPENSES	
A	Provide a provisional sum of Kenya Shillings Nine Hundred Thousand (Kshs.900,000/=) only for the Project Management team Allowances for site visits, inspections, transport, airtime and stationery.	
B	Allow for Contractor's profits and overheads on A above.(….%)	
C	Provide a provisional sum of Kenya Shilling Six Hundred Thousand (Kshs.600,000/=) only for Clerk of Works expenses.	
D	Allow for Contractor's profits and overheads on C above.(….%)	
C	Provide a provisional sum of Kenya Shillings Three Hundred Thousand (Kshs.300,000/=) only for stationery expenses.	
E	Allow for Contractor's profits and overheads on C above.(….%)	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
	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** ……. 52 ***Weeks*** from date of Possession **Liquidated and Ascertained** At the rate of ***Kshs.50, 000.00*** per week or part thereof **Prime Cost Sums for which the Contractor desires to tender for**…… **Period of Interim Certificates:** ***Monthly*** **Minimum amount of interim certificates:** **Period of Honouring Certificates:** ***45 days*** **Percentage of Certified Value Retained** : ***10%*** **Limit of Retention Fund:** ***5%***	
	Carried to Collection	

ITEM	DESCRIPTION	KSHS
	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 page PP/5	
	Brought Forward from page PP/6	
	Brought Forward from page PP/7	
	Brought Forward from page PP/8	
	Brought Forward from page PP/9	
	Brought Forward from page PP/10	
	Brought Forward from page PP/11	
	Brought Forward from page PP/12	
	Brought Forward from page PP/13	
	Brought Forward from page PP/14	
	PARTICULAR PRELIMINARIES **TOTAL CARRIED TO GRAND SUMMARY**	

GENERAL PRELIMINARIES

ITEM	DESCRIPTION	AMOUNT
	GENERAL PRELIMINARIES	
A	**PRICING OF ITEMS OF PRELIMINARIES**	
	Preliminaries to the contract are mandatory conditions and responsibilities the contractor is required to fulfill for the complete and proper execution of the contract. The contractor is advised to read and understand all his obligations under preliminaries. Should he find that fulfillment of any of the items will lead to him incurring any cost not covered under measured works he shall price such works accordingly otherwise failure to price any item will be construed to mean that the tenderer has included it in other priced items in the bills of quantities.	
B	**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. The working hours shall be those generally worked by good employers in the in the Building and Civil Engineering trades in Kenya. No work shall be carried out at night or on gazetted holidays unless the "PROJECT MANAGER" shall so direct. No work shall be covered up nor shall any concreting be carried out in the in the absence of the Clerk of Works without prior approval of the "PROJECT MANAGER" in writing.	
C	**SITE**	
	The term “the Site” wherever used hereinafter and in all Contract Documents shall mean the lands and other places on, under or through which the works are to be executed or carried out and any other lands or places provided by the Employer for the purpose of the Contract. The Contractor is advised to visit the site and will be deemed to have acquainted himself with regard to the nature and position, means of access, risk of injury or damage to existing property, conditions undeunder which the work will have to be carried out, the supply of and conditions affecting labour and the facilities for obtaining the articles of materials referred to in these Bills of Quantities. No claim by the Contractor will be allowed on the grounds of any such matter or otherwise. The Contractor must obtain the approval of the Architect regarding the use of any materials found on site.	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
A	**INSURANCE** The Contractor shall insure as required in Condition No.15 of the Conditions of contract. No payment on account of the work executed will be made to the Contractor untill he has satisfied the "PROJECT MANAGER" either by production of an insurance Policy or and Insurance Certificate that the provision of the foregoing Insurance Clause have been complied with in all respects. Thereafter the "PROJECT MANAGER" shall from time to time ascertain that the premiums are duly paid up by the Contractor, who, if called upon to do so, shall produce receipted premium renewals for the "PROJECT MANAGER" inspection.	
B	**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.	
C	**QUALITY OF THE WORKS** The works should be of high quality and the contractor will be required to make samples of the work to be executed for approval by the PM before he commences the carrying out of the works. The contractor should allow for sample works in his rates accordingly. Incase a sample does not meet the standards set by the PM, the contractor shall be expected to make another sample at his cost until it is approved by the PM.	
D	**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 required by the "PROJECT MANAGER" for his approval or rejection and any other samples in case of rejection until such samples are approved by the "PROJECT MANAGER"and he may reject any materials or workmanship not in his opinion to be up to the 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 Ccontractor 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 Roads Public Works & Housing. 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.	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
A	**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 shall make whatever provisions may be required by the authorities concerned for the support, maintenance and protection of such services.	
B	**PREVENTION OF ACCIDENT, DAMAGE OR LOSS** The Contractor is notified that these works are to be carried out on a site where the Client is going on with other normal activities. The Contractor is instructed to take reasonable care in the execution of the works as to prevent accidents, damage or loss and disruption of normal activities being carried out by the Client. The Contractor shall allow in his rates any expense he deems necessary by taking such care within the site.	
C	**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.	
D	**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 the 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"	
E	**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 works and stains and leave in a clean and tidy state to the reasonable satisfaction of the "PROJECT MANAGER"	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
A	**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."	
B	**EXCEPTION TO THE STANDARD METHOD OF MEASUREMENT** Attendance Clause B19(a) of the Standard Method of Measurement is and the following clause is substituted:- Attendance on nominated Sub-Contractors shall be given as an item in and shall be deemed to include: allowing use of standing scaffolding, messrooms, sanitary conditions and welfare facilities; provision of special scalfolding where necessary, 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 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.	
C	**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 Bills of Quantities. All items 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.	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
A	**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 Measurements. Such sums are net and no addition shall be made to them for profit.	
B	**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 Measurements.Persons or firms nominated by the "PROJECT MANAGER" to execute work or to provide and fix materials or goods as stated in Condition No. 8 of the Conditions of Contract are described herein as Nominated Sub-Contractors. Persons or firms so nominated to supply goods or materials are described herein as Nominated Suppliers.	
C	**ADJUSTMENT OF P.C. SUMS.** In the final account all P.C. Sums shall be deducted and the amount properly expended upon the P.M's order in respect of each of them added to the Contract sum. The Contractor shall provide 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" (as previously described) following P.C. Sums shall be adjusted pro-rata to the physical extent of the work executed (not pro-rata to the amount paid) and this shall apply even though the Contractor's priced Bill shows a percentage in the rate column in respect of them. 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 MANAGERS" order added to the contract Sum. Such work shall be valued as described for variations in condition No. 22 of the conditions of Contract, but should any part of the contract be executed by a nominated Sub-Contractor, or any articles for the Work be supplied by a Nominated Supplier, the value of such work or articles shall be treated as P.C. P.C. Sum and profit and attendance comparable to that contained in the priced Bills of Quantities for similar items added.	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
A	**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 be 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.	
B	**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 as described in Condition No 8 of the Conditions of Contract 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".	
C	**NOMINATED SUPPLIERS** The cost of "**fix only**" materials to be obtained from Nominated Suppliers which are covered by Prime Cost or Provisional Sums shall include for taking delivery where directed, checking with invoices or idents, reporting and claiming damages for shortages and damaged goods, defraying demurrage, signing for as having been received in good order, transporting, unloading, storing, covering and protecting until the time of fixing, unpacking, replacing anything lost or damaged, sorting, assembling, hoisting to required levels and fixing as described. Before placing any orders with Nominated Sub-Contractors or Nominated Suppliers the Contractor must ascertain that the terms and conditions of the quotations and the dates of delivery of materials or execution of works comply with the terms of Contract and the Progress Schedule.	
D	**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 the 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
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 and measaured and paid for to the extent executed at rates provided in these bills.	
B	**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 and Public Works General Specification dated 1976 or any subsequent revision thereof which is issued as a separate document, and which which shall be followed in all respects unless it conflicts with the General Preliminaries, Trade Preambles or other items in these Bills of Quantities.	
C	**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 hereiin. No timber used for formwork, scalffolding or temporary works of any kind shall be used afterwards in the permanent work.	
D	**MATERIALS AND WORKMANSHIP** All materials and workmanship used in the execution of the works shall be of the best quality and description unless otherwise described. Any materials condemned by the Architect shall be immediately removed from site at the Contractor's expense. The standard of workmanship shall not be inferior to the current British codes of practice and / or equivalent Kenya Building Standards. No materials for use in the permanent construction are to be used for any temporary or other purpose other than that for which they are provided.	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
A	**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 is to include the materials of Main Contractor, and Nominated Sub-Contractors Suppliers.	
B	**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.	
C	**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 delivery thereof, as having received them in good order and condition, and will thereafter be responsible for any loss or damage and 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"	
D	**STORAGE OF MATERIALS** The Contractor shall provide at his own risk and cost where directed on the site weatherproof lockup sheds for the safe storage and custody of materials for the works and for the use of workmen engaged thereon and shall remove such 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.	
E	**MATERIALS FROM DEMOLITIONS** Any materials from demolitions and not re-used shall become the property of the Client/User. The Contractor shall allow in his rates for the cost of transporting, storing and securing the materials on site as directed by the "PROJECT MANAGER"	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
A	**SITE LEVELS AND SETTING OUT**	
	Before commencing the work the Contractor must arrange for and agree with the Employer's Representatives the existing site levels and similarly establish and agree a bench mark.	
	The Contractor shall set out the Works in accordance with the dimension and levels shown on the drawings and shall be responsible for the correctness of all dimensions and levels so set out by him and will be required to amend all errors arising from inaccurate setting out cost and expense. In the event of any error or discrepancies these shall be reported to by the Architect for his immediate attention.	
	No work shall be commenced by the Contractor until he has received written instruction from the Architect to adjust such discrepancies which may be proved. Upon receipt of such instructions the Contractor shall thereupon be responsible for adjustments necessary. No claim for extra expense or relief from the Provisions of Clause 5 of the Conditions of Contract based on any discrepancy or error in the dimensions or levels shown on the Drawings may be made thereafter.	
	Before any work is commenced by Sub-Contractors or specialist firms, dimensions must be checked on the site and . or building and agreed with the Contractor irrespective of the comparable dimensions shown on the drawings. The Contractor shall be responsible for the accuracy of such dimensions.	
B	**LABOUR REGULATIONS & FAIRWAGES**	
	The Contractor shall comply with the Regulation of Wages and Conditions of Employment Act and pay wages and other emoluments and observe working hours and Conditions of Labour not less favourable than the minimum remuneration and conditions of employment applicable in the district in which the work is carried out.	
	These regulations must be conveniently displayed at all times during the execution of the Contract for the information of employees in all places used for the execution of the Contract.	
	The Contractor shall furnish to the Architect if called upon to do so such particulars of the rates of wages, hours, and conditions of labour referred to above.	
	The Contractor shall recognize the freedom of employees to belong to Trade Unions and maintain daily records in English of time worked and wages paid to individual employees.	
	The Contractor shall be responsible for compliance by Sub - Contractors employed in the execution of the Contract with the aforementioned labour regulations.	
	Should a claim be made to the Architect alleging the Contractor's default in payment of fair wages of any workman employed on the Contract and if satisfactory proof thereof is furnished to the Architect by the Department responsible for labour for the time being, the Architect may, failing payment by the Contractor, pay the Claim out of any monies due or which may become due to the Contractor under the Contract	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
A	**SAFETY, HEALTH AND WELFARE OF WORK FORCE** The contractor shall allow for providing for safety, heath and welfare of work people and for complying with any relevant ordinances regulations or union agreements	
B	**NATIONAL INSURANCE AND PENSION FUND** The contactor shall allow for making any National Insurance or Social Security Fund or payments due in respect of his work force	
C	**HOLIDAYS AND TRANSPORT FOR WORK FORCE** The contactor shall allow for holiday and transport for work people and of complying with any relevant Ordinances Regulations or Union agreements.	
D	**OVERTIME** The Contractor shall be responsible for any extra costs for overtime arrangements he may consider necessary in order to complete the works within the Contract time unless otherwise instructed by the Architect. For any overtime worked in accordance with written instructions by the Architect, the Contractor shall be reimbursed in respect of such overtime to the extent only of the additional net cost of unproductive time payable over and above the basic hourly rates as Act, Building and construction Industry Wages Council and shall exclude any bonuses, profits and overheads.	
E	**DISTURBANCE OR NUISANCE** The Contractor shall allow for taking all necessary precautions in the order of execution of the works so as to avoid causing disturbance or nuisance to the occupants or any existing buildings on or adjacent to the works and to the public and for complying with the Architect instructions in this respect.	
F	**INTERRUPTION OF WORK** The Contractor is to allow hereinafter for all cost incurred by the interruption of work due to public parades, professions and the like.	
G	**BLASTING OPERATIONS** Blasting will only be allowed with the express permission of the Architect 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 Architect governing the use and storage of explosives.	
	Carried to Collection	

ITEM	DESCRIPTION	AMOUNT
	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 page GP/11	
	TOTAL GENERAL PRELIMINARIES CARRIED TO GRAND SUMMARY	

PREAMBLES AND PRICING NOTES

A. GENERALLY

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

B. MANUFACTURERS' NAMES

Where manufacturers' names and catalogue references are given 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 Public Works "Specification for Metric Sized Concrete Blocks for Building (1972)"

Walling of 100 mm thickness or under shall be reinforced with hoop iron 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 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 arises, 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 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 manufacture, he must inform the Project Manager and obtain approval in writing.

C. STRUCTURAL STEELWORK

All structural steelwork shall comply with the Ministry of Public Works "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
	ADMINISTRATION BLOCK				
	ELEMENT NO.1				
	SUBSTRUCTURES				
	Excavations				
A	Clear site of all shrubs and undergrowth including grubbing up of roots and dispose off as directed.	1,360	SM		
B	Excavate oversite average 150mm deep and cart away as directed	1,360	SM		
C	Excavate oversite to reduce levels commencing from stripped level not exceeeding 1.50meters deep	1,260	CM		
D	Excavate trenches for strip foundation not exceeding 1.5metres for reduced level	62	CM		
C	Ditto to column bases	42	CM		
	Filling and carting away				
D	Return, fill and ram with selected and approved excavated material around excavations	336	CM		
E	Load and cart away excavated materials from site	1,028	CM		
F	Hardcore filling in making up levels, exceeding 300mm thick in layers of 150mm maximum thickness.	930	CM		
G	Apply "Termidor" or any other similar and approved anti termite chemical treatment on blinded surfaces.	845	SM		
H	500 gauge polythene sheeting with sides and end laps as described laid on blinded surfaces	845	SM		
	Carried to Collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SUBSTRUCTURES-(CONTINUED)				
	Plain concrete (1:4:8) in				
A	50mm Thick blinding to strip foundation	247	SM		
B	Ditto to column bases	121	SM		
	Vibrated reinforced concrete grade 20/20 (1:2:4) in:				
C	Strip footing	49	CM		
D	Column bases	36	CM		
E	Columns	5	CM		
F	150mm Thick ground bed	845	SM		
	Sawn formwork to:				
G	Sides of strip footing	164	SM		
H	Sides of columns bases	121	SM		
J	Vertical sides of columns	30	SM		
K	Edges of floor bed 75 - 150mm high	71	LM		
	Steel fabric mesh reinforcement to B.S. 4483				
L	No. A 142 fabric weighing 2.22Kg/sm fixed in bed	845	SM		
	Steel reinforcement as described including cutting to length, bending, hoisting and fixing including all necessary tying wires and spacing blocks (all provisional)				
	Mild Steel Reinforcement				
M	All assorted sizes	9,000	KG		
	Carried to Collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SUBSTRUCTURES-(CONTINUED)				
	Natural stone walling in cement and sand (1:3) mortar and including reinforcing with 20 x 3mm thick hoop iron in every alternate course.				
A	200mm Thick walling	555	SM		
	Plinths				
B	12mm thick cement and sand (1:3) render to plinths	75	SM		
C	Prepare and apply three coats bituminous paint to rendered plinths	75	SM		
D	Allow for keeping the whole of the excavations free from all water; include for draining or other wise keeping all works free from water as necessary over the entire contract period		ITEM		
E	Allow for maintaining and upholding sides of excavations and keeping excavations clear of all fallen materials, rubbish etc		ITEM		
	Paving Slabs around building				
F	600 x 600 x 50mm thick precast concrete paving slabs bedded and jointed in cement and sand (1:4) mortar laid on and including 50mm thick sand bed	179	SM		
	Carried to Collection				
	COLLECTION				
	FROM PAGE AB/1				
	FROM PAGE AB/2				
	FROM ABOVE				
	TOTAL FOR ELEMENT NO. 1 (SUBSTRUCTURES) CARRIED TO SUMMARY	**KSHS**			

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2				
	REINFORCED CONCRETE SUPERSTRUCTURE				
	Vibrated reinforced concrete grade 20/20 (1:2:4) in:				
A	Columns	12	CM		
B	Beams	31	CM		
C	Ring beam	25	CM		
	Sawn formwork to:				
D	Sides columns	242	SM		
E	Sides and soffites of beams & ring beam	737	SM		
	Steel reinforcement as described including cutting to length, bending, hoisting and fixing including all necessary tying wires and spacing blocks (all provisional)				
	Mild Steel Reinforcement				
F	All assorted sizes	6,800	KG		
	TOTAL FOR ELEMENT NO. 2 (REINFORCED CONCRETE) CARRIED TO SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 3				
	WALLING				
A	200 mm wide approved quality 3-ply bituminous felt damp proof course under walls	412	LM		
B	150mm wide	63	LM		
	Concrete block walling in cement and sand (1:4) mortar reinforced with and including 25 x 3mm thick hoop iron in every alternate course				
C	200mm Thick walling externally	612	SM		
	Concrete block walling walling in cement and sand (1:4) mortar reinforced with and including 25 x 3mm thick hoop iron in every alternate course				
D	200mm Thick walling internally	514	SM		
E	150mm Thick walling internally	208	SM		
	Permanent ventilation				
F	Pair of permanent ventilation size 1000 x 300 x 200mm thick fixed with and including mosquito wire gauze	50	NO		
G	Leave or form hole in 200mm thick wall size 1000x 300mm wide	50	NO		
H	Eave filling to 200mm thick wall extreme height 300mm	148	LM		
	TOTAL FOR ELEMENT NO. 3 (WALLING) CARRIED TO SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO.4				
	ROOFING				
	Galvanized Box Profil IT4 sheets profile ; 26 gauge; prepainted				
A	Roof covering; 150mm laps on one end and one and a half corrugation side lap; fixed to angle section purlins with and including self-tapping screws and neoprene washers.	700	SM		
	All steel work is provisisional				
	Unframed; bolted				
B	75 x 50 x 2mm purlins	1,216	LM		
C	75 x 50 x 4mm ridge board	304	LM		
	Framed; bolted all to be Aluminium Zinc coated trusses				
	Roof trusses; hoisting 12metres above ground; Rate to include base plates and bolts, angle cleats, gusset plastes and all neccessary accessories all to structural Engineer,s details and specifications				
D	70 x 50 x 4mm wall plate	412	LM		
E	70 x 50 x 4mm ceiling joist	408	LM		
F	Ditto; rafters	490	LM		
G	Ditto; struts and ties	408	LM		
H	Ditto; king post	123	LM		
	Carried to collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	The following in second grade celcured and well seasoned cypress timber				
	Fascia Board				
A	225 x 25 mm thick wrot cypress fascia /barge boards fixed to end of rafters (m/s)	266	LM		
	Eaves				
B	50 x 50mm second grade celcured and well seasoned cypress timber brandering	512	LM		
C	Ditto but plugged	256	LM		
D	25 x 25mm Prime grade cypress timber slats at 75mm centres nailed to tie beams (m/s)	154	SM		
E	Coffee tray tacked to timber at eaves	154	SM		
	Rain water goods				
	Gutters				
F	150 x 100mm galvanized iron gutter gauge 24 fixed to fascia boards (m/s) with and including approved steel brackets at 1000mm centres	266	LM		
G	Extra over gutter for stopped ends	12	NO		
H	Ditto but for 100 mm diameter outlet	8	NO		
	Downpipe				
J	100 mm diameter galvanised iron downpipe gauge 24 fixed to wall with and including holder butts at 1000mm centres	30	LM		
K	Extra over downpipe for swanneck 1200mm long	8	NO		
L	Ditto horse shoe 300 mm long	8	NO		
	Carried to collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Decoration and painting				
	Knot, stain prepare and apply three coats oil gloss paint to:				
A	General surfaces of timber	54	SM		
B	Surfaces of timber 200-300mm girth	266	LM		
	Prepare and apply three coats gloss oil paint to:				
C	General surfaces of metal gutters	320	SM		
D	Surfaces of large pipes	19	SM		
	Carried to collection				
	COLLECTION				
	FROM PAGE MH/7				
	FROM PAGE MH/7				
	FROM ABOVE				
	TOTAL FOR ELEMENT NO. 4 (ROOFING) CARRIED TO SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO.5				
	DOORS				
	Metal grilled door comprising 75 x 50mm frame and 25 x 25 mm SHS welded and painted to clients satisfaction				
A	Door overall size 1500 x 2400 mm high	2	NO		
	Timber doors				
B	50mm thick hardwood 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.				
C	Door overall size 2400 x 2400 mm high	2	NO		
	Flush Doors				
	45mm thick semi solid core flash doors overall size 820 x 2060 mm high faced both sides with plain internal quality plywood and hardwood lipped all edges to approval.				
D	Door overall size 900 x 2400 mm high	27	NO		
E	Door overall size 1000 x 2400 mm high	30	NO		
	Wrot Cypress or other equal and approved :-				
F	150mm x 100mm Frame with two labours plugged	415	LM		
G	45 x 38mm architrave	830	LM		
H	25mm diameter quadrant	830	LM		
	Carried to collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Supply and fix the following ironmongery with screws to match.				
A	4 Lever mortice lock as per 'Union' Ref 2277	2	NO.		
B	3 Lever mortice lock and set furniture Ref.Union 2295.	57	NO.		
C	100mm Brass butts hinges	86	PRS		
D	40mm Diameter rubber door stops	59	NO.		
	Prepare and apply three coats polyurethane varnish to:				
E	General surfaces of timber	290	SM		
F	Surfaces between 200mm to 300mm girth	830	LM		
G	Ditto not exceeding 100mm girth	830	LM		
	Knot, prime, prepare and apply three coats gloss oil paint to:				
H	General surfaces of metal	15	SM		
	Carried to collections				
	From page AD/9 From above				
	TOTAL FOR ELEMENT NO. 5 (DOORS) CARRIED TO SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO.6				
	WINDOWS				
A	250 x 25mm Precast concrete window cill bedded and jointed with cement and sand (1:3) mortar	173	LM		
	Supply and fix the following purpose made mild steel louvered windows, comprising of heavy gauge 'Z' & 'T'sections framing including heavy duty blades welded to the frame and the like at appropriate angles, factory primed with red oxide primer. Allow for cutting and pining fixing lugs to concrete or masonry work jambs, bedding in cement and sand (1:3) mortar , pointing all round the frames in mastic, including all necessary polished brass ironmongery, all measured cut, and fabricated in accordance with the Architect's window schedule				
B	Window overal size1500 x 1500mm high	54	NO		
C	Window overal size1200 x 1500mm high	5	NO		
D	Window overal size1200 x 750mm high	5	NO		
E	Window overal size 900 x 300mm high	35	NO		
F	Window overal size 600 x 750mm high	20	NO		
	4mm Thick clear glass and glazing fixed with and including putty to steel windows				
G	Panes 0.1 - 0.5 square metres	131	SM		
	Ditto but obscure	23	SM		
	Prepare and apply three coats gloss oil paint to surfaces of metal				
H	Glazed surfaces; both sides (measured gross)	308	SM		
J	Ditto grilled surfaces; both sides (measured gross)	308	SM		
	Curtain Rod				
K	50mm Diameter brass coated curtain rods fixed with matching brackets and rings.	105	LM		
	TOTAL FOR ELEMENT NO. 6 CARRIED TO (WINDOWS)				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 7				
	EXTERNAL FINISHINGS				
	Walls				
	12mm thick gauged lime (1:2:9) plaster to :				
A	Rendering to walls and Beams	1,071	SM		
	Prepare and apply 12mm Thick wall master to plasterd walls				
B	Plastered surfaces of Walls	1,071	SM		
	TOTAL FOR ELEMENT NO. 7 (EXTERNAL FINISHES) **CARRIED TO SUMMARY**				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 8				
	INTERNAL FINISHES				
	FLOORS				
	Cement and sand (1:4) screeding smooth trowelled				
A	30mm thick screed prepared to receive granitto tiles	750	SM		
B	30mm thick screed prepared to receive non-slip ceramic tiles (m/s)	95	SM		
	Granito floor tiles jointed and pointed with matching cement sand (1:4) mortar: colour quality and pattern to the Project Manager's scheme in;				
C	600 x 600 x 8mm thick granito floor tiles fixed with an approved adhesive on prepared screed(m/s)	750	SM		
D	100 x 8mm skirting	567	LM		
	Non-slip ceramic floor tiles as 'Saj Ceramics' or other equal and approved jointed and pointed with matching cement sand (1:4) mortar: colour quality and pattern to the Project Manager's scheme in;				
E	300 x 300 x 8mm thick ceramic floor tiles fixed with an approved adhesive on prepared screed(m/s)	95	SM		
	Ceiling				
F	50 x 50mm celcured cypress timber brandering	2,348	LM		
G	Ditto but plugged	411	LM		
H	10mm thick chipboard ceiling nailed to timber brandering (m/s)	845	SM		
J	100 x 25mm Thick wrot softwood moulded cornice	411	LM		
	Prepare and apply three coats first grade plastic emulsion paint to:				
K	Chipboard ceiling surfaces	845	SM		
L	Timber surfaces not exceeding 100mm girth	411	LM		
	Carried to collections				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Walls				
	Cement and sand (1:4) backing				
A	15 mm thick to receive white glazed wall tiles	227	SM		
	White glazed ceramic tiles bedding and jointing in cement and sand (1:3) mortar and flush pointed with white cement:				
B	250 x 200 x 6mm Thick tiles	227	SM		
	Cement and sand (1:3) plaster				
C	12mm Thick to wall surfaces	2,495	SM		
	Prepare and apply three coats first grade plastic emulsion paint to:				
D	Plastered walls	2,495	SM		
	The following in Padded accoustic foam wall lining to walls and doors:				
E	50X50 mm sawn celcured cypress bearers; framing; plugged or nailed to walling at 600mm centers both sides	684	LM		
F	5mm Thick plywood backing onto timber bearers (m.s)	247	SM		
G	50mm Thick high-density Accoustic foam onto plywood	247	SM		
H	High quality rexin fabric complete with all necessary buttons stitched to padding in approved pattern	247	SM		
J	25mm thick wrot mahogany moulded Quadrant beading or any other equal and approved	413	LM		
	Carried to collections				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	COLLECTIONS From page AD/13 From page AD/14				
	TOTAL FOR ELEMENT NO. 8 (INTERNAL FINISHES) CARRIED TO SUMMARY				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SECTION SUMMARY				
A	**SUBSTRUCTURES**.....	AD/3			
B	**REINFORCED CONCRETE SUPERSTRUCTURE**.....	AD/4			
C	**WALLING**.....	AD/5			
D	**ROOFING**.....	AD/8			
E	**DOORS**.....	AD/10			
F	**WINDOWS**.....	AD/11			
G	**EXTERNAL FINISHES**.....	AD/12			
H	**INTERNAL FINISHES**.....	AD/14			
	TOTAL FOR MEASURED WORKS				

REPUBLIC OF KENYA
PROPOSED PHASE II ADMINISTRATION BLOCK FOR ALUPE UNIVERSITY COLLEGE

TENDER SPECIFICATIONS & BILLS OF QUANTITIES FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL INSTALLATION WORKS

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NOVEMBER 2020

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SPECIAL NOTES

1. These notes shall form part of the Instructions to Tenderers and Conditions of Contract.
2. Should the tenderer be in any doubt about the precise meaning of any item or figure for any reason whatsoever, he must inform the Principal, Alupe University College in order that the corrected meaning may be decided before the date of submission of tender.
3. No liability will be admitted nor claim allowed in respect of errors in the tender due to mistakes in the specification which should have been rectified in the manner described above.
4. The form of Tender is per the main works contract document
5. The Tender Security (Bank) is per the main works contract document
6. The evaluation criteria as per the main works document
7. The Conditions of Contract and Sub-contract Agreement as per the main works document
8. Sub-Contract Preliminaries and Conditions as per the main works document
9. The tenderer shall not alter or otherwise qualify the text of this specification. Any alteration or qualification made without authority will be ignored and the text of the specification as printed will be adhered to.
10. The tenderer shall be deemed to have made allowances in his unit prices generally to cover items of preliminaries or additions to Prime cost Sums or other items, if those have not been priced against the respective items.
11. The instructions to tenderers is per the main works contract document
12. The copyright of this specification is vested in the Engineers and no part thereof may be reproduced without their express permission, given in writing.
13. All the tenderers must make a declaration that they have not and will not make any payment to any person which can be perceived as an inducement to enable them to win this tender.
14. This is a domestic sub-contract
15. The electrical services sub-contractor must have current category of registration with National Construction Authority (NCA) in category 8 and above.
16. The electrical services sub-contractor must have current category of registration with Communications Authority of Kenya.
17. A copy of the agreement entered into by the main contractor and the sub-contractor administered by a commissioner for oaths shall be submitted with the tender and in case of a successful tender, the Form of Agreement, shall be signed so as to be legally binding among the contractor and the sub-contractor.

SECTION D

GENERAL SPECIFICATIONS

OF

MATERIALS AND WORKS

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

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2.25 Space Factor

2.26 Insulation

2.27 Lighting Switches

2.28 Sockets and Switched sockets

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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 GENERAL

This specification is to be read in conjunction with the drawings which are issued with it. Bills of quantities shall be the basis of all additions and omissions during the progress of the works.

2.2 STANDARD OF MATERIALS

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

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

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

2.3 WORKMANSHIP

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

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

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

2.4 PROCUREMENT OF MATERIALS

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

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

2.5 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.

2.6 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.

2.7 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.

2.8 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.

2.9 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.

2.10 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.

2.11 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.

2.12 CONDUITS AND CONDUIT RUNS

Conduit systems are to be installed so as to allow the loop-in system of wiring:
All conduits 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-contractor's 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, 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-contractor's expense.

It will be the Sub-contractor's 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 galvanised 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 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.

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
P.V.C 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.

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 cast cable hooks or clamps, of appropriate size to suit cables, fixed by studs and back nuts to their channel sections.

Alternatively, fixing shall be by BICC claw type cleating 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 backstraps described above which shall in turn be secured to walls or ceilings of ducts by rawbolts.

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 blackstraps 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 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.

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 Heller man 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*
1) **Main and Sub-Main**		
a) Phase	Red	Red
b) Neutral	Black	Black
2) **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.

(i) 1.5mm² for all lighting circuits indicated on the drawing.

Power circuits P.V.C cable (minimum sizes).

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

(iii) 2.5mm² for one 15Amp socket.

(iv) 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.

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 up to 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 STREET LIGHTING

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.

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.

The 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 metres. 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 coloured 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 enamelled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanised. 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 $35mm^2$ 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 fuseboards, 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 galvanised conduit and trunking, the trunking shall be deemed to be galvanised 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 galvanised 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 galvanised 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.

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

(g) 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.

(h) 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.

SECTION E

SCHEDULE OF CONTRACT DRAWINGS

SCHEDULE OF CONTRACT DRAWINGS

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

SECTION F

PARTICULAR SPECIFICATIONS

OF

MATERIALS AND WORKS

PARTICULAR SPECIFICATIONS

1.00 SITE LOCATION

The site of the proposed works is at **Alupe University College - Busia**

SCOPE OF WORKS

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

a) Electrical Works

This shall include conduiting, cabling, fittings and accessories.

b) Fire Alarm System

This shall include fire alarm control panel, smoke/heat detectors, sounders, break glass and earthing.

c) Structured Cabling

This shall include Data Switches, Data Outlets, Data Outlet Cabling and Fibre Cabling.

2.00 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 not be accepted.

3.00 NETWORK CABINETS

To be located inside the podium. Must be metallic (appropriately sized) with a front clear glass, freestanding, complete with lock and key and the following accessories;

a. Cable Management channel rack
b. Cable support hooks
c. Cable support rings and straps
d. Cable duct cover
e. Feed through cable panels
f. Vented equipment shelving
g. Blank filler panels
h. Hinged wall mounted brackets
i. Glass viewing window
j. Colored Designation strips
k. Management lock and key
l. Cooling extractor fans
m. Caster wheels

4.00 FLOOR SWITCH

Bidders **MUST** fill the proposed solution and attach **HIGHLIGHTED** datasheets/brochures to assess their conformity/compliance with each of the technical specifications.		
ITEM	**MINIMUM SPECIFICATIONS**	**PROPOSED SOLUTION**
Mounting	Rack Mount	
Switching	Layer 2	
Interfaces	24 No.10/100/1000 Mbps RJ45 PoE	
	4 No. 10G SFP+	
Console Port	RJ45 & Mini USB	
Management Port	RJ45	
Capacity	480 Gbps	
Power Budget	Up to 30W Per Port	
PoE Standard	IEEE 802.3af, 802.3at	
Power Supply	2 No. Hot Swappable	
Fan Modules	3 No. Hot Swappable	

5.00 CAT 6A PATCH PANEL

Bidders **MUST** fill the proposed solution and attach **HIGHLIGHTED** datasheets/brochures to assess their conformity/compliance with each of the technical specifications.		
ITEM	**MINIMUM SPECIFICATIONS**	**PROPOSED SOLUTION**
Port Density	24 No.	
Port Type	RJ45 Connector	
Cable Type	CAT 6A Shielded Twisted Pair	

6.00 FIBRE PATCH PANEL

Bidders **MUST** fill the proposed solution and attach **HIGHLIGHTED** datasheets/brochures to assess their conformity/compliance with each of the technical specifications.		
ITEM	**MINIMUM SPECIFICATIONS**	**PROPOSED SOLUTION**
Port Density	12 No.	
Port Type	LC Connector	
Cable Type	8 Core Multimode Fibre Cable	

7.00 FLOOR UPS

Bidders **MUST** fill the proposed solution and attach **HIGHLIGHTED** datasheets/brochures to assess their conformity/compliance with each of the technical specifications.		
ITEM	**MINIMUM SPECIFICATIONS**	**PROPOSED SOLUTION**
Mounting	Rack Mount	
Power	2 kVA	
Output Voltage	± 5%	
Output Frequency	50 Hz	
Topology	Line Interactive	
Transfer Time	<10ms	
Battery Type	Maintenance Free	
Battery Recharge	≤ 3 Hours	
Battery Life	5 Years	
Battery Capacity	490 Ah	
Control Panel	LCD Status Console	
Serviceability	Replaceable Battery	

8.00 CABLES

a. STP CABLE

The STP cable shall be category 6A compliant STP cable, with the following specifications;

a. 4-pair cables with 100-ohm impedance.
b. Compliant to standards such as TIA/EIA – 268-B. 2-1 and IEC 61156-5
c. Made of polyethylene insulation
d. Pulling force should support up to 50N/mm2
e. Low Smoke Zero Halogen outer sheath

b. OPTICAL FIBRE CABLE

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

a. Cable size: 8 core.
b. Termination: SC Duplex connectors.
    a. Rated Index: Nominal 62.5/125 micro. M

9.00 TESTING AND COMMISSIONING OF THE SYSTEM

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

a. Category 6A Cable Tests

i. Wire Map
ii. Length
iii. Insertion Loss (Attenuation)
iv. NEXT Loss
v. PSNEXT Loss

vi. ELFEXT Loss, pair-to-pair
vii. PSELFEXT Loss
viii. Return Loss
ix. ACR (Attenuation to crosstalk ratio)
x. PSACR
xi. Propagation Delay
xii. Delay Skew

b. Fibre Optic Cable Tests

i. Link attenuation (insertion loss)
ii. Length

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

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

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

i. Number of outlets
ii. Type of cable
iii. Date completed
iv. Type of Warranty

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

i. Updated floor plans
ii. Wire/cable routing schematic
iii. Facility assignment records
iv. Horizontal cable test results
v. Fibre Backbone test results

10.00 BACK BONE

Backbone cabling inclusive of switches and all necessary accessories shall be carried out in readiness for the termination of edge switches.
The Backbone cabling shall be flexible and allow for easy 'add on's' for future expansions. Hence enough capacity shall be allowed for future expansion.

11.00 DOCUMENTATION

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

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

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

12.00 WARRANTY AND SUPPORT

The Contractor will be required to give a per link warranty of at least fifteen (15) years for the structured cabling infrastructure and must provide a site certification certificate from the manufacturer of the cabling infrastructure not more than 30 days after completion of tests.

In the event of failure of the core switch, the contractor will be required to deliver any necessary parts on the next business day after determining that parts replacement is required, during the standard work week (8 hours a day, 5 days a week). This support will be carried out by a field engineer and will run for a period of **Twelve Months** from the date of commissioning of the LAN.

The contractor will be required to provide a **Twelve Months** warranty on the edge switches from the date of commissioning of the LAN.

13.00 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 equipment 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

14.00 BROCHURES AND TECHNICAL LITERATURE

Tenderers **MUST** enclose together with their submitted bids brochures detailing technical Literature and specifications of **ALL** components of the 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 will subsequently be disqualified.

SECTION G

SCHEDULE OF UNIT RATES

SCHEDULE OF UNIT RATES

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

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

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

SCHEDULE OF UNIT RATES

NO	DESCRIPTION	UNIT RATE (KSHS)
1	PVC/SWA/PVC Copper cables per meter a) 4.0 mm sq. 4 core b) 6.0 mm sq. 4 core c) 10.0 mm sq. 4 core d) 25.0 mm sq. 4 core e) 75.0 mm sq. 4 core f) 95.0 mm sq. 4 core g) 120.0 mm sq. 4 core	
2	IP 65 rated Isolators as SCHNEIDER, 3 Phase a) 20A b) 32A c) 63A d) 100A	
3	IP 65 rated Isolators as SCHNEIDER, Single Phase a) 20A b) 32A c) 63A d) 100A	
4	Distribution Boards a) 12 Ways TPN b) 6 Ways TPN	
5	Industrial Sockets outlets, 5 pin a) 20A b) 32A	
6	Industrial Sockets outlets, 3 pin a) 20A b) 32A	
7	LED Strip	

SECTION H

BILLS OF QUANTITIES

BILLS OF QUANTITIES

A) 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 two sections:

(a) 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.

(b) 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 THE BILLS OF QUANTITES

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 14% V.A.T

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. 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**.

Statement of Compliance

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

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

Signed: _____*for and on behalf of the Tenderer*

Date: _____

Official Rubber Stamp: _____

BILL 1: SCHEDULE No. 1: POWER SUPPLY

Item	Description	Qty	Unit	Rate (KShs)	Amount (KShs)
	Supply,Install,Test and Commission as per BS 7671:2008 the following as described below:				
	LV METERBOARD & SUB-BOARD				
1.1.01	Free Standing L.V Meter Board Constructed from Powder Coated, Heavy Gauge, 16SWG, Mild Steel. The board shall be complete with housing space for 1 No. K.P.L.C Ltd. 3 Phase Meter, Space for 3 Phase K.P.L.C Cut-Out Fuses & Space for C.T's. It shall also be complete with the following: i) 1No. 200A Digital Multimeter ii) 1No. 450A 4P Copper Busbars iii) 1No. 200A TP Adjustible MCCB Incomer c/w Shunt Trip iv) 5No. 40A TP MCCB Outgoers v) 1No. 100A TP MCCB Outgoer ix) 3No. TP Spareways x) 50 KVAR Automatic Stepped P.F Correction Bank, complete with Capacitors, MCCB, Contactors, P.F Regulator & All other associated items & accessories.	1	Item		
	Total Amount Carried Forward to Next Page				

BILL 1: SCHEDULE No. 1: POWER SUPPLY

Item	Description	Qty	Unit	Rate (KShs)	Amount (KShs)
	Brought Forward From Previous Page				
	Supply,Install,Test and Commission as per BS 7671:2008 the following as described below:				
1.1.02	Earthing of Meterboard comprising of Copper Earth Electrode 1500 mm. long and 15 mm. diameter enclosed by a 300 x 300 x 450 mm. Concrete Manhole with Cast Iron Cover complete with a 38 mm. diameter PVC Heavy Gauge Conduit to house 16 mm. sq. cable. bonded to Item 1.1.01 above.	1	Item		
1.1.03	200 x 200 x 75 mm. Heavy Gauge galvanized Steel Adaptable Box for Power Cables	8	No.		
1.1.04	100 mm. Ø H.G PVC DUCTS	200	LM.		
1.1.05	Trenching to a minimum depth of 700 mm, Laying, Sifting, Tiling, Back Filling and Compacting to Ground Level for Cables to the All Blocks.	200	LM.		
1.1.06	600 x 600 x 600 mm deep Manhole Complete with Cast Iron Cover.	10	No.		
1.1.07	Hatari Concrete Tiling Buried 400 mm underground for Item 1.1.05.	1	Lot.		
1.1.08	Fireman's Switch Circuit completely wired in 2 x 2.5 mm sq. heat resistant screened cables drawn in 20 mm Ø concealed Heavy Gauge PVC Conduits including all accessories excluding the switch.	100	LM.		
1.1.09	Fireman's Switch complete with Fire Resistant Housing.	1	No.		
1.1.10	50 mm. Ø H.G PVC DUCTS	100	LM.		
	Total Amount Carried Forward to Next Page				

BILL 1: SCHEDULE No. 1: POWER SUPPLY

Item	Description	Qty	Unit	Rate (KShs)	Amount (KShs)
	Brought Forward From Previous Page				
	Supply,Install,Test and Commission as per BS 7671:2008 the following as described below:				
	MAINS & SUB-MAINS CABLING				
1.1.11	Submains Cabling comprising 4C 16 mm^2 PVC/SWA/PVC CU cable buried in ground with all the necessary accessories from the **LV Meterboard** to **DBA .**	45	LM.		
1.1.12	Submains Cabling comprising 4C 16 mm^2 PVC/SWA/PVC CU cable buried in ground with all the necessary accessories from the **LV Meterboard** to **DBB .**	25	LM.		
1.1.13	Submains Cabling comprising 4C 16 mm^2 PVC/SWA/PVC CU cable buried in ground with all the necessary accessories from the **LV Meterboard** to **DBC .**	30	LM.		
1.1.14	Submains Cabling comprising 4C 16 mm^2 PVC/SWA/PVC CU cable buried in ground with all the necessary accessories from the **LV Meterboard** to **DBD .**	55	LM.		
1.1.15	**Mains** Cabling comprising 3C 50 mm^2 PVC/SWA/PVC CU cable buried in ground with all the necessary accessories to the **LV Meterboard.**	200	LM.		
	Total Amount Carried Forward to Summary Page				

BILL 1: SCHEDULE No. 2: GROUND FLOOR

Item	Description	Qty	Unit	Rate (KShs)	Amount (KShs)
	Supply,Install,Test and Commission as per BS 7671:2008 the following as described below:				
	LIGHTING POINTS				
1.2.01	Lighting Point wired in 3 x 1.5 mm^2 SC PVC insulated CU cables drawn in 20 mm Ø HG PVC conduits clipped onto the roof structure and suspended with hangers as the case may be including all accessories and excluding Switch Plates.				
	i) One way switched	109	No.		
	ii) Two way switched	9	No.		
	LIGHTING FITTINGS				
1.2.02	Light Fittings omplete with all Accessories and Lamps as follows:				
	a) Type B	31	No.		
	b) Type E	52	No.		
	c) Type W	26	No.		
	LIGHTING SWITCHES				
1.2.03	10A Ivory Switch Plates Flush Mounted on Masonry Wall as S**CHNEIDER or approved equivalent.**				
	i)One Gang One Way.	42	No.		
	ii)Three Gang Two Way.	10	No.		
	POWER POINTS				
1.2.04	13A Ring Mains **Socket Outlet Point** wired in 3 x 2.5 mm^2 SC PVC insulated CU cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric complete with all the necessary accessories excluding socket outlet plate.	45	No.		
1.2.05	Ditto Radial for **Hand Drier.**	10	No.		
	SOCKETS AND POWER SWITCHES				
1.2.06	13A Twin Switched Ivory Socket Outlet Plate as **SCHNEIDER or approved equivalent.**	45	No.		
1.2.07	20A dual Pole Switch Plate as **SCHNEIDER or approved equivalent.**	10	No.		
1.2.08	13A Fused Connection Unit as **SCHNEIDER or approved equivalent.**	1	No.		
	Total Amount Carried Forward to Next Page				

BILL 1: SCHEDULE No. 2: GROUND FLOOR

Item	Description	Qty	Unit	Rate (KShs)	Amount (KShs)
	Brought Forward From Previous Page				
	Supply,Install,Test and Commission as per BS 7671:2008 the following as described below:				
1.2.09	**Radial Power Point** wired in 3 x 4.0 mm^2 CU cable drawn in trunking complete with all the necessary accessories excluding Isolator for **Fountain**.	4	LM.		
1.2.10	**250mm x 50mm** deep two compartment metal trunking constructed from heavy gauge powder coated steel, and shall be complete with all accessories for coupling and earthing for power	100	LM.		
	i) Twin Outlet Plate	45	No.		
	ii) Dual Data/Telephone Outlet Plate	34	No.		
	iii)Carry out bonding throughout the entire length of the trunking and connect to earthing.	1	Item		
	DATA POINTS				
1.2.11	Data Points in concealed 25 mm Ø HG PVC conduit complete with all accessories and draw wire left inside.	34	No.		
	FIRE DETECTION AND ALARM				
1.2.13	**Smoke Detector Point** completely wired in wired in 2x1.5mm^2 heat resistant screened cables drawn in 20mmØ concealed HG PVC conduits including all accessories but excluding the detector.	28	No.		
1.2.14	**Heat Detector Point** completely wired in wired in 2x1.5mm^2 heat resistant screened cables drawn in 20mmØ concealed HG PVC conduits including all accessories but excluding the detector.	1	No.		
1.2.15	**Electronic Sounder and Beacon Point** completely wired in wired in 2x1.5mm^2 heat resistant screened cables drawn in 20mmØ concealed HG PVC conduits including all accessories but excluding the unit.	4	No.		
1.2.16	**Call Point** completely wired in wired in 2x1.5mm^2 heat resistant screened cables drawn in 20mmØ concealed HG PVC conduits including all accessories but excluding the unit.	4	No.		
	Total Amount Carried Forward to Next Page				

BILL 1: SCHEDULE No. 2: GROUND FLOOR

Item	Description	Qty	Unit	Rate (KShs)	Amount (KShs)
	Brought Forward From Previous Page				
	Supply,install,test and commission as per BS 7671:2008 the following as described below:				
1.2.17	**Addressable Resettable Call Unit** incorportating integral short circuit isolator and reset key as **Honeywell or approved equivalent.**	4	No.		
1.2.18	**Addressable Photoelectric Heat Detector** with integral short circuit isolator as **Honeywell or approved equivalent.**	1	No.		
1.2.19	**Addressable Photoelectric Smoke Detector** with integral short circuit isolator as **Honeywell or approved equivalent.**	28	No.		
1.2.20	**Addressable Indoor Wall Sounder** with Strobe Light and built in short circuit isolator as **Honeywell or approved equivalent.**	4	No.		
1.2.21	**1 Loop Addressable Fire Alarm Panel** complete with 72 hour stand by batteries, test and reset buttons and supervisory buzzer as **Honeywell or approved equivalent.**	1	No.		
	DISTRIBUTION BOARDS				
1.2.22	**6-way 100A TPN DB** Recessed complete with 100A TP Integral Isolator, Lockable Cover and all Accessories excluding MCBs as **SCHNEIDER or approved equivalent.**	4	No.		
1.2.23	The following MCBs as **SCHNEIDER Type B or approved equivalent.**				
	i) 10A SP	20	No.		
	ii) 15A SP	4	No.		
	iii) 32A SP	8	No.		
	iv) 40A TP	8	No.		
	v) Blanking Plates	40	No.		
	Total Amount Carried Forward to Next Page				

BILL 2: SCHEDULE 1: STRUCTURED CABLING

Item	Description	Qty	Unit	Rate (KShs)	Amount (KShs)
	Supply, Install, Test and Commission the Following:				
	HORIZONTAL CABLING				
2.1.01	RJ45 CAT 6A STP Face Plates as described in the Particular Specifications.	34	No.		
2.1.02	3M RJ45- RJ45 CAT 6A STP Factory Terminated Patch Cord as as described in the Particular Specifications.	34	No.		
2.1.03	1M RJ45- RJ45 CAT 6A STP Factory Terminated Patch Cord as as described in the Particular Specifications.	34	No.		
2.1.04	CAT 6A STP Cable as as described in the Particular Specifications pulled between **Items 2.1.01** and **2.1.06.**	510	No.		
	CABINETS				
2.1.05	15U Network Cabinet as described in the Particular Specifications.	4	No.		
2.1.06	CAT 6A Patch Panel as described in the Particular Specifications.	4	No.		
2.1.07	Fibre Optic Patch Panel as described in the Particular Specifications.	4	No.		
2.1.08	Cable Manager as described in the Particular Specifications.	4	No.		
2.1.09	Floor UPS as described in the Particular Specifications.	4	No.		
	ACTIVE COMPONENTS				
2.1.10	Floor Switch as described in the Particular Specifications.	4	No.		
	BACKBONE CABLING				
2.1.11	8 Core Multimode Fibre Optic Cable pulled between **Item 2.1.07** and the **Existing Server Room.**	300	LM.		
2.1.12	LC-LC Fibre Patch Cable between **Item 2.1.07** and **Item 2.1.10**.	4	No.		
	Total Amount Carried Forward to Price Summary Page				

SCHEDULE OF LIGHT FITTINGS

Item	Description
	LIGHTING FITTINGS
	Light Fittings complete with all accessories and lamps as follows:
a)	**Type B** IP 65 LED Weatherproof 1200mm Luminaire, 29W,117Lm/W, 4000K LED,50000 hrs Lamp Life, Polycarbonate Housing and Optical Cover as **PHILLIPS or approved equivalent.**
b)	**Type E** Standard Surface 600 X 600mm Panel Light, 41W, 100Lm/W, 4000K LED, 50000 hrs Lamp Life, Stainless Steel Housing and Aluminum Rim, Polystyrene Diffuser with Integral Control Gear as **PHILLIPS or approved equivalent.**
c)	**Type W** Circular 11W, 4000K, 115Lm/W, 50000 hrs Lamp Life, Surface Ceiling Light with Plastic Housing and Polycarbonate Diffuser as **PHILLIPS** for **Washrooms**.
	In addition, the LED Fittings should meet the following: 1. Operating Voltage Range: 130-300V AC 2. Operating Frequency Range: 45-55Hz 3. Power Factor: ≥ 0.9
	Bidders **MUST** provide technical brochures of the LED fittings to determine their compliance with the above specifications.

MAIN SUMMARY PAGE

ItemNo.	Description	Amount(KShs)
1.00	Bill No. 1 Schedule No. 1 Power Distribution	
2.00	Bill No. 1 Schedule No. 2 Ground Floor	
3.00	Bill No. 2 Schedule No. 1 Structured Cabling	
	Total Amount for Electrical Installations Fowarded to the Main Summary Page	

AMOUNT IN WORDS

Kenya Shillings .....

.....

Bidder's Official Stamp .....

P.O. Box.....

Signature.....

PIN.....VAT.....

PROPOSED PHASE II ADMINISTRATION BUILDING FOR ALUPE UNIVERSITY IN BUSIA COUNTY.

FOR

ALUPE UNIVERSITY

PLUMBING AND DRAINAGE INSTALLATION WORKS

SPECIFICATIONS AND BILLS OF QUANTITIES

FOR

SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING

OF

PLUMBING AND DRAINAGE INSTALLATION WORKS

TABLE OF CONTENTS

SECTION A

GENERAL MECHANICAL SPECIFICATIONS

SECTION A

GENERAL MECHANICAL SPECIFICATION

SECTION A

GENERAL MECHANICAL SPECIFICATION

1.01 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.

1.02 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.

1.03 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

1.04 **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.

1.05 **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.

1.06 **Site Supervision**

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

1.07 **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.

1.08 **Testing**

1.08.1 General

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

1.08.2 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.

1.08.3 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.

1.08.4 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.

1.09 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.

1.10 **Welding**

1.10.1 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.

1.10.2 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.

1.10.3 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.

1.10.4 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 B

PARTICULAR SPECIFICATIONS FOR PLUMBING AND DRAINAGE INSTALLATION WORKS

PARTICULAR SPECIFICATIONS FOR PORTABLE FIRE EXTINGUISHER AND HOSEREEL SYSTEM INSTALLATION WORKS

PARTICULAR SPECIFICATIONS FOR SOLAR HOT WATER HEATING INSTALLATION WORKS

PARTICULAR SPECIFICATIONS FOR PLUMBING AND DRAINAGE INSTALLATION WORKS

GENERAL

This section specifies the general requirements for plant, equipment and materials forming part of the plumbing and drainage installations.

MATERIALS AND STANDARDS

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.

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.

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'.

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.

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.

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.

INSTALLATION

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.

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.

TESTING AND INSPECTION

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.

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.

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

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.

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.

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.

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.

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.

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.

BOOSTED HOSE REEL SYSTEM

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.

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.

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.

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.

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.

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.

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.

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

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.

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.

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.

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.

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.

Signage-Fire Instruction /Fire Exit

Fire 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.

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.

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.

GENERAL SOLAR WATER HEATING SPECIFICATIONS

SOLAR WATER HEATING SYSTEM

<u>GENERAL SOLAR WATER HEATING SPECIFICATIONS</u>

1.1.0 QUALITY OF MATERIALS AND WORKMANSHIP

1.1.1 General

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

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

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

Where particular manufacturers are specified herein, na alternatives makes will be considered, and the Engineer shall be allowed to reject any other makes.

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

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

The works shall be carried out strictly in accordance with:

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

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

1.1.2 Solar Panel – Construction

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

1.1.2.1 Solar Panel – External Construction

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

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

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

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

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

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

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

1.1.2.2 Solar Panel - Internal Construction

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

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

b) **Heat Exchanger**

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

The collector to be pressure tested to withstand a pressure of 8 kg/cm^2. whichever is greater. In general, collectors shall be pressure tested at 15 times the rated operating gauge pressure of 8kg/cm^2, which ever is greater.

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

c) **Insulation**

The underside of the absorber, inclusive headers and the outer casing internal sides shall be insulated with 50 mm fibre glass insulation, minimum density 64 kg/m^3. The insulation shall be non-combustible and shall withstand maximum continuous operating temperature of 200°C(and minimum operating temperature of –50°C).

1.1.2.3 Hot Water Solar Cylinder

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

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

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

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

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

(f) Cladding
The insulation shall be fully laded with 24 gauge galvanized M.S. Sheet.

1.1.2.4 Flow and Return Pipework

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

1.1.3 INSTALLATION

1.1.3.1 Solar panel

a) Location

The solar panel shall where physically possible be installed facing South. Where it is not practical for the solar panel to face due South, the maximum allowance variation shall be 45^0.

b) Angle of Inclination

The solar panels for maximum efficiency should be fitted at an angle equal to the latitude of the installation area. Minimum angle of inclination should be 5^0.

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

1.1.3.2 Solar Cylinder

a) For Standard Thermosyphon

The solar cylinder shall maintain a minimum horizontal distance of 300mm above the highest point of the solar panel installation

b) For low Thermosyphon

The solar cylinder shall maintain a flow line up grade of 1. 20 minimums where the low profile thermosyphon system is utilized.

1.1.3.3 Flow and Return Pipework

(a) Joints

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

(b) Penetration through Roof decking.

Where pipes penetrate the roof decking, they shall be provided with a sleeve that fits around the pipe making a weatherproof joint between roof and pipe.

(c) Insulation

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

All insulation for supply and return pipework in roof space shall be covered with cotton canvas.
All insulation shall be in accordance with BS. 1334 unless otherwise specified.

1.3.3.4 Drain, overflow and Vent Pipework

(a) The drain and overflow pipework from the solar cylinder shall Terminate approximately 75 mm away from the nearest drain outlet.

(b) Vent pipe from the solar cylinder shall terminate approximately 150 mm over the top water level in the solar cylinder feed tank.

(c) Provided drain valve for the solar panel. Drain valve shall be firmly Clamped in order to avoid leaks at the joints during operation.

1.3.3.5 Valves

(a) Copper alloy gate valves complying with BS.1952 shall be installed on flow and return pipework prior to it being connected to the solar cylinder.

(b) The solar cylinder and panel shall be supplied with stop valves for Draining and to comply with BS 1010.

1.3.3.6 <u>Inter connection of solar panels</u>

Shall be done utilizing Neoprene tubing or Stainless Steel connector or equivalent, fitted with clamps and able to withstand the working pressure.

1.3.3.7 Precaution

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

1.1.4 Alternate Solar Heating System

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

1.1.5 Test and Efficiency Certificates

The Contractor shall provide test and efficiency certificates for the solar panels proposed for the installation in accordance with methods outlined in ASHRAE 23-77.
Certificates for the following tests shall be provided:

1. No flow 30 day exposure
2. Peak exposure test
3. Solar collector Thermal Shock/Water spray test
4. Solar Collector Thermal Shock/Cold Fill test
5. Solar Collector leak and pressure test
6. Thermal efficiency/performance test.

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

1.1.6 Pipework above Ground

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

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

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

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

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

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

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

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

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

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

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

Pipe runs shall be secured by pipe clips connected to pipe hangers, wall brackets or trapeze type supports. 'U' bolts shall not be used as a substitute for the pipe clips without prior approval of the Engineer. An approximate guide to the maximum permissible supports spacing in meters for the steel and copper pipe is given in the following table for horizontal runs.

Size Nominal Bores	Maximum support Spacing
15mm	2.0m
20mm	2.5m
25mm	2.5m
32mm	3.0m
40mm	3.0m
50mm	3.0m
65mm	3.5m
80mm	3.5m
100mm	4.0m

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

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

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

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

1.1.6.1 Galvanised Mild steel Tubing

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

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

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

All changes of direction shall be obtained by us e of proper fittings. Formed bends shall not be accepted.
Long screw connectors and flat-faced unions shall not be used, unless otherwise specified.

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

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

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

1.1.6.2 Copper Tubing

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

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

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

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

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

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

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

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

1.1.6.3 Valves, Cocks, Taps Etc.

Gate Valves

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

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

Globe Valves

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

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

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

Check or Non-Return Valves

All check or non-return valves up to and including 65 mm nominal bore shall be of the swing check type of bronze construction in accordance with B.S. 1953.

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

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

Ball Float Valves

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

(i) Low pressure – 3.588 bar maximum
(ii) Medium pressure – 7. 725 bar maximum.
(iii) High pressure – 12. 620 bar maximum.

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

Safety Valves

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

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

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

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

1.1.6.4 Thermal Insulation

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

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

Insulation shall be fiberglass, minimum density 64 kg/m^3. Premolded fittings shall be used, or if unavailable, metered sections or built-up blanket insulation shall be used.

Insulation shall be fastened in concealed locations with aluminium bands or soft annealed wires and shall be fastened in exposed locations with aluminium bands, 30 cm. (12inches) o.c.

Each pipe item shall be insulated separately. Insulation must be carried through or around hangers.

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

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

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

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

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

1.1.7 Water Storage Tanks

1.1.7.1 Cold Water Storage Tanks

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

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

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

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

1.1.7.2 Thermal Storage Water Heaters

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

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

Electric thermostatically controlled immersion heaters shall comply with B.S. 3456: Section 2:21 and C.P. 324.202.

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

1.1.7.3 Pressure Vessels

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

1.1.8 Protection of metal surfaces

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

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

All metalwork shall be protected by either:-

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

Or

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

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

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

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

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

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

5 mm thick and over	-	610 to 630 g/m (87 –90 um)
Under 5 mm but not less than 2 mm	-	460 to 490 g/m (66 – 70 um)
Under 2 mm but not less than 1 mm	-	335 to 350 g/m (48 – 50 um)
Grey and malleable iron castings	-	610 to 630 g/m (87 – 90 um)
Threaded work and other articles which are centrifuged	-	305 to 315 g/m (44 –45 um)

For conversion to coating thickness unit weight of zinc shall be assumed 7 g/cm^3. The values stated shall be taken as minimum average values for a set of samples. Individual minimum values shall be introduced as the above mentioned minus 10%.

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

1.1.9 Instrumentation

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

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

Pressure gauges shall be fitted with shutoff cock, read in the pressure range of system, minim 12 cm. (4 $^1/_2$ inch) dial, adjustable angle face, white face with black figures and pointer.

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

Thermometers shall be mercury actuated, 12 cm (4 $^1/_2$ inch) dial, adjustable angle face with black figures and pointer.

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

1.2 COMMISSIONG AND MAINTENANCE

1.2.1 <u>Commissioning and Testing</u>

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

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

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

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

Before handing over, the tenderer shall confirm that the installation has been examined, tested, is ready for use, that it will operate and can be maintained efficiently.

The whole of the solar heating installation shall be tested to the satisfaction of the Engineer and the Local Authority.

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

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

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

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

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

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

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

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

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

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

1.2.2 Spare Parts

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

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

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

1.2.3 Defects Liability and Contractual Maintenance Period

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

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

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

The tenderer shall allow in his Contract price for this maintenance and inspection service and shall provide for all tools, instruments, plant and scaffolding, and the transportation thereof, as required for the correct and full execution of these

obligations, and the provision, use or installation of all materials whether they are normal maintenance materials such as oils, greases, sandpaper, etc. and parts which are periodically renewed such as relay contracts or parts which are faulty for any reason whatsoever excepting always Acts of God such as a storm, tempest or flood, lightning and earthquake; civil revolt, acts of war and vandalism.

1.2.4 Maintenance Manual

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

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

The manual must be specially written and not standard manufacturers manual unless approved by the Engineer.
Tags giving instructions are not permitted. All instructions must be written into the manual with reference to the drawings.
All valves, terminals and controls on the plant shall be labeled to correspond with the maintenance and operation manuals.

1.2.5 Maintenance and Service After Expirations of the Contractual Maintenance Period

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

The terms of any such agreement shall not be less beneficial to the Client, than the terms of agreement for other similar installations.

SOLAR WATER HEATING SYSTEM TECHNICAL QUESTIONNAIRE

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

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

2. Construction Details of the Collector:

Aperture Dimensions & Area (m & m^2)…….

Gross Dimensions & Area (m & m^2)…….

Dimensions and Area absorbing surface (m & m^2)……..…….

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

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

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

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

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

8. Normal Operating Temparature Range °C…….

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

10. Collector's Performance Efficiency:……

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

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

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PARTICULAR SPECIFICATION FOR THE DESIGN, SUPPLY AND ERECTION OF WATER STORAGE TANKS

1.0 Description of Site

The Sub-contractor is deemed to have visited the site at Butere Girls High School, Vihiga County and if unable to locate it or its details apply to the Principal Secretary, Ministry of Transport, Infrastructure, Public Works, and Urban Development, Nairobi.

No claims will be allowed for the travelling or other expenses, which may be incurred by the sub-contractor's works.

2.0 Scope of Contract

The work to be carried out under, this contract comprises the designs, manufacture, supply, delivery, erection, together with testing and commissioning of steel tank as here-in specified.

All work shall be performed in straightforward manner by competent workmen under skilled supervision to the entire satisfaction of the project manager.

3.0 Compliance with Regulations

The contractor shall comply in all respects to the provisional and regulations of the By-laws of the Local Authority, Kenya Building Code, as 449 Part B5 1964. BS 4211, CP2 chapters V part 1 and 2 MOPW Structural steel work specification (1973) code of practice for design and construction of buildings and structures in Relation to Earthquake (1972) wherever applicable to the sub-contract works.

The Structural Engineer shall be responsible for the design of the foundation subject to giving approval of the sub-contractor's design of the tower and due allowance should be given for this work to be carried out in sub-contractors programme of works. The main contractor is responsible for the construction of the foundation in accordance with approved designs.

4.0 Structural Drawings and Calculations

2No copies of general arrangement and fabrication drawings properly dimensioned and detailed showing the whole tower and its accessories together with 2No copies of the structural calculations complying with all the relevant BS and CP are to be submitted for approval prior to the commencement of the work.

The calculations are to indicate the maximum downward and upward loads on the foundations for the Engineer to design the foundation

5.0 Steel Water Tanks

The tank shall be **galvanized** pressed steel sectional tank complying in all respects to BS 1564 Types 1 or 2 unless otherwise specified. The jointing materials shall be non-toxic and non-insoluble to water and the tank cover shall be joined throughout the tank top ensuring that the joint is both water proof and dust proof.

Cover framing and members shall be designed to withstand supper imposed loading complying with the requirement complying with the requirements of CP2 Chapter V part 1 and BS 149 Part 2.

All internal stays are to be provided as required by the tank manufacture and the Sub-contractor shall be responsible for ensuring the stays are adequate in number and position and properly tightened. Access manhole with hinged cover together with a filtered vent outlet shall be installed.
The Sub-contractor is to notify the Engineer of the type of panel he is proposing to use and the manufacturer who is to be approved.

The inflow and outflow connection shall be as shown on the drawing.
The outflow supply pipe shall be at least 50mm above the tank bottom while the inflow pipe shall be 200mm below the tank rim. The overflow pipe shall be about 1500mm long, away from the tank. The drain pipe shall be at the lowest part of the tank.

5.1 Low Level Tank

It shall be constructed of **GALVANIZED** 1000 x 1000mm pressed steel plates of 6mm thickness, having a capacity of **AS INDICATED IN THE BILLS OF QUANTITIES**

Preferred Dimensions

(a) Length – 5.0m
(b) Height – 3.0m
(c) Width– 5.0m
(d) Plate thickness: – 6mm

5.2 High Level Tank

Tank Capacity: **AS INDICATED IN THE BILLS OF QUANTITIES**. It shall be constructed of **GALVANIZED** 1000 x 1000mm pressed steel plates of 6mm thickness.

5.2.1 Preferred Dimensions

(a) Length – **AS INDICATED IN THE BILLS OF QUANTITIES**
(b) Width – **AS INDICATED IN THE BILLS OF QUANTITIES**
(c) Height – **AS INDICATED IN THE BILLS OF QUANTITIES**
(d) Plate thickness: – 6mm

Height from ground level to the underside of the tank shall be **AS INDICATED IN THE BILLS OF QUANTITIES**
The tanks in clause 2 shall be complete with:

1. 65mm and 50mm diameter inflow connection (Council and Borehole Supply)
2. 100mm diameter outflow connection
3. 100mm diameter washout pipe
4. 100mm diameter overflow pipe
5. 1No. level regulator
6. 1No. Water level indicator
7. 1No. steel cover and manhole
8. 1No. internal ladder
9. 1No. external ladder to 3m off-ground level with cage
10. 1No. perimeter walkway and handrail around the tank

6.0 Pipework

The sub-contractor shall supply and fix all pipe work and fitting up to ground level as detailed on the drawing or in this specification. All pipe work shall be adequately supported and secured to the tank structure. The washout pipe shall have a bend leading to a reasonable place where the drainage will not interfere with the structure, preferably at about 300mm above ground.

The inflow, outflow and washout pipes shall be fixed against the tower structure so as to facilitate fixing and good support. All pipe work shall be medium grade galvanized steel and must conform to BS 1987 and 1967 class 'B'.

The sub-contractor shall provide high pressure ball valve capable of coping with the maximum area's local water supply pressure.

7.0 Access Ladder

Internal ladders shall be supplied for the tank and shall be fixed adjacent at the manholes but easily removable for cleaning the inside of the tank (i.e hooked connection).

The tanks shall be provided with an external ladder from the platform leading to the manhole and complying to BS 4211. The stringers shall be parallel, minimum width 15 inches apart and of flat bar of minimum dimensions 1½" by 2/8 inches. The rugs shall be of round bars not less than ¾ inches diameter and the distance between centres shall be 9 – 10 inches. The external ladder shall be fitted with safety hoofs made to conform to BS 4211.

The tower external ladder shall be as above but have a half landing 8M above ground level complete with a 6mm thick checked base plate and an appropriate protection safety handrail.

8.0 Platform

The tower, in galvanized steel, shall have a periphery walkway at tank level having minimum width of 600mm clear between the edge of the tank and the inside of the protective safety handrail. The platform is to be provided with a steel chequered plate floor of similar approved and to be completely sealed so as not to allow anybody or items such as bolts and spanners to fall on persons on the ground.

There shall also be a ladder from the ground to the platform complete with a cage, all in steel. The ladder shall be firmly fixed to the tower.

All loading for the design of the platform are to be provided in the structural calculations.

9.0 Painting

The tank shall be painted inside with one coat of bituminous non-toxic paint (or any other equivalent and approved) and on the outside with coat of primer before erection. After erection, the tank inside shall be painted with two coats of aluminium paint. The other structures shall be cleaned and painted one coat lead oxide or red lead before erection and two coats of aluminium paints after erection. All the painting shall be approved by the Engineer.

10.0 Erection

The sub-contractor shall erect the tank complete, on foundation prepared and designed by others and with all necessary pipes, ladders, tower etc. as listed herein and shown on the drawing.

The main contractor shall prepare the foundation to the sub-contractor's and Structural Engineers details. The main contractor shall also concrete or ground in the HD bolts to the sub-contractor's requirements.

11.0 Testing

Testing shall be done by filling the tank with water after erection. The water will be from the local supply and the main contractor shall apply from the Authority for connection. Testing shall be witnessed by the Project Manager or his representative.

11.1 Guarantee

The sub-contractor shall guarantee the tanks against leaks, and the tower for a period of (12) months form the Handover date. Any damage incurred due to bad workmanship shall be made good by the contractor.

SECTION C

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 summary page must be carried forward to the **main summary for Main Works**

6. The technical schedule of items to be supplied MUST be filled.

1. Statement of Compliance

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

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

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

Date: ……..

Official Rubber Stamp: ……

BILL NO.1: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) Suite** Close-coupled WC suite ('S' or 'P'-trap) in approved colour complete with horizontal outlet to BS 3402 with 7.5 litre valveless low level ceramic cistern and fittings including siphon, 15mm diameter side inlet ball valve, 20mm diameter side overflow, plastic flush bend, dual flush system, inlet connection, chrome-plated lever and heavy plastic seat and cover with metal top fixed (chrome plated) hinges. All to be as **IDEAL STANDARD** water closet or equal and approved.	4	No.		
B	**Water Closet (WC) Pan** Close-coupled WC suite ('S' or 'P'-trap) in approved colour complete with horizontal outlet to BS 3402 fittings including siphon,chrome-plated lever and heavy plastic seat and cover with metal top fixed (chrome plated) hinges. All to be as **IDEAL STANDARD** water closet or equal and approved.	10	No.		
C	**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 **PLUMBER** or equal and approved.	10	No		
	Total Carried Forward to Collection Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**Wash hand basin (WHB)** Countertop Wash hand basin size 560 x 440mm with one tap hole, 32mm diameter chrome plated chain waste, chain stay hole, chrome plated non-conculsive time delay press action pillar tap as Cobra model and chrome plated bottle trap (32mm 'P' trap) with 75mm seal. To be of **IDEAL STANDARD** washhand basin or equal and approved.	12	No		
B	**Wash hand basin (WHB)-Pedestal** Pedestal wash hand basin size 650 x 500mm with one tap hole, 32mm diameter chrome plated waste, pedestal, chrome plated non-conculsive time delay press action pillar tap and heavy duty plastic bottle trap (32mm 'P' trap) with 75mm seal. To be of **IDEAL STANDARD** washhand basin or equal and approved.	4	No.		
C	**Toilet Roll Holder** Fully recessed toilet roll holder in Vitreous China of size 165 x 165mm in approved colour as **IDEAL STANDARD** or equal and approved.	15	No.		
D	**Toilet Brush and Holder** Wall mounted toilet brush holder and brush of approved colour as **IDEAL STANDARD** toilet brush set or approved equivalent.	15	No.		
E	**Mirror** 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.	25	No.		
G	**Paper Towel Dispenser** Wall Mounted High Quality ABS Plastic Paper Towel Dispenser Hand Towel Dispenser Hand Tissue Paper Holder white wall mounted	9	No.		
	Total Carried Forward to Collection Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**Soap Dispenser** 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 **MEDICLINIC** or approved equivalent.	12	No.		
B	**Hand Driers** 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 **MEDICLINIC** or approved equivalent.	9	No.		
C	**Urinals bowls** 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. Allow for ceramic 5 litre cistern with connecting flush pipe.All fittings shall be as **IDEAL STANDARD** or equal and approved.	6	No		
D	**Urinal Bowl Divisions** Ceramic urinal bowl divisions separating the above described urinal bowls fixed firmly on the wall. The fittings shall be as **IDEAL STANDARD** or equal and approved.	6	No		
E	**Urinal Bowl Flush Valves** 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 **PLUMBER** 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 UNIGHIR 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 Tapis 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 Shower Facility** Wheel chair accessible shower facility Comprising of the following:- **i**) shower rail **ii**) shower curtain **iii**) concealed shower valve with hose **iv**) shower diveter **v**) support rails **vi**) folding shower back seat and support **vii**) vandal resistant fixed shower head all to be as Twyford Doc M shower pack	0	Set		
	Total Carried Forward to Collection Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A	**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. **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.	1	Set		
	Total Carried Forward to Collection Page				

COLLECTION PAGE

Item	Description	Amount (Kshs)
1	Total Carried forward from above ……	
2	Total Carried forward from above ……	
3	Total Carried forward from above ……	
4	Total Carried forward from above ……	
5	Total Carried forward from above ……	
	Total Carried Forward	

BILL NO.2:PLUMBING AND DRAINAGE PIPEWORK

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				
	Pipe work-PPR PIPES				
A	25mm diameter pipework	90	Lm		
B	32mm diameter pipework	220	Lm		
C	40mm diameter pipework	120	Lm		
D	50mm diameter pipework	65	Lm		
E	65mm diameter pipework	25	Lm		
	Bends				
F	25mm diameter bend	45	No.		
G	32mm diameter bend	30	No.		
H	40mm diameter bend	12	No.		
I	50mm diameter bend	12	No.		
J	63mm diameter bend	4	No.		
	Total Carried Forward				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Tees				
A	25mm equal tee	40	No.		
B	32mm equal tee	40	No.		
C	40mm equal tee	25	No.		
D	50mm equal tee	16	No.		
E	65mm equal tee	8	No.		
	Reducers				
F	32 x 25mm diameter reducer	30	No.		
G	40 x 25mm diameter reducer	10	No.		
H	40 x 32mm diameter reducer	10	No.		
I	50 x 32mm diameter reducer	5	No.		
J	50 x 40mm diameter reducer	5	No.		
K	65 x 50mm diameter reducer	4	No.		
L	65 x 40mm diameter reducer	4	No.		
	Male/Female Adapters (Brass threaded)				
M	25mm brass threaded adapter	25	No.		
N	32mm brass threaded adapter	15	No.		
	Male/Female Bend (Brass threaded)				
O	25mm brass threaded bend	10	No.		
	Flexible Tubing				
P	15mm diameter x 300mm long flexible connectors complete with integral chrome plated angle valve as Cobra or equal and approved.	25	No.		
	Total Carried Forward				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Threaded Brass Coupling				
A	25mm threaded brass coupling	8	No.		
B	32mm threaded brass coupling	20	No.		
C	40mm threaded brass coupling	8	No.		
D	50mm threaded brass coupling	4	No.		
E	65mm threaded brass coupling	4	No.		
	Valves				
F	25mm gate valve	1	No.		
G	32mm gate valve	2	No.		
H	40mm gate valve	1	No.		
I	50mm gate valve	5	No.		
J	65mm gate valve	1	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.		
O	65mm diameter pipe union	1	No.		
	Pipe Sleeves				
P	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				
	MuPVC and uPVC Waste and Soil pipework				
A	100mm diameter heavy gauge golden brown UPVC pipe	80	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	25	No.		
K	40mm diameter sweep bend	19	No.		
L	32mm diameter sweep bend	35	No.		
	Tees				
M	100mm diameter sweep tee	18	No.		
N	50mm diameter sweep tee	18	No.		
O	40mm diameter sweep tee	17	No.		
P	32mm diameter sweep tee	25	No.		
	Total Carried Forward				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Access Caps				
A	100mm diameter access cap	13	No.		
B	50mm diameter access cap	10	No.		
C	40mm diameter access cap	8	No.		
D	32mm diameter access cap	20	No.		
	Boss Connectors				
E	100 x 50mm diameter boss connector	20	No.		
F	100 x 40mm diameter boss connector	18	No.		
	Single Branches				
G	100mm diameter single branch	18	No.		
	WC Connectors				
H	100mm diameter WC connector	13	No.		
	Traps				
I	100 x 50mm diameter floor trap and grating	15	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.	3	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				

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.	15	No.		
	Plumbing drop pipes and roof pipework				
B	PPR 65mm diameter pipework from the roof storage to form a ring manifold around the tanks	150	Lm		
C	PPR 50mm diameter pipework from the ring mains to each meter	100	Lm		
	MuPVC and uPVC Waste and Soil pipework (SVP drops)				
D	100mm diameter heavy gauge golden brown UPVC pipe	150	Lm		
E	100mm diameter heavy gauge grey MUPVC pipe	150	Lm		
	Weathering Slates and Vent Cowls				
F	100mm diameter weathering slate and apron.	15	No.		
G	100mm diameter vent cowl	15	No.		
	Supporting Brackets				
H	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.	10	No.		
	Rainwater drainage				
I	100mm diameter heavy gauge grey mUPVC down pipes	150	Lm		
J	100mm diameter 45^0 bend	15	No.		
K	100mm diameter sweep bend	15	No.		
L	50mm diameter bend	15	No.		
M	100mm diameter tee	15	No.		
N	100mm diameter Hardened Plastic fulbora	15	No.		
	Testing and Commissioning				
O	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 above ……	
2	Total Carried forward from above ……	
3	Total Carried forward from above ……	
4	Total Carried forward from above ……	
5	Total Carried forward from above ……	
6	Total Carried forward from above ……	
Total Carried Forward		

BILL NO.3:WATER RETICULATION					
Item	**Description**	**Qty**	**Unit**	**Rate (Kshs)**	**Amount (Kshs)**
	ASSOCIATED PIPEWORK				
	Supply, deliver and install HDPE pipes to BS. 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	100mm HDPE pipe	170	Lm		
B	63mm HDPE pipe	130	Lm		
	Sluice Valve				
C	100mm diameter Sluice Valve	1	No		
D	63mm diameter Sluice Valve	1	No		
	Non Return Valve				
E	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				
F	100mm diameter equal tee	2	No		
G	63mm diameter equal tee	2	No		
	Bends/Elbows				
H	100mm diameter bend/elbows	4	No		
I	63mm diameter bend/elbows	4	No		
Total Carried Forward					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Valve Chamber				
A	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.	2	No		
	Excavations for Laying Plumbing Lines				
B	Excavate trench in hard soil/murram 600mm wide and depth not exceeding 1000mm deep and average 750mm deep, prepare bed with red soil/marram 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.	300	Lm		
	Stand Pipe				
C	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		
	Pipe Sleeves				
D	100mm diameter heavy duty PVC Class 41pipe sleeves for crossing over pathways and driveways. The sleeves will be encased in 150mm concrete sorround.	20	Lm		
	Sluice Valve Indicator Plates				
E	Standard precast concrete Sluice valve marker post marked 'SV' 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		
Total Carried Forward					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Gate Valve Indicator Plates				
A	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				
B	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		
	Sterilization				
C	Allow for flushing out and sterilizing the whole system with chlorine to the satisfaction of the engineer	1	Sum		
	Testing and Commissioning				
D	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					

COLLECTION PAGE FOR WATER RETICULATION

Item	Description	Amount (Kshs)
1	Total Carried forward from above	
2	Total Carried forward from above	
3	Total Carried forward from above	
Total for Water Reticulation Carried to Summary Page		

BILL NO 4:FIRE INSTALLATION WORKS					
Item	**Description**	**Qty**	**Unit**	**Rate (Kshs)**	**Amount (Kshs)**
	Portable Fire Extinguishers Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.				
A	**Water/Carbon Dioxide Gas Fire Extinguisher** 9 litres water/carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	4	No		
B	**Carbon Dioxide Gas Fire Extinguisher** 5 Kg carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	4	No		
C	**Dry Chemical Powder Fire Extinguisher** 6kg dry chemical podwer portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	4	No		
D	**Fire Notices** Allow for fire signage for the fire exits and fire instructions as directed by the Project Engineer.	2	No		
Total Carried Forward to Collection Page for Fire Water Reticulation					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	HOSE REEL FIRE WATER RETICULATION				
	Supply, deliver, install, test and commission the following plumbing fittings in positions indicated on the contract drawings or as shall be instructed by the Engineer. The pipes and fittings shall be galvanized mild steel pipes (class B) to B.S 1387 heavy gauge and fittings to B.S. 1740 laid in trench. Tenderers must allow in their pipework prices for all fittings, jointings couplings, flanges couplings, unions, connector joints, reducers, etc. as required in the running lengths of pipe, all fixing clips, and holderbats, plugged and screwed and clamps where necessary for the proper functioning of the installation when pricing.				
	GMS Pipework				
A	50mm diameter GMS pipework	250	Lm		
B	25mm diameter GMS pipework	30	Lm		
	Extra over GMS Pipework for the following:				
	Bends				
C	50mm diameter bend/elbow	10	No		
D	25mm diameter bend/elbow	8	No		
	Tees				
E	50mm diameter equal tee	20	No		
	Reducers				
F	50x25mm diameter reducer	10	No		
	Excavations				
G	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.	250	LM		
	Total Carried Forward to Collection Page for Fire Water Reticulation				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Pipe Sleeves				
A	100mm diameter heavy duty PVC Class 41pipe sleeves for crossing over pathways and driveways. The sleeves will be encased in 150mm concrete sorround.	30	Lm		
	Valve Chamber				
B	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.	4	No		
	Valves				
C	50mm diameter approved high pressure screw down full way non-rising stem wedge gate valve to BS 5154 PN 20 for series 'B' rating, with wheel and head joints to tubing and complete with round male threaded transition fittings and associated unions.	1	No		
D	25mm diameter ditto	4	No		
	Unions				
E	50mm diameter union	1	No		
F	25mm diameter union	4	No		
	<u>Pipework for the following:</u>				
G	63mm HDPE pipe	250	Lm		
	Sluice Valve				
H	63mm diameter Sluice Valve	2	No		
	Non Return Valve				
I	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				
J	100mm diameter equal tee	2	No		
	Bends/Elbows				
K	100mm diameter bend/elbows	4	No		
	Total Carried Forward to Collection Page for Fire Water Reticulation				

COLLECTION PAGE FOR FIRE WATER RETICULATION

Item	Description	Amount (Kshs)
1	Total Carried forward from above	
2	Total Carried forward from above	
	Total for Fire Water Reticulation Carried to Summary Page	

BILL NO.5:WATER TANKS

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Supply, deliver and assemble water tanks The tanks to come complete with tank cover, mosquito proof inspection vent.The tank shall be complete with the following pipe connections:-- 6No.Interconnecting unions and valves of diameter 50mm 1no.mm 50mm ball valve and float switch 1no.mm 75mm HDPE overflow pipe each of 2m leght 1no.mm 75mm HDPE pipe outlets each of 15m length 1no.mm 75mm HDPE pipe inlets each of 15m length 1no.mm 75mm HDPE pipe washout each WITH PLASTIC CONTROL VALVE of 15m length				
A	capacity of each tank to be **5,000 litres and of diameter 2380mm x2380mm high to a TOTAL of 10,000 LITRES**	2	item		
B	capacity of each tank to be **10,000 litres and of diameter 2380mm x2380mm high to a TOTAL of 10,000 LITRES**	2	item		
	Booster Pumpsets				
C	Set of electrically driven twin pumps with automatic changeover, capable of delivering **3 cubic metres per hour** against a head of **15 meters.** It includes pressure switches, time delay switch, a switch to protect against dry run, timer, gate valves and non-return valves. The pump to be as **PEDROLLO** or approved equivalent.	1	Set		
	Pump Cage				
D	Pump House of size 2m x2m x2m high with a roof cover and plinth of size 3m x3m.Allow for gate of hinges with lockable unit point.	1	Item		
	Associated Electrical Works				
E	Allow for PVC Conduits and associated electrical cables within 10metres from the nearby Distribution Board.	1	item		
F	Allow for setting to work, testing and commissioning of the installation.	1	item		
	Total Carried Forward Collection Page for Water Tanks				

SUMMARY PAGE

Item	Description	Amount (Ksh)
1	Total for sanitary fittings Installation Works	
2	Total for plumbing and drainage Installation Works	
3	Total for water reticulation Installation Works	
4	Total for fire reticulation installation Works	
5	Total for water tanks installation Works	
6	**Contigency provision for the above works**	**300,000.00**
	Totals for Plumbing and Drainage Installation Works Carried to Form of Tender	

SCHEDULE OF ITEMS

ITEM	DESCRIPTION	RATE
1	Asian Type Water closet	
2	Stainless Steel Hand drier	
3	Stainless Steel Soap dispenser	
4	1000 litres Plastic Water tank	
5	2500 litres Plastic Water tank	
6	100 litres Solar Panel system	
7	1.22mm x 1.22mm Steel Tank Panel	
8	10,000 litres Plastic Water tank	
9	Pressurization pumpset of 6 bars at a head of 30m	

SECTION D:

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.	Solar Panel			
13	Pressurization Pump			

The tenderer shall also submit separate comprehensive descriptive and performance details for all plant apparatus and fittings, as described in the technical schedule.

PROVISIONAL SUMS

PROVISIONAL SUMS

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	PROVISIONAL SUMS The following provisional items are to be measured on completion of the works and priced in accordance with rates contained in these Bills of Quantities or pro-rata thereto or deducted in whole if not required.				
	Civil works				
A	Allow Provisional Sum of Ksh One Million Five Hundred Thousand **(1,500,000.00)** only for Storm and foul water darinage & walkway works.		ITEM		1,500,000.00
	Landscaping works				
B	Allow Provisional Sum of Ksh one Million **(1,000,000.00)** only for grass and flower planting works.		ITEM		1,000,000.00
	Contigencies				
C	Allow Provisional Sum of Ksh One Million (Kshs 1,000,000.00)only for Contigencies		ITEM		1,000,000.00
	Total Provisional Sums carried to Grand Summary				**3,500,000.00**

GRAND SUMMARY

GRAND SUMMARY

ITEM	DESCRIPTION	CONTRACTOR'S USE ONLY	OFFICIAL USE ONLY
		AMOUNT KSHS	AMOUNT KSHS
1	Particular Preliminaries from page PP/15		
2	General Preliminaries from page GP/11		
3	Builder's works from page AD/16		
4	Electrical works from page H/11		
5	Mechanical works from page C/25		
6	Provisional Sums from page PS/1		
	TOTAL COST OF CONSTRUCTION inclusive of VAT		

Amount in words. Kenya shillings……
……Cents……....

Tenderer's signature and stamp……..
……

Address……
……..…

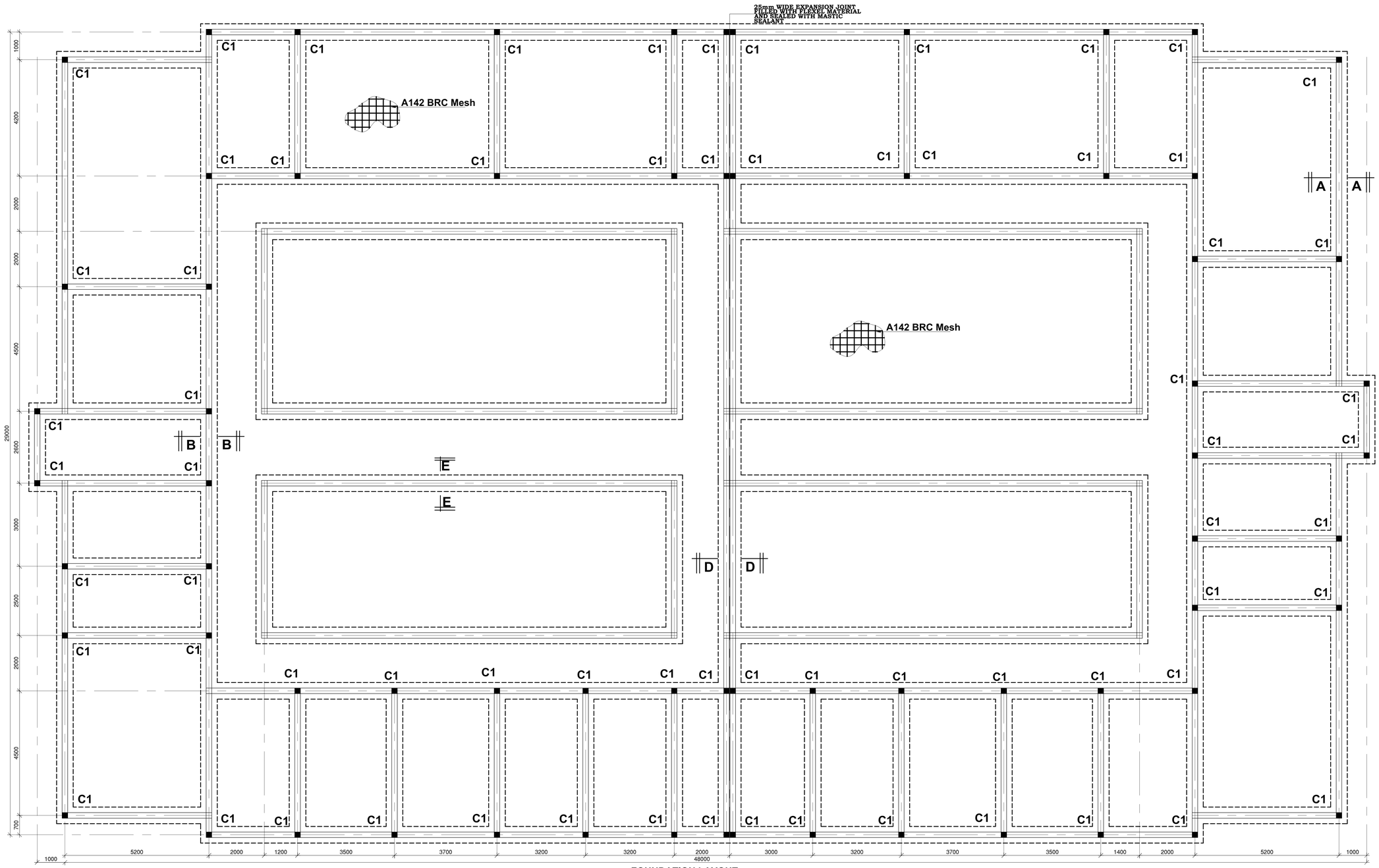
Date ……..……

Witness's name :……..……

Signature:……

Address: ……..……
……..……

Date: ……..……
…...……



FOUNDATION LAYOUT
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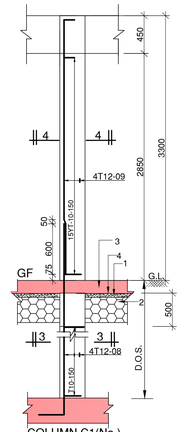
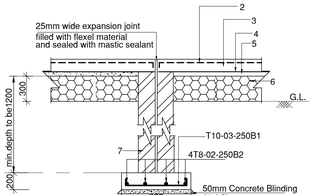


SECTION 4-4
(Scale 1:25)

SECTION 3-3
(Scale 1:25)



SECTION E-E
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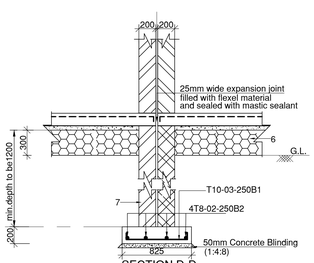

SECTION D-D
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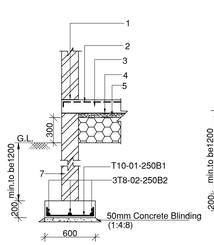

SECTION A-A
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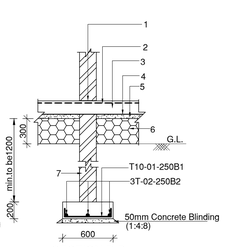


SECTION B-B
(Scale 1:25)

KEY TO SECTIONS
A-A,B-B,C-C,D-D,
S-S & COLUMNS

1. Damp Proof Course
2. BRC Fabric Mesh Ref. A142
3. 150mm thick R.C. Ground Floor Slab
4. 500mm Gauge Damp Proof Membrane Lapped 300mm minimum
5. 50mm Murram Blinding.
6. 300mm Approved Hardcore Material Compacted In Layers of 150mm
7. Masonry Walling.

NOTES

1. This drawing to be read in conjunction with other relevant drawings.
2. The Contractor to confirm all dimensions on site before commencing the works.
3. All dimensions are in millimetres unless stated otherwise
4. Structural concrete to be class 25/20.Concrete cover to reinforcement including links;
   Foundations =50mm
   Columns =40mm
   Beams =25mm
   Slab/ stairs = 20mm
5. Reinforcement steel to be ;
   Y- square twisted high yield bars to BS 4461.
   R-round mild bars to BS 4449.
6. Bearing Capacity of the ground to be 100KN/m^2
7. All steel reinforcement and excavation works MUST be inspected and approved by the Structural engineer before concreting is done.
8. Minimum compressive strength for structural masonry to be 7KN/m^2
10. Only figured dimensions to be taken from this drawing

ISSUES

DATE	TO	APPLICATION

REVISIONS

DATE	BY	DESCRIPTIONS

REFERENCE DRAWINGS

No.	DESCRIPTIONS

CLIENT
ALUPE UNIVERSITY COLLEGE
P.O BOX 845, BUSIA

JOB No. 10142B

PROJECT TITLE
PROPOSED ADMIN BLOCK

DRAWING TITLE
FOUNDATION DETAILS

FOR THE GOVERNMENT OF THE REPUBLIC OF KENYA

C1/Sfb

DRG No.

FILE No.

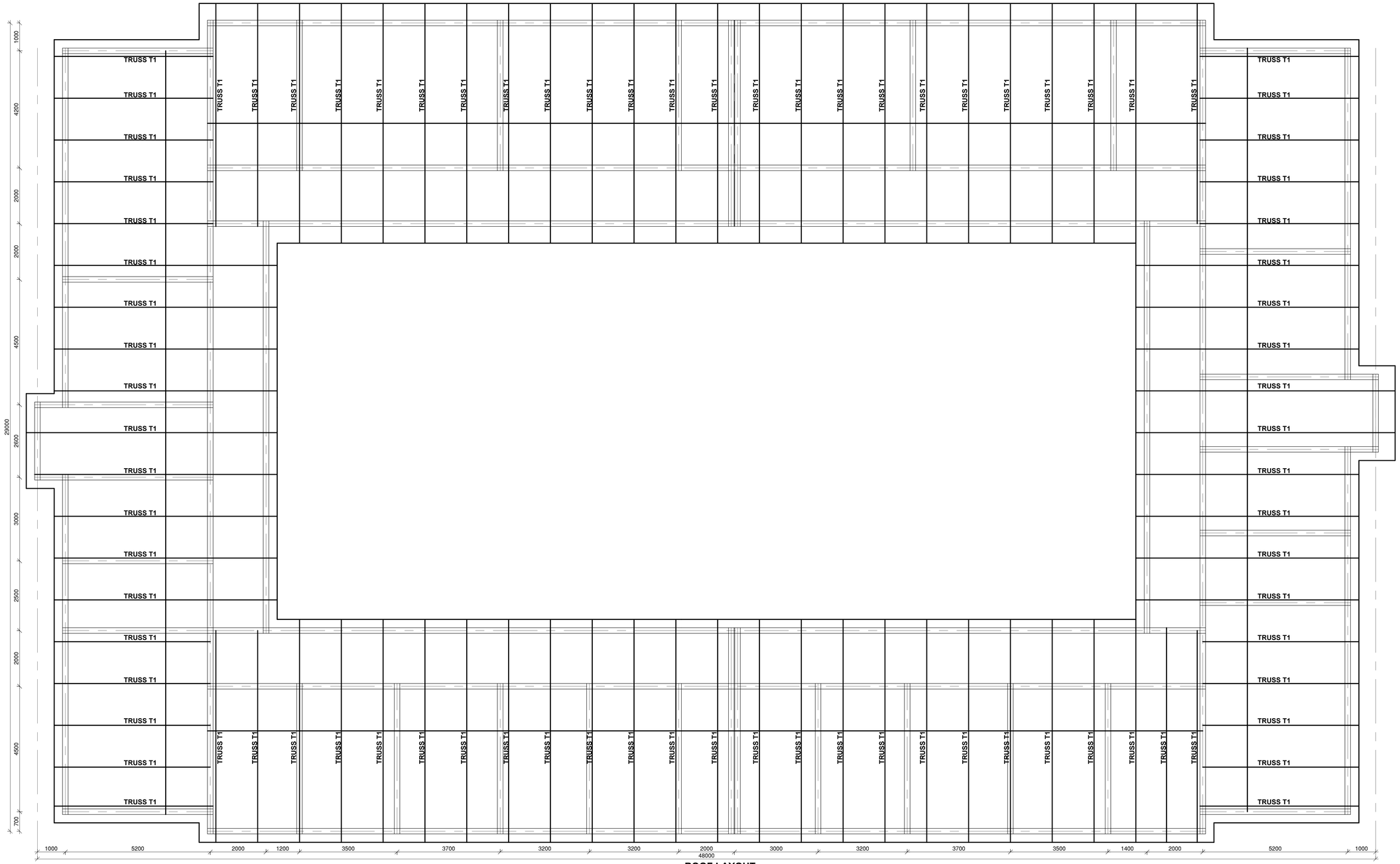
SCALE(S) 1:50, 1:25, 1:20

FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING

APPROVED BY
THE CHIEF ENGINEER (STRUCTURAL),S.D.P.W.

	NAME	SIGNATURE	DATE
DESIGN	WAIGWA K.J		MARCH 2018
DRAWN	WAIGWA K.J.		

MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING & URBAN DEVELOPMENT
STATE DEPT. OF PUBLIC WORKS



ROOF LAYOUT
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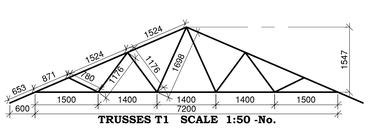
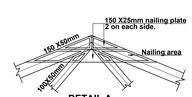
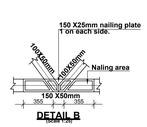


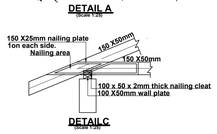
TRUSSES T1 SCALE 1:50 -No.



DETAIL A
(Scale 1:25)

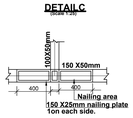


DETAIL B
(Scale 1:25)



DETAIL C
(Scale 1:25)

DETAIL D
(Scale 1:25)



DETAIL E
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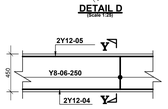


TYPICAL RING BEAM SECTION
(1:20)

SECTION Y-Y
(1:20)

NOTES

1. This drawing to be read in conjunction with other relevant drawings.
2. The Contractor to confirm all dimensions on site before commencing the works.
3. All dimensions are in millimetres unless stated otherwise
4. Structural concrete to be class 25/20.Concrete cover to reinforcement including links;
   Foundations =50mm
   Columns =40mm
   Beams =25mm
   Slab/ stairs = 20mm
5. Reinforcement steel to be ;
   Y- square twisted high yield bars to BS 4461.
   R-round mild bars to BS 4449.
6. Bearing Capacity of the ground to be 100KN/m^2
7. All steel reinforcement and excavation works MUST be inspected and approved by the Structural engineer before concreting is done.
8. Minimum compressive strength for structural masonry to be 7KN/m^2
10. Only figured dimensions to be taken from this drawing

ISSUES

DATE	TO	APPLICATION

REVISIONS

	DATE	BY	DESCRIPTIONS		

REFERENCE DRAWINGS

No.	DESCRIPTIONS

CLIENT
ALUPE UNIVERSITY COLLEGE
P.O BOX 845, BUSIA

JOB No. 10142B

PROJECT TITLE
PROPOSED ADMIN BLOCK

DRAWING TITLE
FOUNDATION DETAILS

FOR THE GOVERNMENT OF THE REPUBLIC OF KENYA

C1/Sfb

DRG No.

FILE No.

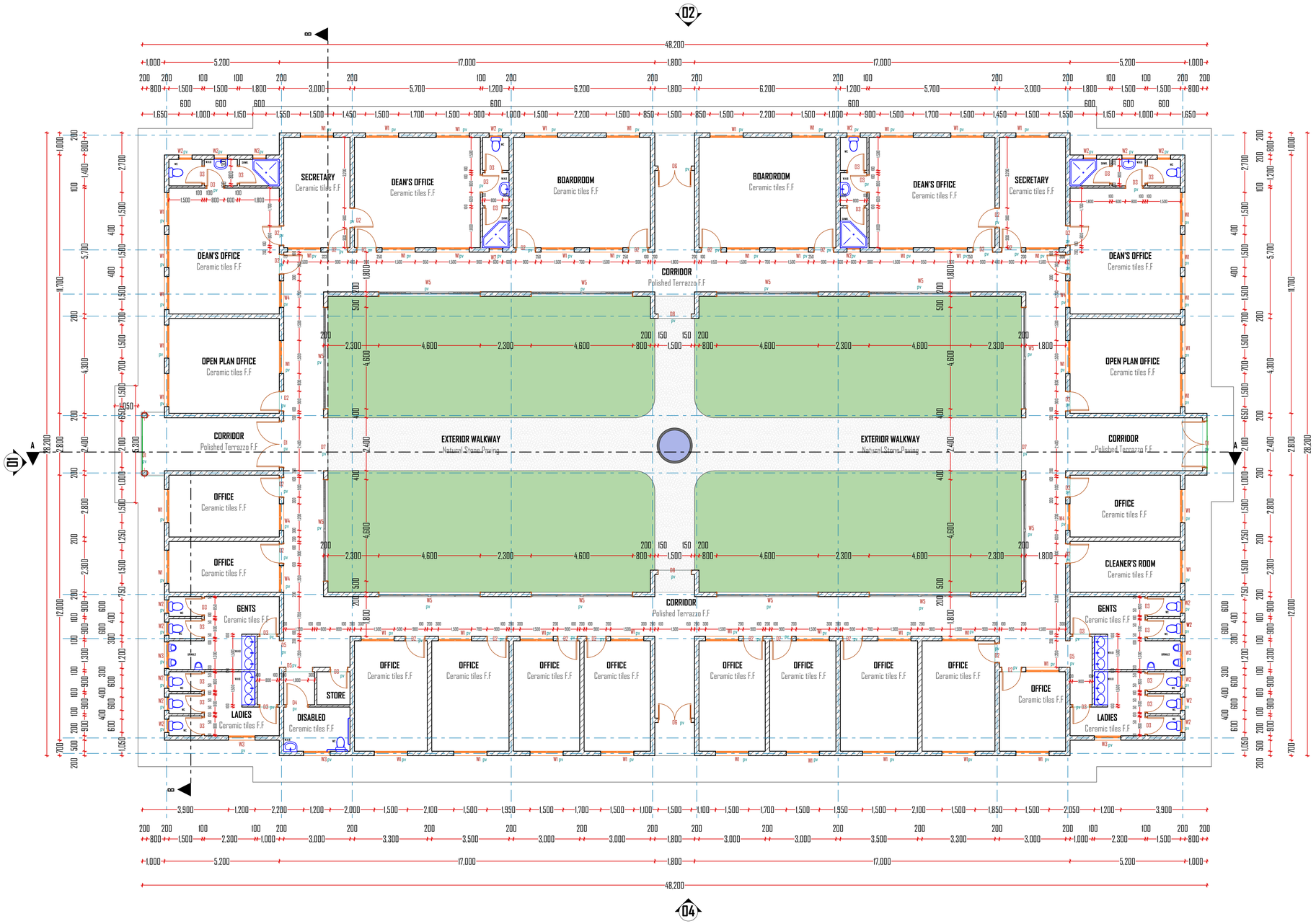
SCALE(S) 1:50, 1:25, 1:20

FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING

APPROVED BY
THE CHIEF ENGINEER (STRUCTURAL),S.D.P.W.

	NAME	SIGNATURE	DATE
DESIGN	WAIGWA K.J		MARCH 2018
DRAWN	WAIGWA K.J.		

MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING & URBAN DEVELOPMENT
STATE DEPT. OF PUBLIC WORKS



NOTES

general

This drawing is to be read in conjuction with engineers' drawings
All dimensions are in mm unless otherwise specified.
drawings are not to be scaled. Only figured dimensions to
to be used. The contractor must check & verify all the
dimensions before commencement of the work.

construction

All slabs at ground level to be layed over 1000 gauge
polythene sheeting on 50mm thick murram blinding.on
well compacted hardcore. All soils under slabs & ground
external foundation to be poised for the termites control.

structural

All black cotton soil to be removed from below all
building & paved surfaces. All paved surfaces to be
clear of black cotton soil to a distance of 500m
outside the edge of the surface.

For all R.C works, refer to SE's details.
Foundation depths to be determined on site to the SE
approval. All walls less than 200mm thick to be reinforced
with hoop iron at every alternate course.
All adjacent R.C work and masonry walls to be tied
with strap irons at every course.

mechanical

All plumbing & drainage work to comply with P.H specifications.
All surface ducts to be accessible from all floors.
S.V.P denotes soil vent pipe and to be provided at the head of
the drainage. Drains passing beneath buildings and driveways
to be encased in 150mm concrete somound. All underground
foul & waste drain pipes shall be of PVC., to comply with BS5255.
All inspection chambers covers and framing shall be cast iron
to comply with BS.497 Table 2 Grade A.
The storm water drain pipes to comply with BS. 556.
Minimum slope in the drain pipes to be 1%
No chases for pipes will be allowed in the slabs.
Sleeves will be allowed with written approval from the SE
No cutting of concrete without express approval of the Architect.
or SE. All testing of pipes must be cordinated with electrical
& any conflicts must be clarified before works begins.
P.V denotes permanent vents.

electrical

All conduits must be laid before plastering.

fire fighting

Provide a 1130 litres reserve tank with a booster pump
Dry risers
Provide a 1x30m hydraulic Hose-real, on every floor.
\Provide manual electric break glass fire alarm system.
Provide 4x9kg litres water CO2 fire extinguishers on every floor

revisions

project

PROPOSED PHASE II ADMINISTRATION BUILDING FOR ALUPE UNIVERSITY IN BUSIA COUNTY.

drawing title

ARCHITECTURAL WORKING DRAWINGS

Folio no.

client ministry/department

ALUPE UNIVERSITY

client signature

code

scale 1:100

1	
2	
3	

project job no.			drawing no.
	name	signed	date
Drawn & Designed by			
Checked by	Arch. W. K. Oloo		

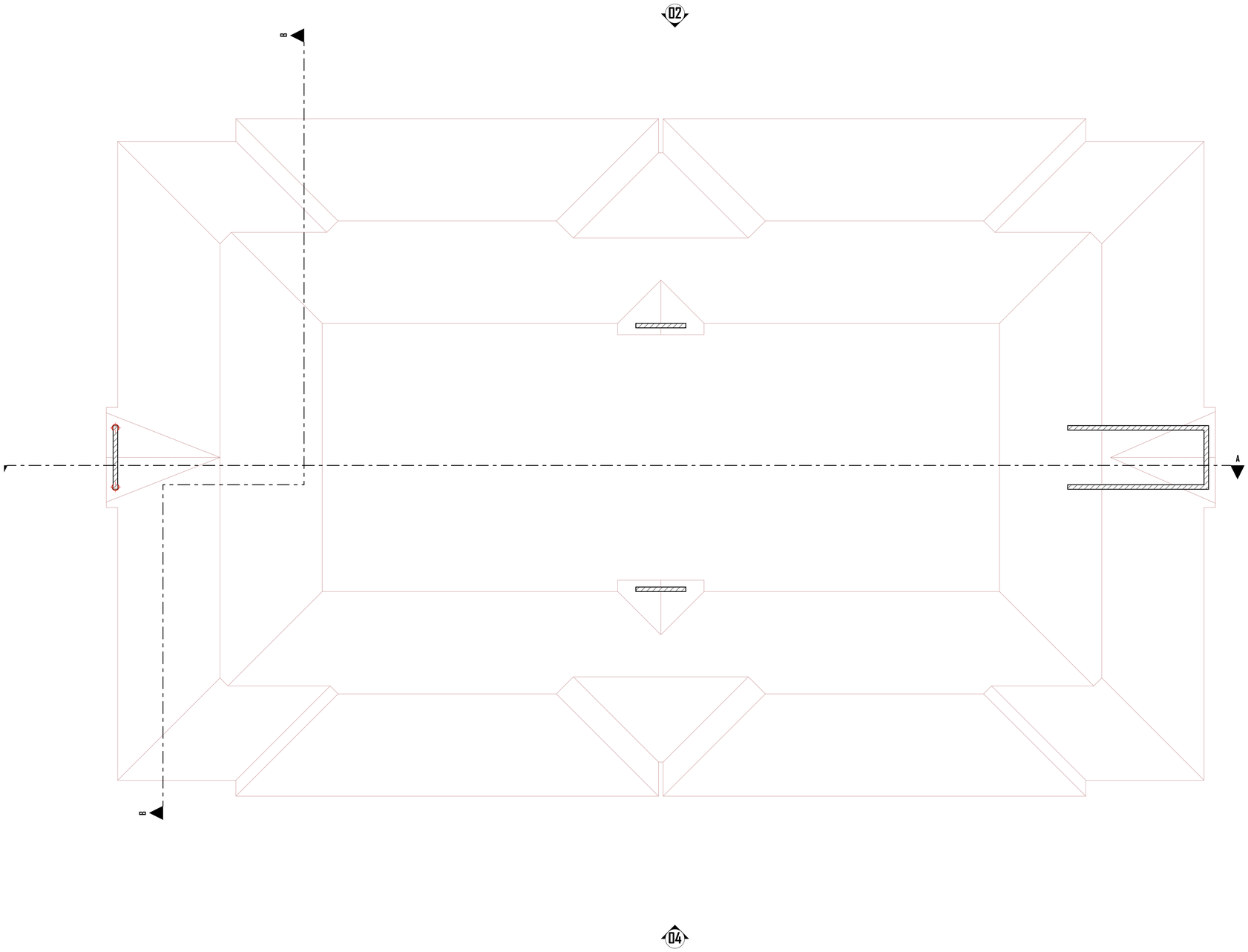
APPROVED
Architect S.K.Muli OGW

Ag. Chief Architect Signed

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

STATE DEPARTMENT OF PUBLIC WORKS
ARCHITECTURAL DEPARTMENT

FOR THE GOVERNMENT OF THE REPUBLIC OF KENYA



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structural

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revisions

project

PROPOSED PHASE II ADMINISTRATION BUILDING FOR ALUPE UNIVERSITY IN BUSIA COUNTY.

drawing title

ARCHITECTURAL WORKING DRAWINGS

Folio no.

client ministry/department

ALUPE UNIVERSITY

client signature

code

scale		
	1	
	2	
	3	

project job no. **drawing no.**

	name	signed	date
Drawn & Designed by	Ar. J. Isaac		
Checked by	Arch. W. K. Oloo		

APPROVED
Architect S.K.Muli OGW

Ag. Chief Architect Signed

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

STATE DEPARTMENT OF PUBLIC WORKS
ARCHITECTURAL DEPARTMENT

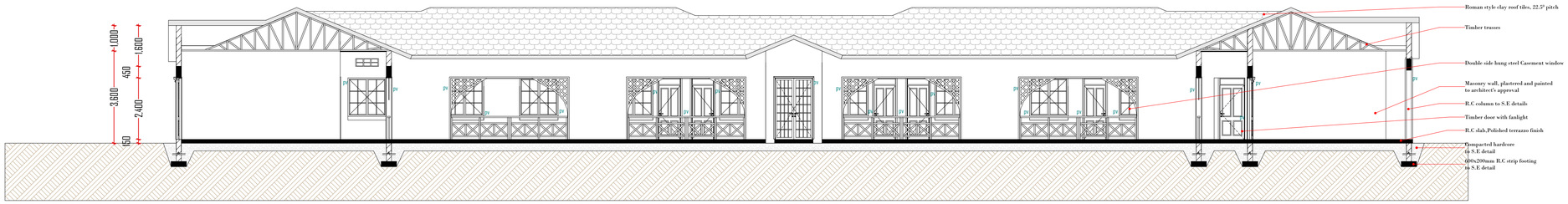
FOR THE GOVERNMENT OF THE REPUBLIC OF KENYA

ELEVATION 01

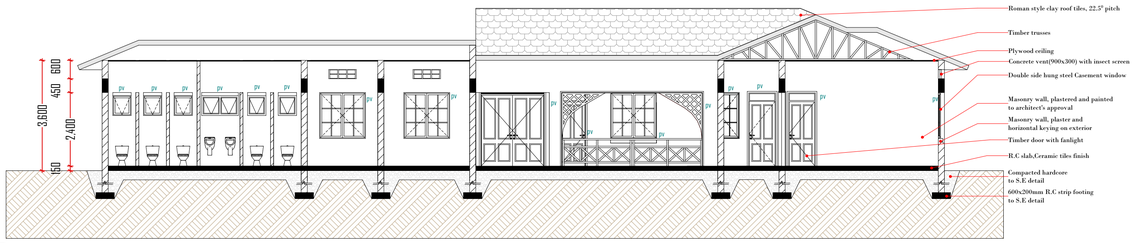
ELEVATION 02

ELEVATION 03

ELEVATION 04



SECTION A-A



SECTION B-B

NOTES

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revisions

project

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drawing title

ARCHITECTURAL WORKING DRAWINGS

Folio no.

client ministry/department

ALUPE UNIVERSITY

client signature

code

scale 1:100

1	
2	
3	

project job no. **drawing no.**

	name	signed	date
Drawn & Designed by	Arch.		
Checked by	Arch. W. K. Oloo		

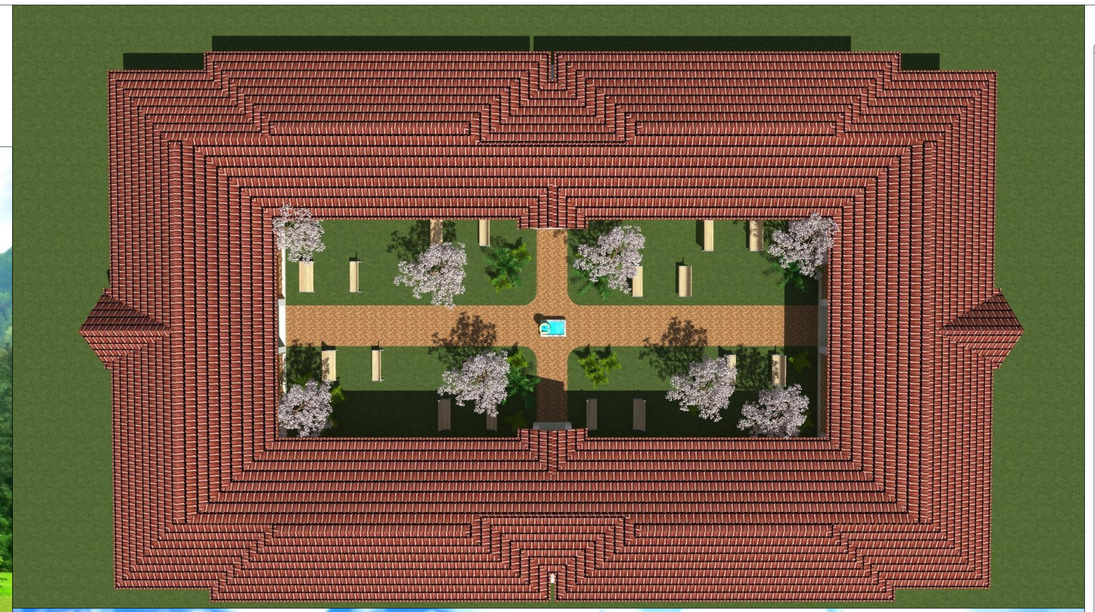
APPROVED
Architect S.K.Muli OGW

Ag. Chief Architect Signed

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

STATE DEPARTMENT OF PUBLIC WORKS
ARCHITECTURAL DEPARTMENT

FOR THE GOVERNMENT OF THE REPUBLIC OF KENYA



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revisions

project

PROPOSED PHASE II ADMINISTRATION BUILDING FOR ALUPE UNIVERSITY IN BUSIA COUNTY.

drawing title

ARCHITECTURAL WORKING DRAWINGS

Folio no.

client ministry/department

ALUPE UNIVERSITY

client signature

code

scale		
	1	
	2	
	3	

project job no.			**drawing no.**

	name	**signed**	**date**
Drawn & Designed by	W.O.Nyam		
Checked by	Arch. W. K. Oloo		

APPROVED
Architect S.K.Muli OGW

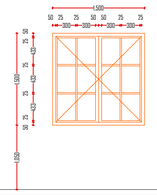
Ag. Chief Architect Signed

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

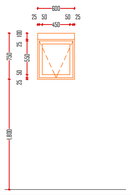
STATE DEPARTMENT OF PUBLIC WORKS
ARCHITECTURAL DEPARTMENT

FOR THE GOVERNMENT OF THE REPUBLIC OF KENYA

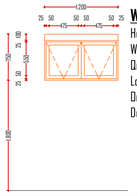
WINDOW SCHEDULE



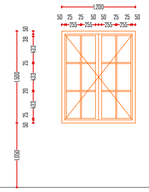
W1
Height: 1500mm
Width: 1500mm
Quantity: 54
Location: As on plan
Orientation: As Shown
Description: Double side hung steel casement window,
50x50mm RHS framing,
25x25mm Z & T section MS intermediate members
4mm thick clear glass,
Brass window stays and fasteners.



W2
Height: 750mm
Width: 600mm
Quantity: 20
Location: Washrooms; As on plan
Orientation: As Shown
Description: Top hung steel casement window,
100mm ventilation gap with insect screen
25x25mm RHS framing,
4mm thick clear glass,
Brass window stays and fasteners.

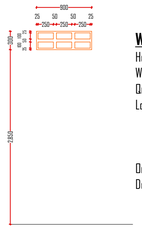


W3
Height: 750mm
Width: 1200mm
Quantity: 5
Location: Washrooms; As on plan
Orientation: As Shown
Description: Double top hung steel casement window,
50mm ventilation gap with insect screen
25x25mm RHS framing,
4mm thick clear glass,
Brass window stays and fasteners.



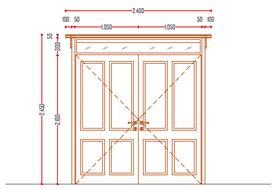
W4
Height: 1500mm
Width: 1200mm
Quantity: 5
Location: As on plan
Orientation: As Shown
Description: Double side hung steel casement window,
50x50mm RHS framing,
25x25mm Z & T section MS intermediate members
4mm thick clear glass,
Brass window stays and fasteners.

W5
Height: 2400mm
Width: 4600mm
Quantity: 12
Location: As on plan
Orientation: As Shown
Description: Opening with external and and internal timber casings.

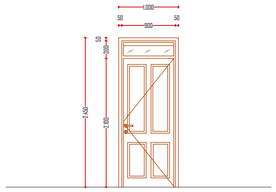


W6
Height: 300mm
Width: 900mm
Quantity: 35
Location: Centrally placed above every 1200 & 1500mm wide double side hung steel casement window on all the external walls & above the two metal grille doors (secondary entrances).
Orientation: As Shown
Description: Pre-cast concrete vents with insect screen

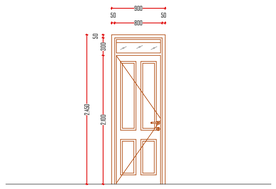
DOOR SCHEDULE



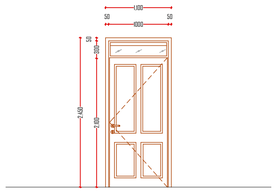
D1
Type: Exterior Outward opening Double leaf varnished timber door.6mm clear glass fanlight with 50mm permanent ventilation gap, external overhang casing with architrave capital next to side casing and internal casing.
Quantity: 2
Location: Main Entrances
Iron Mongery: 3 lever mortice lock with lever handle
3 no. butt hinges



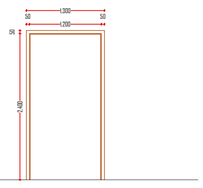
D2
Type: Semi solid core inward opening timber door, 6mm clear glass fanlight with 50mm permanent ventilation gap, external and internal timber casings.
Quantity: 29
Location: All offices, boardrooms & cleaner's room.
Iron Mongery: 3 lever mortice lock with lever handle
3 no. butt hinges



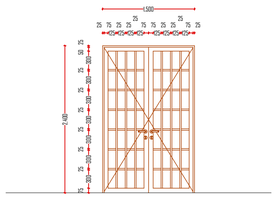
D3
Type: Semi solid core inward opening timber door, 6mm clear glass fanlight with 50mm permanent ventilation gap, external and internal timber casings.
Quantity: 27
Location: All washrooms and store
Iron Mongery: 3 lever mortice lock with lever handle
3 no. butt hinges



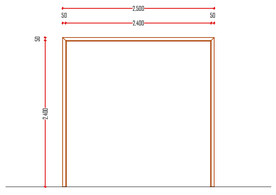
D4
Type: Semi solid core outward opening timber door, 6mm clear glass fanlight with 50mm permanent ventilation gap, external and internal timber casings.
Quantity: 1
Location: Disabled toilet
Iron Mongery: 3 lever mortice lock with lever handle
3 no. butt hinges



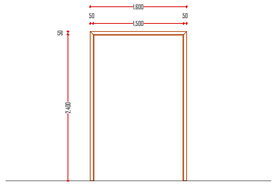
D5
Type: Door opening with external and and internal timber casings.
Quantity: 3
Location: Ladies/Gents and Disabled washrooms airlock area
Iron Mongery: None



D6
Type: Exterior Double leaf painted metal grille door, external and internal casing.
Quantity: 2
Location: Secondary Entrances
Iron Mongery: 3 lever mortice lock with lever handle
3 no. butt hinges



D7
Type: Door opening with external and and internal timber casings.
Quantity: 2
Location: Courtyard
Iron Mongery: None



D8
Type: Semi solid core outward opening timber door, 6mm clear glass fanlight with 50mm permanent ventilation gap, external and internal casing.
Quantity: 2
Location: Courtyard
Iron Mongery: None

NOTES

general
This drawing is to be read in conjuction with engineers' drawings
All dimensions are in mm unless otherwise specified.
drawings are not to be scaled. Only figured dimensions to
to be used. The contractor must check & verify all the
dimensions before commencement of the work.

construction
All slabs at ground level to be layed over 1000 gauge polythene sheeting on 50mm thick murram blinding.on well compacted hardcore. All soils under slabs & ground external foundation to be poised for the termites control.

structural
All black cotton soil to be removed from below all building & paved surfaces. All paved surfaces to be clear of black cotton soil to a distance of 500m outside the edge of the surface.

For all R.C works, refer to SE's details.
Foundation depths to be determined on site to the SE approval. All walls less than 200mm thick to be reinforced with hoop iron at every alternate course.
All adjacent R.C work and masonry walls to be tied with strap irons at every course.

mechanical
All plumbing & drainage work to comply with P.H specifications.
All surface ducts to be accessible from all floors.
S.V.P denotes soil vent pipe and to be provided at the head of the drainage. Drains passing beneath buildings and driveways to be encased in 150mm concrete sarround. All underground foul & waste drain pipes shall be of PVC., to comply with BS5255.
All inspection chambers covers and framing shall be cast iron to comply with BS.497 Table 2 Grade A.
The storm water drain pipes to comply with BS. 556.
Minimum slope in the drain pipes to be 1%
No chases for pipes will be allowed in the slabs.
Sleeves will be allowed with written approval from the SE
No cutting of concrete without express approval of the Architect, or SE. All testing of pipes must be cordinated with electrical & any conflicts must be clarified before works begins.
P.V denotes permanent vents.

electrical
All conduits must be laid before plastering.

fire fighting
Provide a 1130 litres reserve tank with a booster pump
Dry risers
Provide a 1x30m hydraulic Hose-real, on every floor.
\Provide manuall electric break glass fire alarm system.
Provide 4x9kg litres water CO2 fire extingushers on every floor

revisions

project
PROPOSED PHASE II ADMINISTRATION BUILDING FOR ALUPE UNIVERSITY IN BUSIA COUNTY.

drawing title
ARCHITECTURAL WORKING DRAWINGS

Folio no.

client ministry/department
ALUPE UNIVERSITY

client signature

code

scale 1:50
1
2
3

project job no.
drawing no.

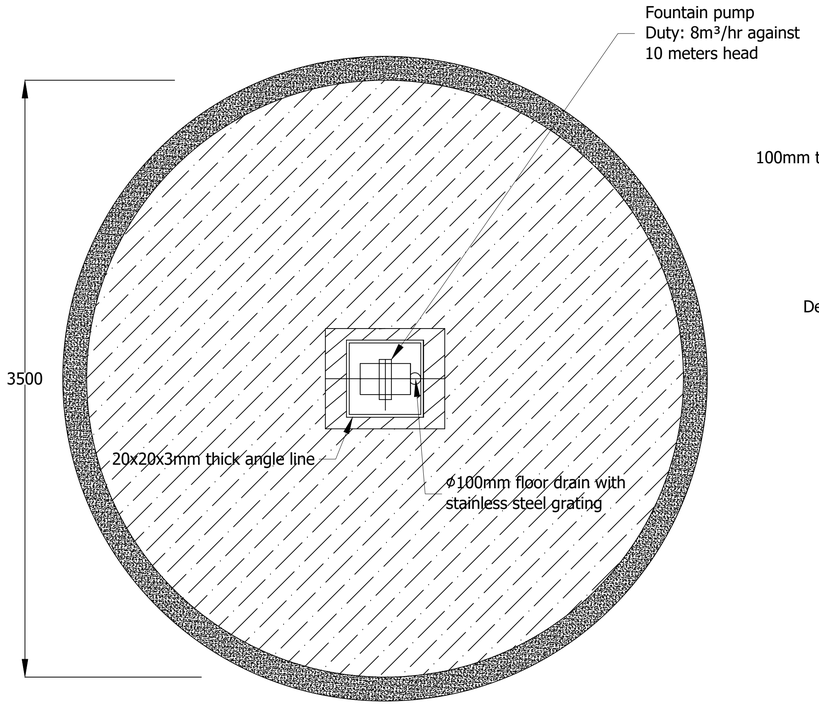
	name	signed	date
Drawn & Designed by	A.C.Team		
Checked by	Arch. W. K. Oloo		

APPROVED
Architect S.K.Muli OGW

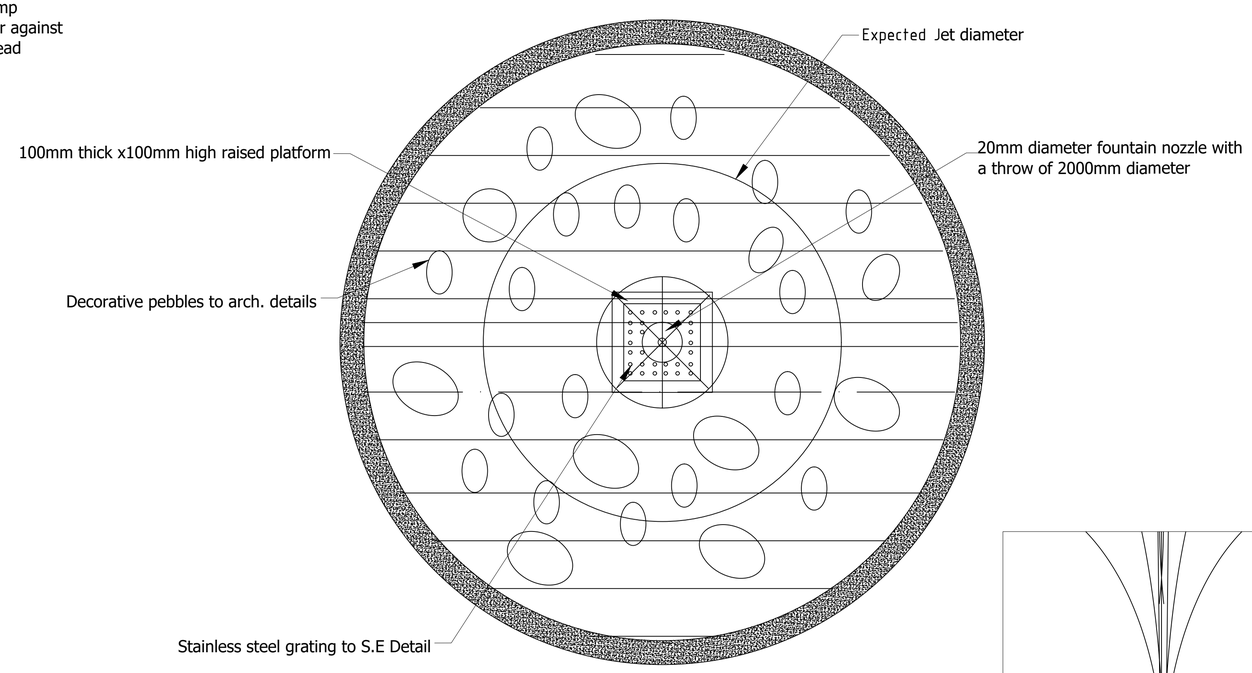
Ag. Chief Architect Signed

MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
STATE DEPARTMENT OF PUBLIC WORKS
ARCHITECTURAL DEPARTMENT

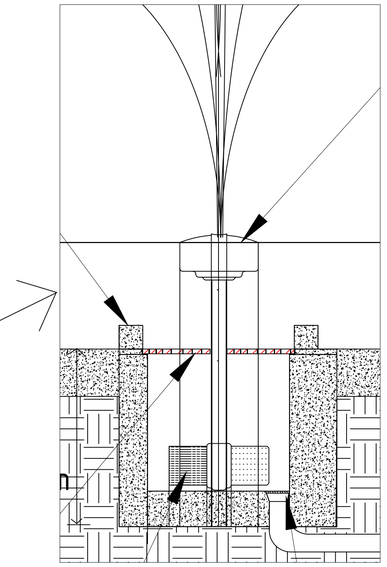
FOR THE GOVERNMENT OF THE REPUBLIC OF KENYA

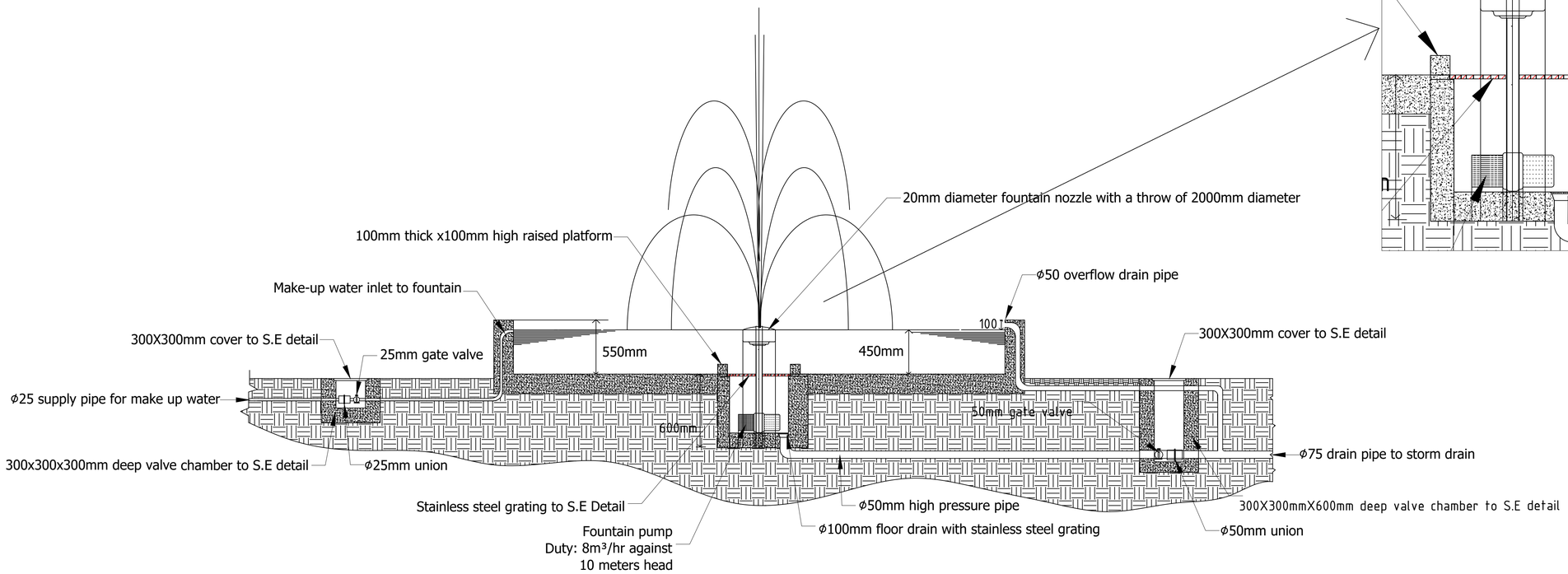


CROSS-SECTIONAL PLAN VIEW SHOWING THE PUMP SECTION



PLAN VIEW





SECTION

NOTES

1. All dimensions are in millimetres unless otherwise stated.
2. All drawing shall be read together with Architect and Structural Engineer drawings
3. All drainage pipes under floorslab /driveway/walkway car park etc to be sleeved in heavy duty UPVC or GMS pipe as instructed and to be encased in 150mm diameter concrete surround.
4. All pipeswork shall run in wall chase, underfloor, underworktop, in ceiling voids etc.exposed pipe work shall not be accepted.
5. All drainage pipes above ground shall be high pressure pipes
6. All valve chambers in drive area or walkway to have heavy duty covers.

REVISIONS

NO	DATE	BY	DESCRIPTION	SIGNATURE

Project

PROPOSED ALUPE ADMINISTRATION BLOCK

Client

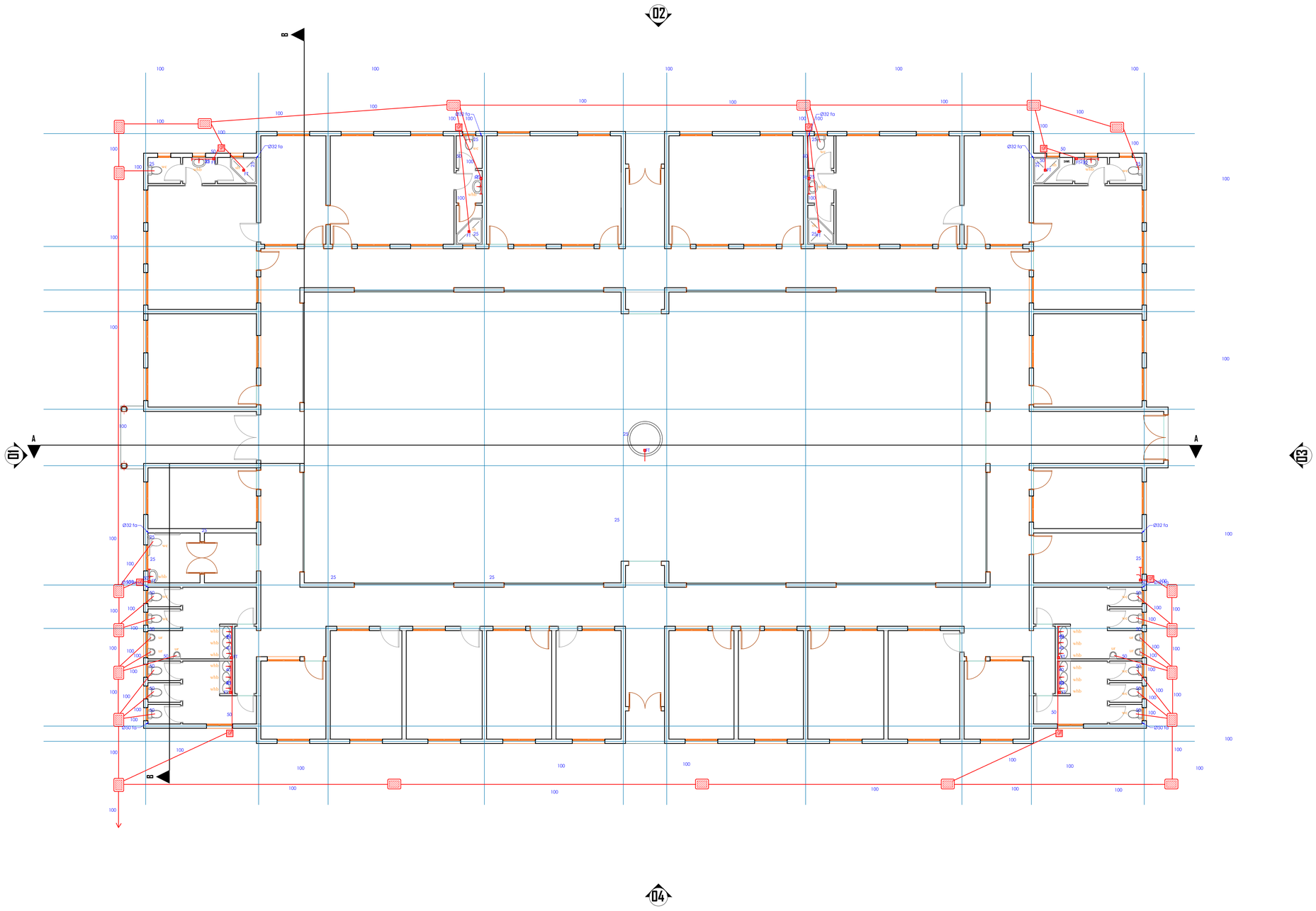
ALUPE UNIVERSITY

Title

WATER FOUNTAIN LAYOUT

	Name	Signature	Date
Drawn	K.K		
Designed	K.K		

Scale	Date	Drawing No.
1:25	NOVEMBER 2020	MECH 3



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REVISIONS

NO	DATE	BY	DESCRIPTION	SIGNATURE

Project

PROPOSED ALUPE ADMINISTRATION BLOCK

Client

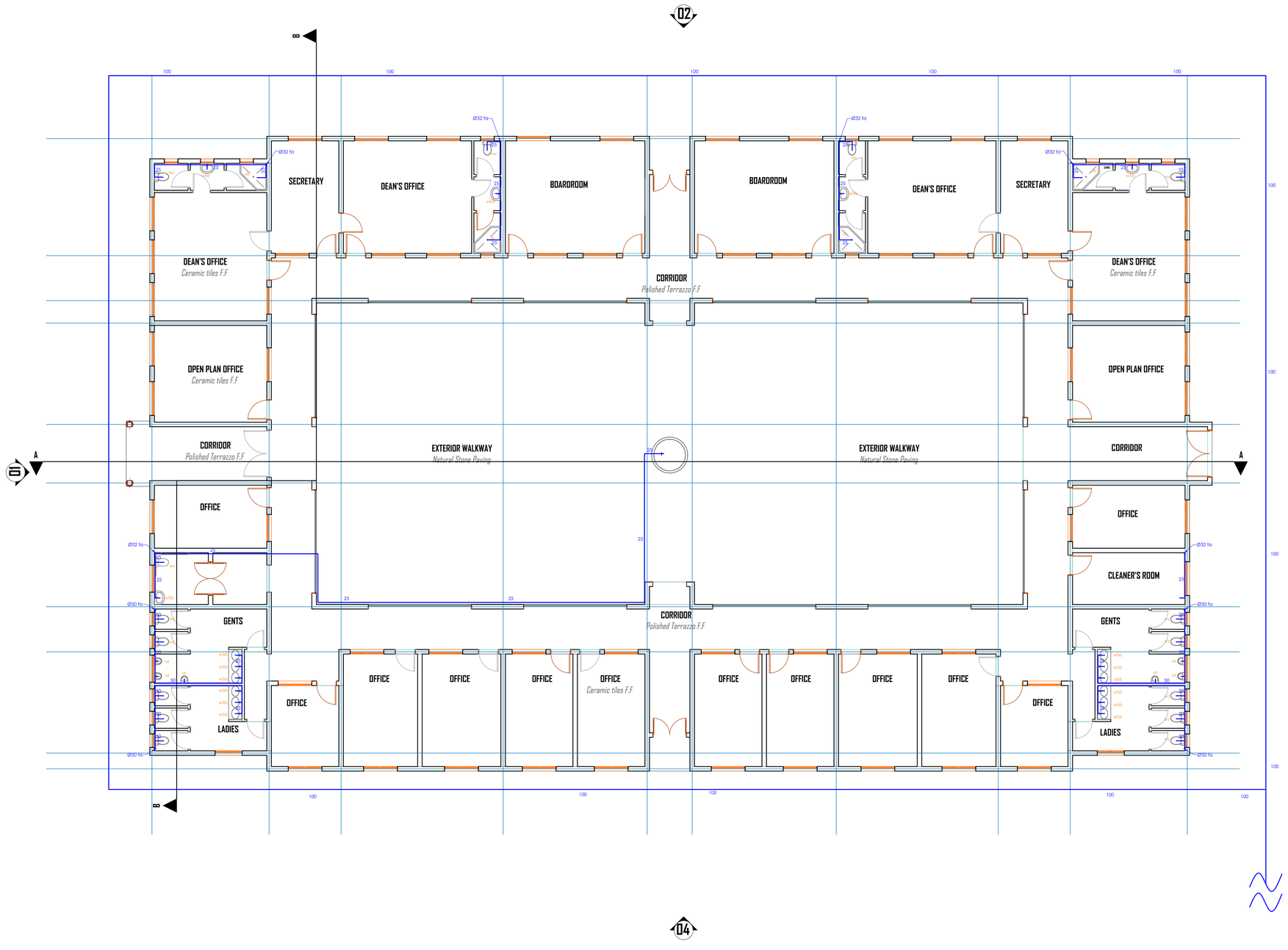
ALUPE UNIVERSITY

Title

DRAINAGE LAYOUT

	Name	Signature	Date
Drawn	K.K		
Designed	K.K		

Scale	Date	Drawing No.
1:25	NOVEMBER 2020	MECH 1



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REVISIONS

NO	DATE	BY	DESCRIPTION	SIGNATURE

Project

PROPOSED ALUPE ADMINISTRATION BLOCK

Client

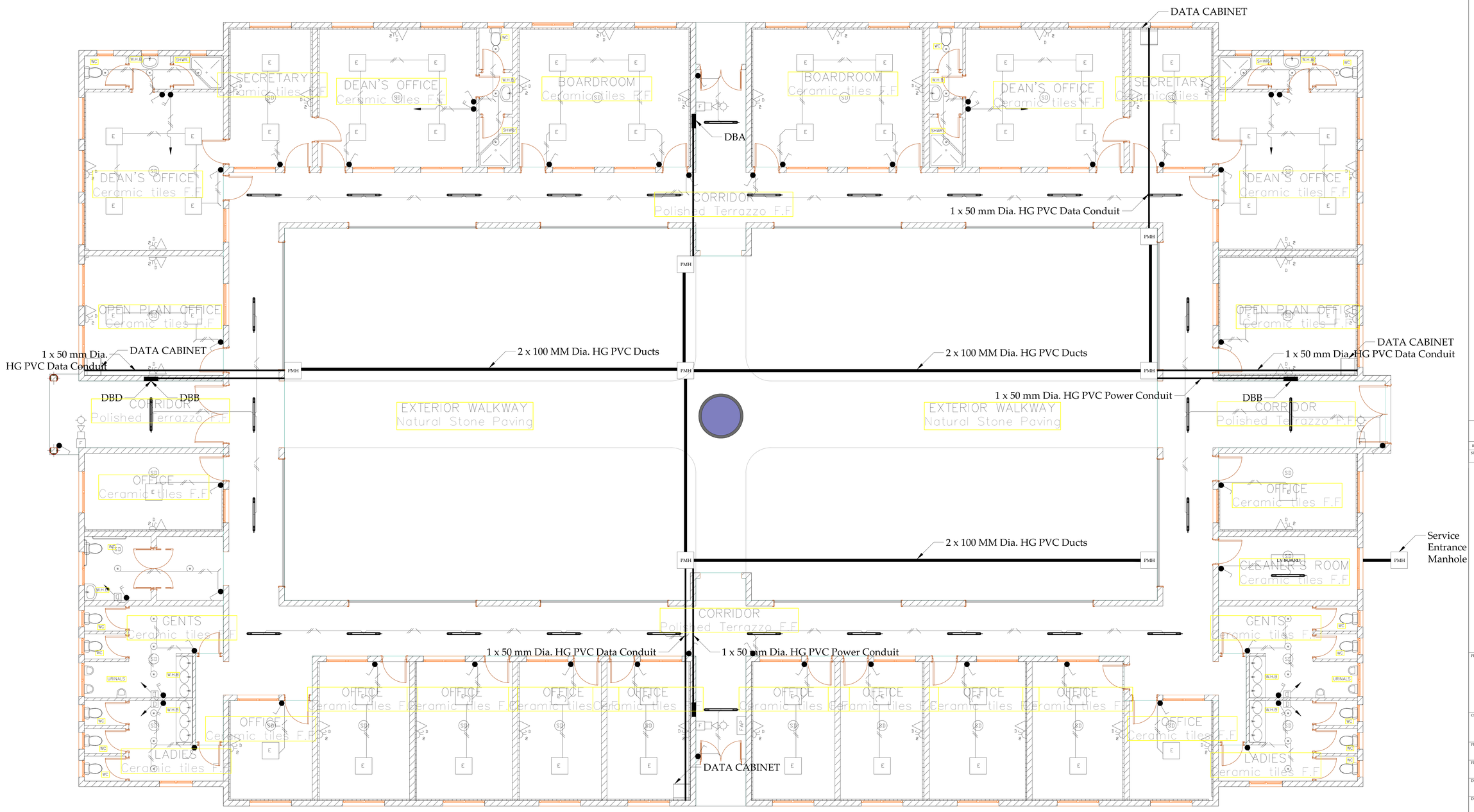
ALUPE UNIVERSITY

Title

PLUMBING LAYOUT

	Name	Signature	Date
Drawn	K.K		
Designed	K.K		

Scale	Date	Drawing No.
1:25	NOVEMBER 2020	MECH 2



Notes:

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2. WORK TO FIGURED DIMENSIONS ONLY AND ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND SERVICE ENGINEER'S DRAWINGS AND SPECIFICATIONS
4. ALL CONDUITS SHALL BE HEAVY GAUGE AND SAMPLES SHALL BE APPROVED BEFORE INSTALLATION COMMENCES.
5. NO TWO INDEPENDENT CIRCUITS SHALL BE RUN IN THE SAME CONDUITS.

REV:	DESCRIPTION:	BY:	DATE:
-	-	-	-

STATUS: TENDER ISSUE

PROJECT:
PROPOSED PHASE II
ADMINISTRATION BLOCK
FOR ALUPE UNIVERSITY COLLEGE

CLIENT:
ALUPE UNIVERSITY COLLEGE
P. O. BOX 845 - 50400
BUSIA
KENYA

PROJECT NO:

FILE NO:

DRAWING TITLE:
GROUND FLOOR ELECTRICAL SERVICES LAYOUT

DRAWING NO:

SCALE(S) AT A0: 1:50

REVISION: -

APPROVED:

CHIEF ENGINEER (ELECTRICAL) S.D.P.W

	NAME:	SIGNATURE:	DATE:
DRAWN:			
DESIGN:			
CHECKED:			

MINISTRY OF TRANSPORT, INFRASTRACTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
STATE DEPARTMENT OF PUBLIC WORKS
ELECTRICAL DEPARTMENT