TENDER NO. KMTC/61/2019 - 2020

TENDER FOR PROPOSED ADMINISTRATION & CLASSROOMS BLOCK FOR KENYA MEDICAL TRAINING COLLEGE – NYANDARUA CAMPUS

CLOSING DATE: 14TH JULY 2020 AT 10.00AM

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SECTION I

INVITATION FOR TENDER

SECTION I

INVITATION FOR TENDER (IFT)

National Open Tender

FUNDING: KENYA MEDICAL TRAINING COLLEGE (KMTC)

PROPOSED ADMINISTRATION & CLASSROOMS BLOCK FOR KENYA MEDICAL TRAINING COLLEGE – NYANDARUA CAMPUS

Date: 30th JUNE 2020

1. The Government of The Republic of Kenya (GoK) through The Kenya Medical Training College (KMTC) has set aside funds for construction of an Administration & Classrooms Block for Nyandarua Campus, Nyandarua County, Kenya.
2. KMTC, on behalf of GOK now invite sealed tender (s) for the underlisted categories of works.

Tender Reference	Tender Description	NCA Registration Category	Tender Security Amount
KMTC/61/2019-2020	Proposed Administration & Classrooms Block For Kenya Medical Training College – Nyandarua Campus	NCA 6 (Building Works), NCA 8 (Electrical Mechanical Engineering Services)	Kshs. 600,000

3. Bidding will be conducted through the **National Open Tender** procedures specified in the Government of Kenya Public Procurement and Asset Disposals Act, 2015.
4. Interested eligible bidders may obtain further information from KMTC offices and inspect the bidding documents at the Ground Floor Reception, Administration Block situated at:

   Kenya Medical Training College Headquarters
   P.O Box 30195 – 00100 Nairobi
   Telephone No.: +254 706541869/+254 737352543
   Email: info@kmtc.ac.ke

   On normal working days on Monday to Friday **09.00hrs and 17.00hrs except on Public Holidays or download at the** KMTC website https://www.kmtc.ac.ke or tender.go.ke Documents downloaded are free of charge and bidders are advised to register at the KMTC Procurement Office or via email at procurement@kmtc.ac.ke (***Refer to registration form in the tender document***).

5. A complete set of bidding documents (Hard Copy) in English may be purchased by interested bidders on the submission of **a written application** on company letterhead

to the address below and upon payment of a non-refundable/non-transferable **fee of Kenya Shillings; 1,000/=**. The method of payment is by Bankers cheque payable to "Director, Kenya Medical Training College"

6. Complete serialized/paginated Bid Documents; **One original** and **a copy** in plain sealed envelopes clearly marked on top with the Tender Reference and Description and accompanied by a Bid Security of an amount as indicated in the respective Tender Documents in a freely convertible currency from Commercial Banks or Insurance Companies (Approved by The GOK Public Procurement Regulatory Authority) and should be addressed to:

   The Chief Executive Officer
   Kenya Medical Training College,
   P.O Box 30195 - 00100
   Nairobi, Kenya.

   And must be deposited in Tender box situated at the Administration Block, Ground Floor reception, Kenya Medical Training College headquarters in Nairobi on or before **14h July, 2020 at 10.00AM.** Bids will be opened immediately thereafter in the presence of Bidders' and or representatives who choose to attend.

7. Late bids shall **NOT** be accepted.

8. There will be NO mandatory Site visit.

Chief Executive Officer
Kenya Medical Training College

REGISTRATION FORM FOR ONLINE TENDERERS/BIDDERS/SUPPLIERS

REGISTRATION FORM FOR ONLINE TENDERERS/BIDDERS/SUPPLIERS

Tender No.: KMTC/61/2019 –2020, Proposed Administration & Classrooms Block for Kenya Medical Training College - Nyandarua Campus

NOTE: Please provide your details below for purposes of communication in case you download this tender document from KMTC website.

Name of the firm:……..

Postal Address:……..

Telephone Contacts:……...……

Company email address:……..

Contact Person:……

Once completed please submit this form to the email below;

procurement@kmtc.ac.ke

SPECIAL NOTES

SPECIAL NOTES

1. The Contractor is required to check the numbers of the pages of these Bills of Quantities against the contents stated on the Table of Contents and should he find missing, in duplicate or indistinct, he must inform the Procuring entity as described in this document at once and have the same rectified.

2. Should the Contractor be in doubt about the precise meaning of any item or figure for any reason whatsoever, he must inform the Procuring entity in order that the correct meaning may be decided before the date of submission of tenders.

3. No liability will be accepted nor any claim allowed in respect of errors in the Contractor's tender due to mistakes in these Bills of Quantities which should have been rectified in the manner described above.

4. The Tenderer shall not alter or otherwise qualify the text of this Tender Document. Any alteration or qualification made without any authority will be ignored and the text printed will be adhered to.

5. In case of Discrepancy between Tender Data Sheet and other sections of these Tender Documents, information in the Tender Data Sheet shall apply.

6. The bids shall be evaluated in accordance with evaluation criteria as detailed in the bid document.

7. Only Tenderers who score 80 points and above in the Technical Evaluation Stage shall qualify for further evaluation.

SECTION II

INSTRUCTION TO TENDERS

SECTION II
INSTRUCTIONS TO TENDERERS

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

1.1 This Invitation for Tenders is open to all eligible tenderers 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 Kenya Medical Training College to provide consulting services for the preparation or supervision of the Works, and any of its affiliates, shall not be eligible to tender.

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

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

1.5 Where no pre-qualification of potential tenderers has been done**,** all tenderers shall include be required 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 three years;

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

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

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

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

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

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

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

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

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

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

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

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

(b) experience as main contractor in the construction of at least five works of a nature and complexity equivalent to the Works over the last 5 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 ten 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 2 months of the estimated payment flow under this Contract.

1.8 The figures for each of the partners of a joint venture shall be added together to determine the tenderer's compliance with the minimum qualifying criteria of clause 1.7 (a) and (e); however, for a joint venture to qualify, each of its partners must meet at least 25 percent of minimum criteria 1.7 (a), (b) and (e) for an individual tenderer, and the partner in charge at least 40 percent of those minimum criteria. Failure to comply with this requirement will result in rejection of the joint venture's tender. Subcontractors' experience and resources will not be taken into account in determining the tenderer's compliance with the qualifying criteria, unless otherwise stated.

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

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

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

1.12 The Kenya Medical Training College employees, committee members, board members and their relative (spouse and children) are not eligible to participate in the tender.

1.13 The price to be charged for the tender document shall be Kshs.1,000/.

1.14 The Kenya Medical Training College shall allow the tenderer to review the tender document free of charge before purchase.

2 Tender Documents

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

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

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

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

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

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

3 Preparation of Tenders

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

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

(a) These Instructions to Tenderers, Form of Tender, Conditions of Contract, Appendix to Instructions to Tender, Appendix to Conditions of Contract and Specifications;

(b) Tender Security;

(c) Priced Bill of Quantities;

(d) Qualification Information Form and Documents;

(e) Alternative offers where invited; and

(f) Any other materials required to be completed and submitted by the tenderers.

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

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

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

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

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

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

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

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

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

3.12 The Tender Security may be forfeited

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

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

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

(i) sign the Agreement, or

(ii) furnish the required Performance Security.

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

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

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

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

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

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

4 Submission of Tenders

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

(a) be addressed to the Kenya Medical Training College at the address provided in the invitation to tender;

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

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

4.2 Tenders shall be delivered to Kenya Medical Training College at the address specified above not later than the time and date specified in the invitation to tender. However, Kenya Medical Training College may extend the deadline for submission of tenders by issuing an amendment in accordance with Sub-Clause 2.5 in which case all rights and obligations of the Employer and the tenderers previously subject to the original deadline will then be subject to the new deadline.

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

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

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

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

5 Tender Opening and Evaluation

5.1 The tenders will be opened by Kenya Medical Training College, 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.

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

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

5.4 To assist in the examination, evaluation, and comparison of tenders, the Kenya Medical Training College at his discretion, may ask any tenderer for

clarification of the tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, telex or facsimile but no change in the price or substance of the tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered in the evaluation of the tenders in accordance with Clause 5.7.

5.5 Prior to the detailed evaluation of tenders, the Kenya Medical Training College 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 Kenya Medical Training College's rights or the tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other tenderers presenting substantially responsive tenders.

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

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

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

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

(c) In the event of a discrepancy between the tender amount as stated in the Form of Tender and the corrected tender figure in the main summary of the Bill of Quantities, the amount as stated in the Form of Tender shall prevail.

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

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

(f) the amount stated in the tender will be adjusted in accordance with the above procedure for the correction of errors and, with concurrence of the tenderer, shall be considered as binding upon the tenderer. If the

tenderer does not accept the corrected amount, the tender may be rejected and the Tender Security may be forfeited in accordance with clause 3.11.

5.8 Kenya Medical Training College will evaluate and compare only the tenders determined to be substantially responsive in accordance with Clause 5.5.

5.9 In evaluating the tenders, Kenya Medical Training College 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

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

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

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

6 Award of Contract

6.1 Subject to Clause 6.2, the award of the Contract will be made to the tenderer whose tender has been determined to be substantially responsive to the tendering documents and who has offered the lowest evaluated tender price, provided that such tenderer has been determined to be (a) eligible in accordance with the provision of Clauses 1.2, and (b) qualified in accordance with the provisions of clause 1.7 and 1.8.

6.2 Notwithstanding clause 6.1 above, Kenya Medical Training College reserves the right to accept or reject any tender, and to cancel the tendering process and reject all tenders, at any time prior to the award of Contract, without

thereby incurring any liability to the affected tenderer or tenderers or any obligation to inform the affected tenderer or tenderers of the grounds for the action.

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

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

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

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

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

6.7 Upon the furnishing by the successful tenderer of the Performance Security, Kenya Medical Training College Ltd. will promptly notify the other tenderers that their tenders have been unsuccessful.

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

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

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

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

6.12 Where contract price variation is allowed, the variation shall not exceed 25% of the original contract price.

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

6.14 Kenya Medical Training College may at any time terminate procurement proceedings before contract award and shall not be liable to any person for the termination.

6.15 Kenya Medical Training College shall give prompt notice of the termination to the tenderers and on request give its reasons for termination within 14 days of receiving the request from any tenderer.

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

7 Corrupt and Fraudulent practices

7.1 Kenya Medical Training College 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

APPENDIX TO INSTRUCTIONS TO TENDERERS

The following information for procurement of services shall complement or amend the provisions of the instructions to tenderers. Wherever there is a conflict between the provisions of the instructions to tenderers and the provisions of the Appendix, the provisions of the Appendix herein shall prevail over those of the instructions to tenderers.

5.7 (f) Not Applicable

SECTION III

TENDER EVALUATION CRITERIA

SECTION III

TENDER EVALUATION CRITERIA

The following criteria will be used in the evaluation of all bids. The submission of the required documents will be used in the determination of the Completeness and Suitability of the Bid. Bids that do not contain all the information required will be declared non responsive and shall not be evaluated further.

1.1 Stage I – Mandatory Requirements

a) Certificate of Registration/Incorporation

b) Valid Registration with **National Construction Authority (NCA 6) for Building Works and National Construction Authority (NCA 8) for Electrical Mechanical Engineering Services**

c) Valid Tax Compliance Certificate

d) Valid Tender Security of 150 days

e) Duly Signed Anti-Corruption declaration form

f) Duly signed non-Debarment declaration form.

g) Pagination/Serialization of Tender Document

h) Duly signed Form of Tender

Any tenderer who fails to meet the mandatory requirements will be disqualified.

1.2 Stage II -Technical Evaluation

	PARAMETER	MAXIMUM POINTS
(i)	Presentation of Bid document	2
(ii)	Key personnel	20
(iii)	Contract Completed in the last Ten (10) years	20
(iv)	Schedules of on-going projects	3
(v)	Schedules of contractors equipment	20
(vi)	Audited Financial Report for the last 3 years	15
(vii)	Evidence of Financial Resources	15
(viii)	Name, Address and Telephone of Banks (Contractor to provide)	2
(ix)	Litigation History	3
	TOTAL	100

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

stage II : Technical Evaluation

Item	Description	Raw Points Scored	Max. Point	
i.	Presentation and response (This includes binding the documents, neat presentation, separation and arrangement of requested information and general response to all requirements)		2	
ii	**Key Personnel (Attach evidence)**			20
	Director of the firm • Holder of degree in relevant field --4 • Holder of diploma in relevant field ---------- 3 • Holder of certificate in relevant Engineering field---------- 2 • Holder of trade test certificate in relevant Engineering field (At least three personnel)---------- --1		4	
	2No. degree/diploma holders of key personnel in relevant field • With over 10 years relevant experience ---------- 8 • With over 5 years relevant experience---------- 4 • With under 5 years relevant experience ---------- 2		8	
	4 No certificate holder of key personnel in relevant field • With over 10 years relevant experience---------- 4 • With over 5 years relevant experience ---------- 3 • With under 5 years relevant experience ----------1		4	
	8 No artisan (trade test certificate in relevant field) • Artisan with over 10 years relevant experience ----------		4	

	---- 4 • Artisan with under 10 years relevant experience 2			
iii	**Contract completed in the last Ten (10) years** <u>Provide Evidence</u> 2 projects of similar nature/ complexity and magnitude **Maximum - 20 marks** (a) Above Kshs.30 Million (12 marks for each project) (b) Kshs 20 Million - 30 Million(6 marks for each project) (c) Kshs 10 Million – 20 Million – (2 mark for each project)		**20**	

iv	**On-going projects and their values** <u>Provide Evidence</u>			**3**
v	**Schedule of contractors equipment and transport (proof or evidence of ownership/Lease)** **a)Relevant Transport** • Pickups (4mks) • Tippers (4Mks) b) **Equipments/Plant** • Back Hoe (4Mks) • Hoisting Equipment (4Mks) • Concrete Mixers (4Mks)			**20**
vi	**Financial report** a)Audited financial report (last three (3) years) • Provide Audited Accounts for 2016, 2017, 2018 ……(3 Mks) • Average Annual Turn-over equal to or greater than the annual Expected Turn over of the project ---------- (12mks) • Average Annual Turn-over above 50% but below 100% of the cost of the project ---------- (2Mks) • Average Annual Turn-over below 50% of the cost of the project ---------- 1Mks		**15**	

	b)Evidence of Financial Resources (cash in hand, lines of credit, over draft facility, etc) • Has financial resources to finance the projected **monthly cash flow*** for three months ----------15 • Has financial resources equal to the projected **monthly cash flow***---------- 10 • Has financial resources less the projected **monthly cash flow***----------5 • Has not indicated sources of financial resources ---------- 0		**15**
	Name, Address and Telephone of Banks		**2**
vii	**Litigation History** • Duly Filled ---------- 2 • Not filled ---------- 0		**3**
	TOTAL		100

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

A bidder must score at least 80% total marks to qualify for further evaluation. (Score 80/100).

FINANCIAL EVALUATION

The Tenderers who qualify under Technical Evaluation will have their Financial Bid evaluated and the lowest responsive bid submitted after analysis shall have their tender considered for award.

Financial Score = Lowest Responsive Bidder / Bidder Price (under consideration) X 20

Combined scores
Total Combined Score = Technical score + Financial Score.

RECOMMENDATION FOR AWARD
The bidder with the highest total combined score shall be recommended for award.

SECTION IV

CONDITIONS OF CONTRACT

SECTION IV
CONDITIONS OF CONTRACT
GENERAL 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 Kenya Medical Training College 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 Kenya Medical Training College

"The Contractor's Tender" is the completed tendering document submitted by the Contractor to Kenya Medical Training College

"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 Kenya Medical Training College 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 Kenya Medical Training College, 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;

a) Agreement,
b) Letter of Acceptance,
c) Contractor's Tender,
d) Appendix to Conditions of Contract,
e) Conditions of Contract,
f) Specifications,
g) Drawings,
h) Bill of Quantities,

i) 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 Kenya Medical Training College 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 Kenya Medical Training College] 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 Kenya Medical Training College and the Contractor in the role representing the Kenya Medical Training College.

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 Kenya Medical Training College 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 Kenya Medical Training College, as per the directions of the Project Manager. The Contractor shall also provide facilities and services for them. Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College 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, Kenya Medical Training College 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 authorized by the Project Manager, access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

16. Instructions

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

16.2 If within seven days after receipt of a written notice from the Project Manager requiring compliance with Project Manager's instructions the Contractor does not comply therewith, the Kenya Medical Training College may employ and pay other persons to execute any work whatsoever which may be necessary to give effect to such instructions and all costs incurred in connection therewith shall be recoverable from the Contractor by the Employer as a debt or may be deducted by the Project Manager from any moneys due or to become due to the Contractor under this 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 Kenya Medical Training College once Kenya Medical Training College 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. Kenya Medical Training College shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of issue of each certificate. If Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College reserves the right to pay the equivalent at the time of payment in the currencies of the countries of such goods and services. Kenya Medical Training College and the Project Manager shall be notified promptly by the Contractor of any changes in the expected foreign currency requirements of the Contractor during the execution of the Works as indicated in the Schedule of Foreign Currency Requirements and the foreign and local currency portions of the balance of the Contract Price shall then be amended by agreement between Kenya Medical Training College 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 Kenya Medical Training College 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) Kenya Medical Training College does not give access to a part of the Site by the Site Possession Date stated in the Appendix to Conditions of Contract.

(b) Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College'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 Kenya Medical Training College 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 Kenya Medical Training College 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. Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College, and denominated in Kenya Shillings. The Performance Security shall be valid until a date 30 days beyond the date of issue of the Certificate of Completion.

29 Dayworks

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

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

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

30 Liability and Insurance

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

(a) The risk of personal injury, death or loss of or damage to property (excluding the Works, Plant, Materials and Equipment), which are due to;

(i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works, or

(ii) negligence, breach of statutory duty or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.

(b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault Kenya Medical Training College or in Kenya Medical Training College'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 Kenya Medical Training College'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 Kenya Medical Training College's risk are Contractor's risks.

The Contractor shall provide, in the joint names of Kenya Medical Training College 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, Kenya Medical Training College may effect the insurance which the Contractor should have provided and recover the premiums from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

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

31 Completion and Taking Over

31.1 Upon deciding that the Works are complete, the Contractor shall issue a written request to the Project Manager to issue a Certificate of Completion of the Works. Kenya Medical Training College 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 Kenya Medical Training College 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. Kenya Medical Training College shall pay the Contractor the amount due in the Final Certificate within 60 days.

33 Termination

33.1 Kenya Medical Training College 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 Kenya Medical Training College 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 fundamental breaches of Contract shall include, but shall not be limited to, the following; 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 Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College 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 Kenya Medical Training College 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

36.1 The Contractor shall not;

(a) Offer or give or agree to give to any person in the service of Kenya Medical Training College 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 Kenya Medical Training College or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract for Kenya Medical Training College.

(b) Enter into this or any other contract with the Kenya Medical Training College 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 Kenya Medical Training College.

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 Kenya Medical Training College 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:

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

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

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

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

37.6 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 Kenya Medical Training College 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.

SPECIAL CONDITIONS OF CONTRACT

Special conditions of contract shall supplement the general conditions of contract, wherever there is a conflict between the GCC and the SCC, the provisions of the SCC herein shall prevail over those in the GCC.

5.1 THE PROJECT IMPLEMENTATION TEAM CONSISTS OF:

The "Employer":- KENYA MEDICAL TRAINING COLLEGE.
P. O. BOX 30195 – 00100
NAIROBI

The "Project Manager":- ARCHBUILD LIMITED.
P. O. BOX 14575 – 00100
NAIROBI.

The "Project Architect" ARCHBUILD LIMITED.
P. O. BOX 14575 – 00100
NAIROBI.

The "Quantity Surveyor": CONSTRUCTION & ALLIED CONSULTANTS
P. O. BOX 101646 – 00101
NAIROBI.

The " Civil / Structural Engineers": FRADER CONSULTING LIMITED.
P. O. BOX 4162 – 00506
NAIROBI.

APPENDIX TO CONDITIONS OF CONTRACT

APPENDIX TO CONDITIONS OF CONTRACT

1.00	**APPENDIX TO CONDITIONS OF CONTRACT** **THE EMPLOYER IS:-** Name: KENYA MEDICAL TRAINING COLLEGE. Address: P. O. BOX 30195 - 00100, NAIROBI Name of Authorized Representative: THE CHIEF EXECUTIVE OFFICER, KENYA MEDICAL TRAINING COLLEGE Telephone: +254 706541860 / +254 737 352543 Facsimile: ……. **THE PROJECT MANAGER IS:** Name: ARCHBUILD LIMITED Address: P. O. BOX 14575 – 00100, NAIROBI The name (and identification number) of the Contract is PROPOSED ADMINISTRATION & CLASSROOMS BLOCK FOR KENYA MEDICAL TRAINING COLLEGE, NYANDARUA CAMPUS - **Tender Ref. No** KMTC/61/2019 - 2020 The works in this contract comprise the construction of : Administration & Classrooms Block - 966 M^2 Septic Tank & Soak Pit Associated Mechanical and Electrical Services Installations. The Start Date shall be As agreed with the Employers. The Contractor shall submit a revised program for the Works within Seven days of delivery of the Letter of Acceptance. The Site Possession Date shall be 14 days from the date of acceptance letter The Site is located in Nyandarua, Nyandarua County. The Defects Liability Period is 180 days AFTER DATE OF PRACTICAL COMPLETION.

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

1. None ‘
2. “ ‘
3. “ ‘
4. “ ‘

The minimum insurance covers shall be;

1. The minimum cover for insurance of the Works and of plant and Materials in respect of the Contractor’s faulty design is:10% CONTRACT SUM
2. The minimum cover for loss or damage to Equipment is:10% CONTRACT SUM
3. The minimum for insurance of other property is:10% CONTRACT SUM
4. The minimum cover for personal injury or death insurance
5. For the Contractor’s employees: AS PER WORKMAN’S COMPENSATION
6. And for other people is:5% CONTRACT SUM

The following events shall also be Compensation Events: AS STATED IN 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 TEN PER CENT (10%) OF CERTIFIED AMOUNT

The Limit of retention is FIVE PER CENT (5%) OF CONTRACT SUM

The Minimum monthly certificate shall be in the amount of 2% (minimum) of Contract Price / Contract Sum

The Price Adjustment Clause SHALL NOT APPLY. THIS IS A FIXED PRICE CONTRACT

The liquidated damages for the whole of the Works are ONE HUNDRED THOUSAND (KSHS.100,000.00) PER WEEK OR PART THEREOF

The Performance Security shall be for the following minimum amounts equivalent as a percentage of the Contract Price **TEN PERCENT (10%).**

Bidders are allowed to bid in any freely convertible currency. The rate of exchange for comparison purpose shall be the CBK rate on the tender opening date.

The schedule of basic rates used in pricing by the Contractor is as attached *[Contractor to attach].*
Clause 25.3 (JBC clauses) shall not apply. The bidder shall instead quote for prices from material from reputed manufacturers or suppliers for material listed.
Advance Payment **SHALL NOT** be granted. Clause 23.7 is not applicable

SECTION V

STANDARD FORMS

SECTION V
STANDARD FORMS

NOTES ON THE SAMPLE FORMS

1 *Form of Invitation to Tender* - form to be completed by the Kenya Medical Training College

2 *Form of Tender* - The form of tender must be completed by the tenderer and submitted with the tender documents. It must also be duly signed by duly authorized representatives of the tenderer.

3 *Letter of Acceptance* this form letter will be used to communicate the award to the successful tenderer

4 *Form of Agreement* - The Form of Agreement shall not be completed by the tenderer at the time of submitting the tender. The Contract Form shall be completed after contract award and should incorporate the accepted contract price.

5 *Form*-of *Tender Security* - When required by the tender documents the tender shall provide the tender security either in the form included herein or in another format acceptable to the Kenya Medical Training College.

6 *Performance Security Form*- The performance security form should not be completed by the tenderers at the time of tender preparation. Only the successful tenderer will be required to provide performance security in the form provided herein or in another form acceptable to the Kenya Medical Training College.

7 *Bank Guarantee for Advance Payment Form* - When Advance payment is requested for by the successful bidder and agreed by the Kenya Medical Training College, this form must be completed fully and duly signed by the authorized officials of the bank.

8 *Qualification Information* - this form must be completed fully and duly signed by the bidder.

9 *Tender Questionnaire* - this form must be completed fully and duly signed by the bidder.

10 *Confidential Business Questionnaire Form* - This form must be completed by the tenderer and submitted with the tender documents.

11. *Statement of Foreign Currency Requirement* – this form is not applicable to this tender.

12. *Details of Sub-Contractors* - This form must be completed by the tenderer and submitted with the tender documents.

13. *Request for Review Form* This form shall only be used after tender evaluation if a bidder disagrees with the decisions of the Procuring Entity.

14. *Declaration of Undertaking* (Integrity Statement)

15. *Non - Debarment Declaration* - This form must be completed by the tenderer and submitted with the tender documents.

16. *Site Visit Declaration Form* – This form is for information only. A pre-bid site visit certificate has been issued elsewhere in this document and shall only be filled during the pre-bid site visit in the manner prescribed therein.

FORM OF INVITATION FOR TENDERS

_____*[date]*

To: TENDERER'S NAME_____

P. O. BOX _____

_____

_____

Dear Sirs:

RE: _____

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 _____

Upon payment of a non-refundable fee of _____

All tenders must be accompanied by ONE (1) copy of both Technical and Financial Proposals and a security in the form and amount specified in the tendering documents, and must be delivered to _____, or be addressed to _____ _____. Tenders will be opened immediately thereafter, in the presence of tenderers' representatives who choose to attend.

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

Yours faithfully,

_____ Authorized Signature

_____ Name and Title

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. Refer also to Clause 1.7(c) of the Instructions to Tenderers

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?)**

1.5 Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data. Refer also to clause 1.5(e) of the Instructions to Tenderers and Clause 9.1 of the Conditions of Contract

Position	Name	Years of experience (general)	Years of experience in proposed position

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 Kenya Medical Training College

_____
_____
_____

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

_____
_____

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

3.0 **Joint Ventures**

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

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

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.

Bidder's Signature: ----------**Official Stamp** ----------

Date: ----------

TENDER QUESTIONNAIRE

Please fill in block letters.

1. Full names of tenderer

   _____

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

   _____

3. Telephone number (s) of tenderer

   _____

4. Facsimile number of tenderer

   _____

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

   _____

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

   _____

   _____

   _____

_____

Signature of Tenderer

CONFIDENTIAL BUSINESS QUESTIONNAIRE FORM

You are requested to give the particulars indicated in Part 1; either Part 2(a), 2(b) or 2 (c) whichever applies to your type of business; and Part 3.

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

Part 1 – General

1.1 Business Name
……

1.2 Location of Business Premises. ……

1.3 Plot No…… Street/Road ……

Postal Address ……..……..

Tel No. ……..…. Fax …… E mail ……..……..

1.4 Nature of Business ,…….……

1.5 Registration Certificate No.……

1.6 Maximum Value of Business which you can handle at any one time – Kshs……

1.7 Name of your Bankers ……Branch …….

Part 2 (a) – Sole Proprietor

2a.1 Your Name in Full ……..…….. Age ……

2a.2 Nationality …… Country of Origin ……

- Citizenship Details ……..

Part 2 (b) Partnership

2b.1 Given details of Partners as follows:

2b.2

Name	Nationality	Citizenship Details	Shares
1……			
2……			
3……			
4……			

Part 2 (c) – Registered Company

2c.1 Private or Public …….

2c.2 State the Nominal and Issued Capital of Company-

Nominal Kshs. ……

Issued Kshs. ……

2c.3 Given details of all Directors as follows

Name	Nationality	Citizenship Details	Shares
1……			
2……			
3……			
4……			
5……			

Part 3 – Eligibility Status

3.1 Are you related to an Employee, Committee Member or Board Member of Kenya Medical Training College ? Yes _____ No_____

3.2 If answer in '3.1' is **YES** give the relationship.
……
……
……
……

3.3 Does an Employee, Committee Member, Board Member of Kenya Medical Training College sit in the Board of Directors or Management of your Organization, Subsidiaries or Joint Ventures? Yes_____ No_____

3.4 If answer in '3.3' above is **YES** give details.
……
……
……

3.5 Has your Organization, Subsidiary Joint Venture or Sub-contractor been involved in the past directly or indirectly with a firm or any of it's affiliates that have been engaged by Kenya Medical Training College to provide consulting services for preparation of design, specifications and other documents to be used for procurement of the goods under this invitation? Yes_____ No_____

3.6 If answer in '3.5' above is **YES** give details.
……
……
……

3.7 Are you under a declaration of ineligibility for corrupt and fraudulent practices? YES_____ No_____

3.8 If answer in '3.7' above is **YES** give details:
……
……
……

3.9 Have you offered or given anything of value to influence the procurement process? Yes _____No_____

3.10 If answer in '3.9' above is **YES** give details

……

……

……

I DECLARE that the information given on this form is correct to the best of my knowledge and belief.

Date …….. Signature of Candidate

- *If a Kenya Citizen, indicate under "Citizenship Details" whether by Birth, Naturalization or registration.*

DECLARATION OF UNDERTAKING (INTEGRITY STATEMENT)

Anti – Corruption Policy in the Procurement Process

Undertaking By Bidder On Anti – Corruption Policy / Code of Conduct And Compliance Program

The governments of Kenya is committed to fighting corruption in all its forms and in all its institutions to ensure that all the government earned revenues are utilized prudently and for the purpose intended with a view to promoting economic development as the country work towards actualizing Vision 2030.

Here at KMTC and also being one of the government entities mandated under the government Legal Notice number 466 of 2004 to procure, warehouse and distribute Essential Medicines and Medical Supplies to all the public health facilities in Kenya, on behalf of the government, we are highly committed to fighting any form of corruption in our organization to ensure that all the monies that the government entrust with us, is optimally and prudently utilized for the benefits of all the people we serve.

The following is a requirement that every Bidder wishing to do business with KMTC must comply with:

(1) Each bidder must submit a statement, as part of the tender documents, in the format given and which must be signed personally by the Chief Executive Officer or other appropriate senior corporate officer of the bidding company and, where relevant, of its subsidiary in Kenya. If a tender is submitted by a subsidiary, a statement to this effect will also be required of the parent company, signed by its Chief Executive Officer or other appropriate senior corporate officer.

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

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

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

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

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

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

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

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

a) Cancellation of the contract;

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

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

(7) The Government of Kenya through Kenya Anti-Corruption Commission has made special arrangements for adequate oversight of the procurement process and the execution of the contract. Those charged with the oversight responsibility will have full access if need be to all documentation submitted by Bidders for this contract, and to which in turn all Bidders and other parties involved or affected by the project shall have full access (provided, however, that no proprietary information concerning a bidder may be disclosed to another bidder or to the public).

1. MEMORANDUM (FORMAT)

(Clause 41, 62 and 66 of Kenya Public Procurement and Asset Disposal Act 2015)

This company _____*(name of company)* has issued, for the purposes of this tender, a Compliance Program copy attached -which includes all reasonable steps necessary to assure that the No-bribery commitment given in this statement will be complied with by its managers and employees, as well as by all third parties working with this company on the public sector projects or contract including agents, consultants, consortium partners, subcontractors and suppliers')"

Authorized Signature:_____

Name and Title of Signatory: _____

NON - DEBARMENT DECLARATION

We **(*insert the name of the company / supplier*)** ----------declares and guarantees that no director, sub-contractor or any person who has any controlling interest in our organization has been debarred from participating in a procurement proceeding.

Name ……Signature……..Date ……

Company Seal / Business Stamp

TENDER SECURITY FORM

(Amend accordingly if provided by Insurance Company)

Whereas ……..[name of the tenderer]

(hereinafter called "the tenderer")has submitted its tender dated……..[date of submission of tender] for the provision of ……..

[name and/or description of the services]

(hereinafter called "the Tenderer")……

KNOW ALL PEOPLE by these presents that WE……

of……having registered office at

[name of Procuring Entity](hereinafter called "the Bank")are bound unto……..

[name of Procuring Entity](hereinafter called "the Procuring Entity") in the sum of …….

for which payment well and truly to be made to the said Procuring Entity, 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 the tenderer withdraws its Tender during the period of tender validity specified by the tenderer on the Tender Form; or
2. If the tenderer, having been notified of the acceptance of its Tender by the PROCURING ENTITY during the period of tender validity:

(a) fails or refuses to execute the Contract Form, 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 Procuring Entity up to the above amount upon receipt of its first written demand, without the Procuring Entity having to substantiate its demand, provided that in its demand the Procuring Entity will note that the arnount claimed by it is due to it, 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 above date.

[signature of the bank]

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

BANK GUARANTEE FOR ADVANCE PAYMENT FORM

To ……

Gentlemen and/or Ladies:

In accordance with the payment provision included in the special conditions of contract, which amends the general conditions of contract to provide for advance payment,
……

[name and address of tenderer][hereinafter called "the tenderer"] shall deposit with the Procuring entity a bank guarantee to guarantee its proper and faithful performance under the said clause of the contract in an amount of …… …… *[amount of guarantee in figures and words]*.

We, the…… *[bank or financial institution],* as instructed by the tenderer, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to the Procuring entity on its first demand without whatsoever right of objection on our part and without its first claim to the tenderer, in the amount not exceeding…… ……...*[amount of guarantee in figures and words]*.

We further agree that no change or addition to or other modification of the terms of the Contract to be performed thereunder or of any of the Contract documents which may be made between the Procuring entity and the tenderer, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition, or modification.

This guarantee shall remain valid and in full effect from the date of the advance payment received by the tenderer under the Contract until *[date]*.

Yours truly,

Signature and seal of the Guarantors _____

[name of bank or financial institution]

_____

[address]

_____

[date]

PERFORMANCE SECURITY FORM

To: ……

WHEREAS……
…….[name of tenderer]

(hereinafter called "the tenderer") has undertaken, in pursuance of Contract No._____[reference number of the contract] dated _____20_____ to supply……..

[Description services](Hereinafter called "the contract")

AND WHEREAS it has been stipulated by you in the said Contract that the tenderer shall furnish you with *a* bank guarantee by a reputable bank for the sum specified therein as security for compliance with the Tenderer's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the tenderer a guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the tenderer, up to a total of …… ……. *[amount of the guarantee in words and figures],* and we undertake to pay you, upon your first written demand declaring the tenderer to be in default under the Contract and without cavil or argument, any sum or sums within the limits of …… ……*[amount of guarantee]* as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the _____ day of 20_____

_____

Signature and seal of the Guarantors

_____

[name of bank or financial institution]

_____

[address]

_____ [date]

METHOD STATEMENT

The Tenderer is required to give a brief description herebelow of how the tenderer plans to execute the works (The tenderer may add more pages if required).

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)

LETTER OF NOTIFICATION OF AWARD

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 whose particulars appear below on the subject matter of this Letter of Notification of Award.

…….
The Chief Executive Officer
Kenya Medical Training College
P. O. Box 30195 – 00100
NAIROBI.

FOR: **…….**

LETTER OF ACCEPTANCE
[letterhead paper of the Employer]

_____*[date]*

TO: _____(Contractor)

P. O. BOX: _____

_____

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: ……

FORM OF AGREEMENT

THIS AGREEMENT, made the _____ day of _____ 20 _____ between **KENYA MEDICAL TRAINING COLLEGE** of [or whose registered office is situated at] **……..** (hereinafter called "the Procurement Entity") of the one part AND

_____of or whose registered office is situated at]_____

(hereinafter called "the Contractor") of the other part.

WHEREAS THE Procurement Entity 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 Procurement Entity 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

Kenya Shillings_____*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 Procurement Entity to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Procurement Entity to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

4. The Procurement Entity 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 the Procurement Entity

_____

Binding Signature of Contractor _____

In the presence of (i) Name_____

Address_____

Signature_____

(ii) Name _____

Address_____

Signature_____

CONTRACT FORM

THIS AGREEMENT made the ___day of _____20____between…… [name of Procuring Entity] of …….[country of Procuring Entity] (hereinafter called "the Procuring entity") of the one part and ……[name of tenderer] of …….[city and country of tenderer] (hereinafter called "the tenderer") of the other part.

WHEREAS the procuring entity invited tenders for certain materials and spares. viz……..[brief description of materials and spares] and has accepted a tender by the tenderer for the supply of those materials and spares in the spares in the sum of ……[contract price in words and figures].

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 referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:

   (a) the Tender Form and the Price Schedule submitted by the tenderer;

   (b) the Schedule of Requirements;

   (c) the Technical Specifications;

   (d) the General Conditions of Contract;

   (e) the Special Conditions of Contract; and

   (f) the Procuring entity's Notification of Award.

3. In consideration of the payments to be made by the Procuring entity to the tenderer as hereinafter mentioned, the tenderer hereby covenants with the Procuring entity to provide the materials and spares and to remedy defects therein in conformity in all respects with the provisions of the Contract

4. The Procuring entity hereby covenants to pay the tenderer in consideration of the provision of the materials and spares 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 hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, sealed, delivered by _____the _____(for the Procuring entity)

Signed, sealed, delivered by _____the _____(for the tenderer)

in the presence of_____

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 the Procuring Entity)* of ……dated the…day of ……..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:-

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

SECTION VI

BILLS OF QUANTITIES

SECTION VI

BILLS OF QUANTITIES

TABLE OF CONTENTS

FORM OF AGREEMENT

FORM OF AGREEMENT

THIS AGREEMENT, made the _____ day of _____ 20 _____ between **KENYA MEDICAL TRAINING COLLEGE.** of P.O.BOX 30195 – 00100 NAIROBI (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 **PROPOSED ADMINISTRATION & CLASSROOMS BLOCK FOR KENYA MEDICAL TRAINING COLLEGE, NYANDARUA CAMPUS** (hereinafter called "the Works") located at **Nyandarua, Nyandarua County** 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

Kenya Shillings_____*Amount in figures*],

Kenya Shillings_____ [*Amount in words]*.

NOW THIS AGREEMENT WITNESSETH as follows:

3. 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.

4. The following documents shall be deemed to form and shall be read and construed as part of this Agreement i.e.
   (viii) Letter of Acceptance
   (ix) Form of Tender
   (x) Conditions of Contract Part I
   (xi) Conditions of Contract Part II and Appendix to Conditions of Contract
   (xii) Specifications
   (xiii) Drawings
   (xiv) Priced Bills of Quantities

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

6. Kenya Medical Training College 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 Kenya Medical Training College.

_____

Binding Signature of Contractor _____

In the presence of (i) Name_____

Address_____

Signature_____

(ii) Name _____

Address_____

Signature_____

FORM OF TENDER

FORM OF TENDER

Date _____

Tender No:. KMTC/61/2019-2020

To: Kenya Medical Training College
P. O. Box 30195 - 00100
NAIROBI.

Dear Sirs,

RE: PROPOSED ADMINISTRATION & CLASSROOMS BLOCK FOR KENYA MEDICAL TRAINING COLLEGE, NYANDARUA CAMPUS, TENDER NO. KMTC/61/2019-2020

In accordance with the Instructions to Tenderers, Specifications and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct, install and complete such Works and remedy any defects therein for the sum of Kshs._____ *[Amount in figure]* Kenya Shillings _____
_____
_____ *[Amount in words]*.

We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Architect's notice to commence, and to complete the Administartion Block & Classrooms within _____ (In Words) (_____) (in Figures)

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. 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.

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 _____

Tenderer's Name: _____

Tenderer's Address: _____

Tenderer's Signature: _____

Witness's Name: _____

Witness's Address: _____

Witness's Signature: _____Date_____

SPECIFICATIONS (TRADE PREAMBLES)

SPECIFICATIONS (TRADE PREAMBLES)

INDEX PAGE

EXCAVATION AND EARTHWORK

A. The Contractor shall comply with the requirement of the following codes of Practice.

Codes of Practice

B.	Site investigations	C.P. 2001	
C.		Earthworks	C.P. 2003
D.		Foundations	C.P. 2004
E.	Protection of building against water from the ground	C.P. 102	

Note: The Contractor's attention is drawn to section "D" of the Standard Method of Measurements.

F. The Contractor shall visit the site and ascertain for himself the nature of the soil to be excavated. The rates for excavation shall include excavation in any type of material or made up ground excluding rock as defined below. No claim will be allowed for want of knowledge in this respect.

G. Setting out shall be approved before work is commenced.

H. Generally clear the site of all shrubs and trees, grub up roots and fill the holes with red earth. Trees and shrubs shall only be cut as directed on site, and any damage caused to such trees and shrubs not directed to be made good at the Contractor's expense.

I. Excavation for bases and strip foundation shall be to the widths, depth, and levels shown on the Architect's and/or Engineer's drawings. Rates shall be deemed to include for whatsoever alternative method the Contractor chooses to adopt.

J. The Engineer shall be called to inspect the completed excavations. The Contractor shall keep all excavations dry and free from rain or other surface water.

K. Excavations made below required levels shall be filled with Mass Concrete (1:3:6) at the Contractor's expense.

L. Rates for filling or disposal of earth shall include for any double handling, except that resulting from a written order by the Architect and/or Engineer to deposit earth in temporary soil heaps pending its final disposal. Filling shall be in approved filling material to required levels in specified layers carefully rammed and consolidated. Disposal of all surplus excavated material shall be as instructed and rates shall include for loading and wheeling off the site to a pit to be provided by the Contractor.

EXCAVATION AND EARTHWORK (CTD.)

A. Hardcore shall be stone, coarse gravel or other inert material yielding, when thoroughly consolidated, a freely porous bed and blinded with fine hardcore, ashes and similar materials shall include for all temporary retaining boards and for rolling with an 8-10 tonne roller unless otherwise described, in layers not exceeding 150mm deep.

B. Anti-termite treatment shall be fine sprayed using an approved environmentally safe insecticide.

A guarantee of ten (10) years minimum shall be supplied.

C. The Contractor shall at his own expense and before commencing excavations ascertain in writing from the Postal and Power Authorities, Municipal Council and other public bodies, companies and persons who may be affected, the position and depths of their respective ducts, cables, mains, or piles and appurtenances.

The Contractor shall there upon search and locate such services in order to appropriately prop, protect, underpin, alter, divert, restore and make good all pipes, cables or ducts, poles or wires and their appurtenances disturbed or damaged during the progress of the works or consequent thereof.

Such services as required to be removed or altered by virtue of the situation of the permanent work and not the manner in which the work is carried out, shall be so removed or altered at the expenses of the Employer.

D. Rock excavation shall be deemed to mean excavating in such hard material as will necessitate the use of wedges or compressed air equipment or other special plant.

E. Blasting will only be allowed with the prior express permission of the Architect and/or Engineer.

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 and/or Engineer governing the use and storage of explosives.

F. 'Rates are to include also for destroying any white ants' nests found in the vicinity of the buildings, destroying queen ants, depositing cyanide lumps in hole and tunnels and filling with hardcore and murram well rammed and sealed.

CONCRETE WORK

GENERAL

Definitions

A. The term "ARCHITECT" or "ENGINEER" wherever used hereinafter shall have the same meaning as stated in the Preliminaries.

B. The Engineer is authorised to act on behalf of the Architect in all relevant matters in the contract price.

C. The terms "APPROVED", "DIRECTED" AND "SELECTED" wherever used hereinafter shall mean upon approval, direction and selection of or the Engineer, in writing, at their absolute discretion.

D. The Engineer is authorised to act on behalf of the Architect after due consultations in all relevant matters in the contract approvals.

CONCRETE WORK SPECIFICATIONS

GENERAL

Authoritative Standards and Codes of Practice

The following authoritative standards are referred to hereinafter:

	B.S.	Date	Title
A.			12 1989 Portland Cement (Ordinary and rapid hardening).
B.			812 1967 Methods for sampling and testing of mineral aggregates, sand and fillers.
C.			882 1983 Aggregates from natural sources for concrete (including granolithic).
D.	1881	1970/71	Methods of testing concrete.
E.	5328	1981	Methods for specifying concrete
F.			2499 1973 Hot applied joint sealants for concrete pavements.
G.	3148	1980	Tests for water making concrete.
H.	3921	1985	Clay bricks
I.	4251	1974 (1980)	Truck type concrete mixers.
J.			4449 1988 Carbon steel bars for the reinforcement of concrete.
K.			4466 1981 Bending dimensions and scheduling of bars for the reinforcement of concrete (old edition).
L.			4483 1985 Steel fabric for the reinforcement of concrete.
M.	5075		Concrete Admixtures.
N.	6073:Pt.1	1981	Precast concrete blocks.

CONCRETE WORK SPECIFICATIONS (CTD)

Authoritative Standards and Codes of Practice (ctd.)

	B.S.	Date	Title
A.	8110:Pt.1 & 2	1985	The structural use of concrete.
B.			5950 The use of structural steel in buildings.
C.			5400:Pt.5 1979 Steel, concrete and composite Bridge.
D.			8007 1987 The structural use of concrete for retaining aqueous liquids.

American Society for Testing and Materials Standards as published by the American Society for Testing and Materials, 1916 Race St., Philadelphia pa. 19103 U.S.A. (Abbreviated in Test to ASTM).

	ASTM	Date	Title
E.			C88 73 Soundness of aggregates by use of Sodium sulphate
F.			C234 71 Comparing concrete on the Basis of the Bond developed with Reinforcing steel.
G.			C289 71 Potential Reactivity of Aggregates (Chemical Method).

The following codes of practice are referred to hereinafter:

British Standard Codes of Practice published by the Council for Codes of practice British Institution, 2 Park Street, London WIA 2BS, England (abbreviated in text to C.P).

	C.P.	Date	Title
H.			CP.117:pt.1: 1965 Composite construction in structural steel and concrete
I.			BS.3110 1972 Safe use of cranes (mobile cranes, tower cranes and derrick cranes)

CONCRETE WORK SPECIFICATIONS (CTD)

Authoritative Standards and Codes of Practice

A. Should the contractor wish to substitute any of the authoritative standards or code of practice for any listed above he should submit details of any such together with two complete copies of the same to the Engineer for approval with his tender. Approval will only be given to the use of such standard where the Engineer considers the proposed standard or code of practice will give a quality of finished work equal to or better than specified standard.

B. All in situ concrete shall be in accordance with BS 8110 except where superceded by this specification.

C. All precast concrete shall be in accordance with BS 8110 except where superceded by this specification.

NOTE: The Contractor's attention is drawn to section 'F' of the standard method of measurement of building works.

Samples and Materials Generally

D. The Contractor shall, when required, provide for approval samples of all materials to be incorporated in the works. Such samples when approved shall be retained by the Engineer and shall form the standard for all such materials incorporated. No deliveries to the site should commence before such approval is obtained.

E. No materials of any description will be used without prior sanction by the engineer and any condemned as unfit for use in the works must be removed immediately from site by and without recompense to the Contractor.

Test Certificate

F. The Contractor shall provide the Engineer with three copies of all test reports or certificates that are or may be required by this Specification.

Suppliers

G. As soon as possible after the contract has been awarded and before finalising any order for materials to be incorporated in the works, the contractor shall submit the names of any proposed suppliers to the Engineers for approval.

H. Each supplier must be willing to admit the Engineer, or his representative, to his premises during working hours for the purposes of obtaining samples of the materials in question.

I. The information regarding the names of the suppliers may be submitted at different times, as may be convenient, but no sources of supply will be changed without proper approval.

CONCRETE WORK SPECIFICATIONS (CTD)

Drawings

A. The Contractor should check all drawings carefully before any part of the work is carried out. Any discrepancy should be reported to the Engineer immediately for his clarification. The contractor shall be responsible for any costs arising out of his failure to report such discrepancies to the Engineer, in good time.

B. The Contractor shall ensure that he has all relevant drawings and bar bending schedules for any part of the works, well in advance of the execution of that part of the works. Any costs arising out of the contractor's failure to ask for related drawings, or bending schedules in writing, in good time, shall be the responsibility of the contractor. The same shall hold true even if the contractor has submitted a programme of works at commencement.

C. **Bending Schedules**

The Engineer will issue bar bending schedules in accordance with B.S. 4466 (1981). The contractor should check these against the drawings before any cutting; bending or construction involving the schedules is started. Any discrepancy should be reported to the Engineer immediately for his clarification. The contractor shall be responsible for any delays or additional work caused solely by his failure to check the schedules.

Approval

D. Well before construction commences the contractor shall supply to the Engineer for his approval details of his proposed layouts of concreting plant and on site workshop, details of formwork system and the construction devises e.g., cranes, chutes, scaffolding, which he proposes using for the structural work. The information is to be sufficiently detailed to enable the Engineer to approve or otherwise.

E. The Contractor should note that further approvals are required by the specification before construction starts. The contractor is wholly responsible for obtaining these approvals and no claim for delays will be entertained due to the contractor's failure to obtain such approvals in adequate time.

CONCRETE WORK SPECIFICATIONS (CTD)

MATERIALS

Cement

A. Cement, unless otherwise specified, shall be ordinary Portland cement complying with B.S. 12.

B. The Contractor shall obtain a manufacturer's certificate of test in accordance with the appropriate standard for each consignment of cement delivered to the site and shall immediately forward copies of the same to the Engineer for his retention.

C. Notwithstanding the manufacturer's certificate the Engineer may require that any cement delivered to the site be sampled and tested. Any batch of cement so tested which fails to comply with this specification will be rejected.

D. All cement unless delivered in bulk, shall be stored in a weatherproof shed, the floor of which shall be raised at least 150mm above the ground to allow free air circulation. Cement delivered in bulk shall be stored in a weatherproof silo. All cement shall at all times be protected from deterioration.

E. All cement shall be delivered to the site in the original sealed bags of the manufacturer or in approved bulk containers.

F. Each consignment of cement shall be kept separate. Identified and used in order of delivery. No two types of cement shall be used in combination.

G. Any cement which upon inspection is considered by the Engineer to have deteriorated in any way will be rejected.

Aggregate for Concrete

H. Any aggregate for concrete shall, unless otherwise specified, be aggregate from natural sources complying with B.S.882. Additionally, the flakiness index when determined by the sieve method described in B.S.812 shall not exceed 35 for any size of concrete aggregate. Fine aggregate within or finer than zone 4 of B.S. 882 shall not be used.

I. When tested for soundness in accordance with ASTM Test C88-73 the loss of weight after 5 cycles shall not exceed 5% (percent) for any aggregate.

J. Aggregate which is potentially reactive when tested in accordance with ASTM Test C.289-71 for the alkali aggregate reaction shall not be used? The Standard for acceptance being that test results shall plot to the left of the solid line which is shown in Figure 2 of the test standard.

CONCRETE WORK SPECIFICATIONS (CTD)

MATERIALS (CTD)

Aggregate for Concrete (ctd.)

A. Well before any concreting work, the contractor shall forward to the Engineer for approval details of his proposed source of supply of aggregates giving the aggregate group classification and typical physical properties as required by B.S.882.

B. The Contractor shall provide the Engineer with a certificate for his retention showing that all aggregates regularly comply with the requirements of this specification.

C. The Engineer may require that any aggregate be tested for soundness in accordance with ASTM Test C88-73 before giving approval to any proposed source of supply.

D. The Engineer may require that any aggregate be tested for potential reactivity in accordance with ASTM Test C.289-71

E. Notwithstanding any certificate of compliance, the Engineer may at any time require that any aggregate delivered to the site be sampled and tested. Any aggregate so tested which fails to comply with this specification will be rejected.

F. Coarse aggregate shall be delivered ready screened or screened on site into separate nominal single sizes within limits given in B.S.882

G. Aggregate of different sizes or typical shall be stored in different hoppers or different stockpiles on approved well drained paved areas which shall be separated from each other. Stockpiles shall be protected against contamination from any source.

H. Any aggregate which has become contaminated or which does not conform to the above requirements may be rejected by the Engineer.

Water for use with cement.

I. Water for use in mixing with cement or for curing concrete shall be from an approved source, clean, fresh and free from organic and other deleterious matter.

J. The Engineer may require that any water sampled and tested by the method given in B.S.3148. Water failing the criteria given in the Appendix to B.S. 3148 will be rejected.

K. Water for use in mixing with cement shall neither be hotter than 25deg. C (77deg.F) - or colder than 5deg. (41deg. F) at the time of mixing.

CONCRETE WORK SPECIFICATIONS (CTD)

MATERIALS (CTD.)

Steel Rod Reinforcement

A. **Steel Rod Reinforcement shall consist of:**

a) Mild steel bars complying with B.S 4449
b) Hot rolled high yield bars complying with B.S.4449
c) Cold worked high yield bars complying with B.S.4449 as described in the drawings.

Where cold worked high yield bars are to be used these shall be square twisted bars formed by a torsion-controlled process.

B. The contractor shall obtain a manufacturer's certificate of test in accordance with the appropriate standard for each steel batch relating to reinforcement delivered to site and shall immediately forward copies of the same to the Engineer for his retention.

C. Where hot rolled high yield deformed bars are to be used, the results of bond tests to ASTM 234-71 using concrete of the same quality as that to be used in the works, shall be forwarded to the Engineer.

D. Notwithstanding the manufacturer's certificate, the Engineer may require that any reinforcement delivered to the site be sampled and tested. Any reinforcement so sampled and tested which fails to comply with this specification will be rejected.

E. All reinforcement shall be delivered to the site either as straight bars or ready cut and bent to shape.

F. All reinforcement shall be stored in clean conditions in an orderly manner to the satisfaction of the Engineer such that the batch to which each piece belongs can be readily identified.

Steel Fabric Reinforcement

G. Steel fabric reinforcement shall be electrically cross welded steel mesh reinforcement complying with B.S.4483.

Tying Wires

H. Tying wires for fixing reinforcement shall be either:

a) No. 16 gauge soft annealed iron wire.

or

b) No. 18 gauge stainless steel wire.

CONCRETE WORK SPECIFICATIONS (CTD)

MATERIALS (CTD.)

Spacers

A. Spacer blocks required for ensuring that the reinforcement is correctly positioned shall be as small as possible consistent with their purpose, of a shape acceptable to the Engineer, and designed so that they will not overturn when the concrete is placed, unless otherwise approved they shall be made of concrete with 10mm maximum aggregate size and mix proportions to produce the same strength as the adjacent concrete S.W.G. 18 wire shall be cast in the block for the purpose of tying it to the reinforcement.

B. Space blocks of concrete shall not be used until at least 7 days old.

C. No admixtures or cement containing additives shall be used in concrete unless specified or approved by the Engineer. Such approval will not be given unless in the Engineer's opinion specific benefit to the density or quality of the concrete will result.

D. **Wall Ties**

Wall ties between concrete and adjoining block or brick walling shall be "Abbey" slots and anchors as supplied Abbey Building Suppliers Limited. or similar approved. Wall ties must be provided at concrete and block or brick wall butting surface.

Joint Fillers

E. Joint fillers unless otherwise stated shall be "Flexcell" as manufactured by Expandite Ltd. or similar approved and placed in accordance with the manufacturer's instructions.

Joint Sealants

F. Shall be as described in the drawings and approved by the Engineer. Sealants shall be used strictly in accordance with the manufacturer's instructions.

G. Poured joint sealing compound shall be a hot poured rubber bitumen compound complying with the requirement of B.S.2499.

Water stops

H. Water stops unless otherwise stated shall be "Sika water bar" as manufactured by Sika International or similar approved and placed and jointed in accordance with the manufacturer's instructions. In addition, the method of holding water bar in position, while concreting, must be to the approval of the Engineer.

CONCRETE WORK SPECIFICATIONS (CTD)

REINFORCEMENT

Workmanship

A. Reinforcement shall be bent accurately in accordance with B.S. 4466 to the shapes and dimensions shown in the schedules. All reinforcement shall be at temperatures in range of 5deg.C and 100deg. C.

B. Cold worked or any high yield bars shall not be straightened or bent again once having been bent. When it is necessary to bend mild steel reinforcement already cast in the concrete the internal radius of such bends shall be not less than twice the diameter of the bar.

C. No welding of reinforcement shall be carried out without the approval of the Engineer.

D. All reinforcement shall at the time of concreting be free from mud, oil mortar droppings, loose rust, paint, grease, mill scale or other deleterious matter. Reinforcement still 'blue' from the mill shall not be used.

E. All reinforcement shall be fixed in the position shown on the drawings by adequate use of spacers, tying wires, chairs, stools, etc. and shall be so maintained during the concreting operations.

F. Lap in all reinforcement shall be where indicated on the drawings or approved by the Engineer. Unless otherwise indicated the minimum lap length for rod reinforcement shall be 40 diameters for mild steel and 50 diameter for high tensile twisted bars.

G. A steel-fixer shall be in attendance at all times when concreting is in progress to correct any errors, omissions or movement in the reinforcement.

H. In severe heat conditions reinforcement shall be shaded from direct sunlight and hosed down with clean water prior to concreting to keep the reinforcement below 25deg.C (77deg.F).

I. Notwithstanding any inspections, approvals regarding reinforcement, it shall be the contractor's sole responsibility to ensure that the reinforcement complies exactly with the details on the Drawings or Schedule or other written instructions by the Engineer.

Composite floor slabs

J. Concrete hollow pots for use in the composition floor slabs are to be of the sizes required as shown on the drawings and with 25mm wall thickness and are to be true to shape, free from cracks or distortion of adequate strength to support the concrete during placing and consolidation by vibration. Stocks are to be manufactured in accordance with the procedure specified in B.S.2028 and to be of mix not weaker than 1:4:8 cement; sand; stone using maximum 10mm size aggregate. Samples must be approved before incorporation into the works.

CONCRETE WORK SPECIFICATIONS (CTD)

REINFORCEMENT (CTD)

Composite floor slabs (ctd)

A. Concrete hollow pots are to be cured for at least 28 days before use on site. During the first seven days of curing, pots are to be kept permanently damp and protected from exposure to sun and wind.

B. Hollow clay pots where indicated for use in the composite floor slabs are to be the sizes shown on the drawings and to be of adequate strength to support the concrete during placing and consolidation by vibration. They shall be obtained from an approved manufacturer. Before any orders are placed, at least 6 sample clay blocks shall be provided for the approval of the Engineer. Any clay blocks subsequently delivered to site which in the opinion of the Engineer are not of equal standard to the approved samples shall be rejected.

C. Rejected pots shall immediately be removed from site and shall not be used in the works. Clay blocks are to be fully cured before delivery or use on site.

D. Defective or damaged pots are to be removed immediately from site.

E. The hollow pot floor construction is generally to be as shown on the Engineer's drawings.

F. Care shall be taken in planning pots to ensure that they are set out in accordance with the details shown on the Drawings and that they run truly in line without encroaching on the width of the insitu ribs.

G. The open ends of hollow pots, if adjacent to concrete to be placed inside, are to be plugged or stopped to prevent the concrete from flowing into the void and the contractor is to include for this in his prices.

H. The contractor should note that slip tiles are not to be used to the soffit of ribs and he is to take this into consideration in pricing the items of formwork to the soffit of hollow pot floor construction.

I. Before concreting is carried out the pots are to be thoroughly wetted.

J. Care should be taken during concreting that the width of ribs between the rows of pots and the solid insitu concrete shown on the Drawings adjacent to stopping beams is not encroached upon by the pots.

K. Where holes for service occur, the necessary holes or pockets shall be accommodated by replacing of a hollow pot by insitu concrete or the widening of a rib.

L. Prices for such holes through hollow pots slab construction are to include for the re-arrangement or substitution of the hollow pot with solid concrete or the widening of a rib.

REINFORCEMENT (CTD)

Composite floor slabs (ctd)

A. The concrete topping shall be poured at the same time as the ribs between hollow pots.

B. Reinforcement shall be positioned accurately with the specified cover in accordance with the Drawings and using the particular spacer blocks as previously described.

C. Spacer blocks shall be provided at no more than 1.2m centres.

D. Care must be taken during concreting that the reinforcement is not displaced.

Composite Construction of Beams and Columns

E. The contractor shall provide a method statement for construction of concrete encased steel columns and beams. Notwithstanding the Engineer's approval of this method statement, the responsibility of producing workmanship of the specified quality shall rest entirely with the contractor. In addition the contractor shall construct a sample of a concrete encased column and beam, on site, in accordance with the method statement for approval. If approved, all composite construction for the works shall be of a similar quality. The contractor should allow for hoisting of steel beams and columns in his rates.

F. The contractor shall maintain on site for the duration of the contract, all equipment required for modifications to 'in-position' steel beams and columns.

G. The contractor is to note that steel grade 43 shall be used in composite beams steel grade 50 will be used in composite columns.

H. All connections of steel beams to columns and column splice connection details shall be as specified on the structural drawings.

FORM WORK

Definition

I. "Forms falsework or shuttering" shall include all temporary moulds forming the concrete to the required shape together with any special lining that may be required to produce the concrete finish specified.

J. "Falsework or Centering" shall consist of furnishing, placing and removal of all temporary construction such as framing, props and struts required for the support of forms.

K. All timber for formwork, falsework and centering shall be sound wood, well seasoned and free from loose knots, shakes, large cracks, warping and other defects. Before use on the work, it shall be properly stacked and protected from injury from any source. Any timber which becomes badly warped or cracked, prior to the placing of concrete, shall be rejected.

REINFORCEMENT (CTD)

Form Work (ctd)

A. If the contractor proposes to use steel shuttering, he shall submit to the Architect/ Engineer dimensioned drawings of all the component parts, and give details of the manner in which he proposes to assemble or use them. Steel shuttering will only be permitted if it is sturdy in construction and if the manner of its use is approved by the Architect/Engineer.

B. Struts and props shall, where required by the Architect, be fitted with double hardwood wedges or other approved devices so that the moulds may be adjusted as required and eased gradually when required. Wedges shall be spiked into position and any adjusting devices locked before the concrete is cast.

C. All forms shall be wood or metal and shall be built grout-tight and of sufficient rigidity to prevent distortion due to the pressure of the concrete and other loads incident to the construction operations. Form shall be constructed and maintained so as to prevent warping and the opening of joints due to shrinkage of the timber.

D. All formwork shall be approved by the Architect/Engineer before concrete is placed within it. The contractor shall if required by the Architect provide the latter with copies of his calculations of strength and stability of the formwork or falsework but notwithstanding the Engineer's approval of these calculations, nothing shall relieve the contractor of his responsibilities for the safety or adequacy of the formwork.

Falsework and centering

E. Detailed plans for falsework or centering shall be supplied by the contractor to the Architect at least 14 days in advance of the time the contractor begins construction of the falsework. Notwithstanding the approval of the Architect of any designs for falsework submitted by the Contractor, the Contractor shall solely be responsible for the safety and adequacy of the falsework or centering.

F. All falsework shall be constructed to provide the necessary rigidity and to support the loads from the weight of green concrete and shutting and incidental construction loads.

G. Falsework or centering shall be founded upon a solid footing safe against undermining and protected from softening. Falsework which cannot be founded on satisfactory footings shall be supported on pilling which shall be spaced driven and removed in a manner approved by the Architect. The Architect may require the contractor to employ screw jacks, or hard wood wedges to take up any settlement in the formwork either before or during the placing of concrete.

H. Falsework shall be set to give the finished structure the required grade and camber shown on the Drawings.

CONCRETE WORK SPECIFICATIONS (CTD)

REINFORCEMENT (CTD)

Form of Construction Joints (ctd)

A. Where permanent or temporary joints are to be made in horizontal or inclined members, stout stopping off boards shall be securely fixed across the mould to form a grouting joint. The form of the permanent construction joints shall be as shown on the Drawings.

B. Where reinforcement or water stops pass through the face of construction joint the stopping off boards shall be drilled so that the bars or water stop can pass through or the board shall be made in sections with a half round indentation in the joint faces for each bar so that when placed, the board is a neat and accurate fit and not grout leaks from the concrete through the bar holes, joints, or around the water stops.

C. The forms shall be restrained and unyielding and shall be so designed that the finished concrete will conform to the proper dimensions and contours. The design of the forms shall take into account the effect of vibration of concrete as it is placed.

D. All sharp edges inside the forms shall be provided with 25mm by 25mm triangular fillets, unless otherwise shown on the drawings or directed by the Architect.

E. Openings for the inspection and cleaning of the inside of shuttering for walls, piers and columns shall be formed in such a way that they can be closed conveniently before commencing to concrete.

F. When concrete is to be deposited to a steeper slope than 15deg. to the horizontal, top forms shall be used to enable the concrete to be properly compacted.

G. Form clamps tie bolts and anchors shall be used to fasten forms. The use of wire ties to hold forms in position during placing of concrete will not be permitted. Tie bolts and clamps shall be positive in action and of sufficient strength and number to prevent spreading or springing of the forms. They shall be of such type that no metal part shall be left within the specified concrete.

H. The cavities shall be filled with grout or mortar and the surface left sound, smooth, even and uniform in colour. All forms for outside surfaces shall be constructed with stiff wales at right angles to the studs and all form clamps shall extend through and fasten such wales.

I. The shapes, strength, rigidity, water tightness and surface smoothness of re-used forms shall be maintained at all times. Any warped or bulged timber must be replaced. Forms which are unsatisfactory in any respect shall not be re-used.

J. All forms shall be treated with approved mould or similar oil or be soaked with water immediately before placing concrete to prevent adherence of concrete. Any materials which adhere to or discolour concrete shall not be used.

CONCRETE WORK SPECIFICATIONS (CTD)

REINFORCEMENT (CTD)

Form of Construction Joints C'td

A. All forms shall be set and maintained true to the line designed until the concrete is sufficiently hardened. Forms shall remain in place for periods which shall be as specified hereinafter. When forms appears to be unsatisfactory in any way, either before or during the placing of concrete, the Architect shall order the work stopped until the defect have been corrected.

Release Agents

B. Only approved chemical release agents, mould creams (emulsions of water in oil) or oils containing a proportion of surfactant not exceeding 2% will be permitted. Water soluble emulsion and oils without surfactant shall not be used. Oil based release agents shall be applied at a ratio of 7m2/litre 24 hours in advance of concreting, preferably by spray or roller. Chemical release agents shall be applied in accordance with the manufacturers' recommendations.

C. The greatest care must be taken that all sawdust shavings, chips and other debris is removed from the formwork before concrete is placed in position and the necessary arrangements must be made by leaving out a board in the bottom of the formwork or otherwise as required.

D. The erection, easing, striking and removal of all formwork must be done under the personal supervision of a competent foreman, and any damage occurring through faulty formwork or its incorrect removal shall be made good by the contractor at his own expense.

E. All projecting fins on the concrete surfaces after removal of formwork shall be chipped off, and any voids or honeycombing to any surface made good to the requirements of the Architect.

F. No patching of the concrete is to be done before inspection of the concrete surfaces as stripped.

G. Traffic or loading must not be allowed on the concrete until the concrete is sufficiently matured and in no case shall traffic or loading be of such magnitude as to cause deflection or other movement in the formwork or damage to the concrete members. Where directed by the Architect/Engineer props may be required to be left in position under slabs and other members for greater period than those specified hereinafter.

CONCRETE WORK SPECIFICATIONS (CTD)

REINFORCEMENT (CTD)

Striking Times

A. It shall be the Contractor's responsibility that no distortion, damage overloading or undue deflection is caused to the structure by the striking of formwork, but the Engineer reserves the right to delay the time of striking in the interest of the work. Formwork shall not be struck until the concrete has sufficiently hardened. Approval of the Engineer shall not relieve the Contractor of his liability to make good any concrete damage by premature removal or collapse of forms. In no circumstances shall forms be struck until the concrete reaches a cube strength of at least twice the stress to which the concrete may be subjected at the time of striking. The following times given in day (24 hours) are the absolute minimum that will be permitted:-

FORMS	**ORDINARY PORTLAND CEMENT**	**RAPID HARDENING CEMENT**
Walls, columns (unloaded), beams sides	2	2
Slabs - props left under	7	2
Beams soffites - props left under	14	5
Slabs - props	14	5
Beams - props	18	8

The time for removal of forms as set out shall not apply to slabs and beams spanning more than 10 metres. For such spans appropriate times shall be recommended or advised by the Engineer.

The periods given above based on the removal of all props and formwork using ordinary Portland cement under average weather conditions. Adverse weather conditions or different cement may cause the above periods to be increased. Should the contractor wish to make use of reduced striking times then he must satisfy the Engineer that the strength of the concrete at such time and the structural system is adequate to withstand the dead and imposed loads applied to it. Before making use of reduced striking times the Engineer's agreement must be obtained in writing.

B. Where the structure is of multi storey construction props with head trees and braces shall be provided to distribute the imposed load below the floor being cast. This will normally be 3 storey heights below the floor being cast unless otherwise stated.

REINFORCEMENT (CTD)

Finish to Concrete Shuttered Surface

A. Sawn finish. The shuttering shall consist of sawn boards, sheet metal or other suitable material to give a support to the concrete. Appearance is not of primary importance for this class of formwork. It shall be used for surface against which backfill or further concrete is to be placed. The treatment of the shuttering or concrete to provide a bond for the further surface treatment of the concrete shall be directed or approved by the Architect. Masonry or similar material used for facing concrete shall only be used as shuttering where directed by the Architect.

The Architect's approval shall be obtained to the use of blocks or slabs when used as permanent forms in foundation and other similar location.

B. Wrought finish. The shuttering shall be wrought with boards arranged in a uniform pattern. Alternatively, plywood, metal panels or other approved materials may be used, subject to the Architect's approval. Joints between boards or panel shall be horizontal or vertical unless otherwise directed. This shuttering shall give a good finish to the concrete and will normally be used for all faces where a high class finish is not necessary.

C. Fair-faced finishing. Standard steel panels, hardboard and boarding will not be permitted for the face of this shuttering. The shuttering shall be faced with resin-bonded plywood, faced with matt finished plastic or equivalent material in large sheets which shall be arranged in an approved uniform pattern. Wherever possible, joints between sheets shall be arranged to coincide with features such as sills, heads, jambs or changes in direction or the surface areas of formwork between features in walls, between beams in horizontal surface or other similar arrangement, shall where possible, be divided into panels of uniform dimensions, without the use of make-up pieces. All joints between panels on vertical or inclined surfaces shall be vertical or horizontal unless otherwise directed by the Architect; those on horizontal surfaces shall be at right angles and wherever possible they shall be parallel to walls and beams. The shuttering shall give a high class finish to the concrete with no lips, fins, or irregularities, and shall give a completely true and even surface which will be prominently exposed to view where good alignment is of special importance. It is for use in both in-situ and precast concrete.

D. Texture finish. This is an all-over finish of high quality as may be directed by the Architect. Sample panels may be constructed on site prior to commencement of the works, to compare different textures. The shuttering shall be such that the concrete finish has not lips, fins, or irregularities and shall give a surface which will be prominently exposed to view where good appearance and alignment are of special importance.

E. Chisel dressed finish. This finish consists of cutting a maximum of 10mm of concrete surfaces to expose the aggregate. This work is to be carried out after the concrete is at least 30 days old and is to be executed by hand. Mechanical means will not be permitted.

CONCRETE WORK SPECIFICATIONS (CTD)

REINFORCEMENT (CTD)

Finish to Concrete Shuttered Surface (ctd)

A. Where other finishes, apart from the above are specified, the contractor shall provide a sample panel at least 2.4m x 1.2m in vertical surface area including a typical horizontal and vertical joint in the shuttering. The sample panel shall be constructed using the systems of shuttering and the construction techniques that the contractor proposes for the actual works. This sample when approved will form the standard for the entire works. All unsuccessful samples shall be removed from the site.

Tamped Floor Finish

B. Where "tamped finish" is specified it will be obtained by an edge board to the Architect's approval. Board works are to be made to a true pattern and will generally be at right angles to the traffic flow. Haphazard or diagonal tamping will not be accepted.

Concrete Mixes (General)

Works Cubes

C. For all structural concrete the following representative samples shall be taken and in accordance with B.S. 1881.

One each day on which less than 50cu.m. of concrete is being poured.

a) Six 150mm cubes - three for test 7 days and three for test 28 days.

and

b) Two slump test

or

c) Two compacting factor tests.

On any day when greater quantities of concrete are being poured then six additional cube tests and two additional slump or compacting factor test shall be carried out for each 50M3 or part thereof.

D. All cubes shall be marked with the date of casting and a reference number. For each cube a record shall be kept of the position in which the batch of concrete from which it was sampled was placed. All cubes shall be tested by an approved testing authority.

E. The concrete cubes tested at 7 days are intended to be indicative only and the target works strengths at 7 days given in Table 1 or II are not mandatory. It should be noted however that it is unlikely that cubes failing the 7 days target will subsequently pass the 28 days cube strength.

REINFORCEMENT (CTD)

Work cubes (ctd.)

A. The concrete cubes tested at 28 days shall be taken to represent the concrete placed in the works. The standard of acceptance for cube strength tests shall be as follows:

B. The cube strength shall be calculated from the maximum load sustained by the cube failure. One test result shall be the average of two test specimens taken from the same sample. The appropriate strength requirement, as given in Table 1 or 11 shall be considered to be satisfactory if:

a) None of the strengths of the three cubes is below the specified cube strength, or if
b) The average strength of three cubes is not less than the specified cube strength and the difference between the greatest and the least strengths are not more than 20% of that average.

C. The standard of acceptance for the slumps test during the production of concrete shall be the design slump +/-25mm.

D. The standard of acceptance for the compacting factor test during the production of concrete shall be design compacting factor +/-0.03.

E. Any concrete which fails to meet the above standard of acceptance shall be either further tested or condemned at the Engineer's sole discretion. Any such tests or the removal of condemned concrete, replacement and associated costs shall be at the Contractor's expense.

F. If the strength required are not attained or maintained throughout the contract, the contractor will also be required to redesign the mix and submit trial mixes in accordance with the specification so as to give a concrete which does comply with the requirements of this specification.

Concrete Mixes (Nominal Mixes)

G. Mixes for each class of concrete specified or shown on the drawings shall be used by the contractor. They shall be mixed to achieve high density combined with adequate workability for the purpose.

H. Details of any proposed mix shall be forwarded to the Engineer not less than 7 days before that class of concrete is required to be used on the works for his approval in principle.

I. Classes of concrete will be referred to by their nominal mix proportions. Classes of concrete shall meet the criteria shown in Table I.

J. The workability of the concrete shall be the minimum consistent with producing a dense, well compacted mass. Due regard shall be paid to the size and shape of the section together with any congestion of reinforcement.

REINFORCEMENT (CTD)

Concrete Mixes (Design Mixes)

A. Mixes for each class of concrete specified or shown on the drawings shall be designed by the contractor to achieve the specified minimum cube strength combined with high density and adequate workability for the purpose. In order to allow for unavoidable variation the mean design strength should exceed the specified works cube strength by twice the expected standard deviation. In the absence of previous information a standard deviation of 7N/MM2 should be assumed.

B. Details of any proposed mix design shall be forwarded to the Engineer not less than 7 days before that class of concrete is required to be used on the works for his approval in principle. The details shall include at least the following information.

a) Source, nature and grading of coarse and fine aggregates

b) Source of cement.

c) Nominal maximum size of aggregate.

d) Cement content.

e) Aggregate/cement ratio.

f) Water/cement ratio.

g) Design density

h) Design slump or compacting factor,

i) Design strength.

C. Classes of concrete will be referred to by the minimum 28 days work cube strength and the maximum size of aggregate. Classes of concrete shall meet the criteria shown in Table II. The maximum water/cement ratio is herein defined as the ratio of the weight of the "free" water to the available weight of the cement. The "free water" is that quantity of water available to combine with the cement. Any required to be absorbed by aggregate is excluded.

D. The workability of the concrete shall be the minimum consistent with producing a dense well compacted mass. Due regard shall be paid to the size and shape of the section together with any congestion of reinforcement.

E. After the Engineer has approved a design mix in principle the contractor shall prepare a trial mix on site using plant and materials intended for the works. Three batches of concrete shall be sampled and the following prepared, from each batch in accordance with B.S.1881:

CONCRETE WORK SPECIFICATIONS (CTD)

REINFORCEMENT (CTD)

Concrete Mixes (Design Mixes) (ctd)

a) nine 150mm cube-three for test at 7 days, three for test at 14 days and three for test at 28 days, and

b) three slump tests or where the design slump is less than 25mm then

c) three compacting factor tests.

Concrete Mixes (General)

A. The standard of acceptance of preliminary tests will be similar to the standard for normal cubes, slump or compacting factor, except that the minimum cube strengths required shall be those given under "minimum preliminary cube strength at 28 days" in Table I or II.

B. No structural concrete shall be placed in the works until the Engineer has approved the preliminary tests. Thereafter the approved mix proportions shall be adhered to throughout the work and may only be varied with the prior approval of the Engineer.

CONCRETE WORK SPECIFICATIONS (CTD)

TABLE 1: PRESCRIBED WORKMANSHIP CONCRETE MIXES

Class of concrete	Minimum work cube strength of 28 days N/MM2	Cement Kg	Fine Aggregate Cubic Metres	Coarse Aggregate Cubic Metres	Minimum Preliminary Cube Strength at 28 days N/MM2	Minimum Target Works Cube Strength at 7 days N/MM2
1:1:2	30	50	0.035	0.07	40	22
1:1:5:3	25	50	0.05	0.10	33	19
1:2:4	20	50	0.07	0.14	28	14

CONCRETE WORK SPECIFICATIONS (CTD)

TABLE II: DESIGN MIXES CONCRETE WORKMANSHIP CONCRETE MIXES

Class of Concrete	Minimum Work Cube Strength of 28 days N/MM2	Maximum Size of Aggregate MM	Minimum Cement Content KG/M3	Maximum Water Cement Ratio	Maximum Cement Content KG/M3	Minimum Preliminary Cube Strength at 28 days	Minimum Target Works Cube Strength at 7 days N/MM2
40	40	20	350	0.44	540	40	30
30/40	30	40	300	0.46	540	40	22
30/20	30	20	310	0.46	540	40	22
30/10	30	20	340	0.46	540	40	22
25/40	25	40	280	0.53	540	33	19
25/20	25	20	295	0.53	540	33	19
25/10	25	10	325	0.53	540	33	19
20/40	20	40	260	0.60	540	28	14
20/20	20	20	280	0.60	540	28	14

CONCRETE WORK SPECIFICATIONS (CTD)

Tolerance

A. All in-situ concrete shall be dimensionally accurate to within the following non-accumulative tolerances:

a) between the centre lines of principal members' columns or beams +/- 5mm up to 15metres c/c +/-10mm over 15metres c/c

Note the +/- 10mm tolerance shall not be cumulative

b) in storey height +/- 5mm floor to floor

c) in plumbness of columns and walls +/- 10mm on any storey or overall the structure

d) in level of floors + 5mm/ -3mm of the true prescribed horizontal surface level

e) in cross sectional dimensions of column beams and walls +5mm/- 3mm in any dimension up to 2 metres overall +10mm/ - 3mm in any dimension over 2 metres

f) cover to reinforcement +5 mm / - 0 of the stated covers.

Miscellaneous Items

B. Holes chases indentations and the like shall be provided where indicated on the drawings. All such shall be formed in the concrete and not cut after the concrete has hardened.

C. Should the contractor or any sub-contractor require additional holes or the like these requirements shall be submitted to the Engineer at least two days prior to concreting, for his approval.

D. Pipes, conduits, fixing bolts and other such cast-in items shall be provided where indicated on the drawings.

E. Should the contractor or any sub-contractor require additional cast-in items these requirements shall be submitted to the Engineer at least two days prior to concreting, for his approval.

Ready Mixed Concrete

F. Ready Mixed Concrete shall be used only with the approval of the Engineer. When such approval is given it shall be supplied in accordance with B.S. 5328 except where this conflicts with this specification when this specification shall prevail.

CONCRETE WORK SPECIFICATIONS (CTD)

Ready Mixed Concrete (ctd.)

A. Truck mixer units and their mixing and discharge performance shall comply with the requirement of B.S.4251.

B. The use of ready mixed concrete shall not relieve the Contractor of any of his obligations and the appropriate clauses of this specification shall apply equally to the ready mixed concrete.

C. Concrete test cubes and slump tests shall be taken on site at the point and time of discharge in accordance with this specification irrespective of any cubes that the supplier may take at his own risk.

Mixing and Transporting Concrete

D. All materials for concrete shall be measured by weight in approved weight batching equipment. Such equipment shall be checked at weekly intervals at the Contractor's expense and shall be accurate to within 2%. Certificate of accuracy shall be submitted immediately to the Engineer.

E. All concrete shall be mixed in approved power driven mixers of a type and capacity suitable for the work. The mixer shall be equipped with an accurate water measuring device which shall be checked at weekly intervals at the contractor's expense. Certificates of accuracy shall be submitted immediately to the Engineer.

F. All materials shall be thoroughly mixed dry before water is added and the mixing of each batch shall continue for a period not less than two minutes after the water is added or such longer period are recommended by the manufacturer of the mixer. The mixture shall be of uniform colour and distribution on discharge and the entire contents of the mixer shall be discharged before recharging. The volume of mixed materials shall not exceed the rated capacity of the mixer.

G. Mixers shall be all times be kept in a clean condition. prior to the first mix each day being agitated in the mixer a rich cement sand mix shall be used to coat the inside of the drum, the surplus material being emptied away and not used in the works.

H. The moisture contents of the coarse and fine aggregate shall be checked by the contractor at frequent intervals and the amount of water added to the mix adjusted to maintain the design workability.

I. Concrete shall be discharged from the mixer onto a clean, level watertight platform or into a clean watertight container. It shall be transported in a manner which ensures that it is of the correct quality and consistency at the point of deposition. All platforms and containers shall be cleaned of the old concrete before the fresh concrete is discharged onto them.

CONCRETE WORK SPECIFICATIONS (CTD)

Mixing and Transporting Concrete (ctd)

A. Concrete shall not be dropped from a height, thrown or otherwise treated so that segregation, undesirable finish, or defective structural quality results. In any case concrete shall not be dropped from a height greater than 3.0m

B. No extra water shall be added to the concrete mix after it has left the mixer.

C. The Contractor shall take adequate precautions to protect concrete in transit from the effects of the weather.

D. Pumping of concrete, which will require a special design mix, will only be permitted with the approval of the Engineer.

E. Should the concreting be stopped due to mechanical malfunction, accident or other similar cause then the contractor shall inform the Engineer immediately so that necessary measures and precautions can be taken. The cost of any additional work caused by these stoppages shall be the responsibility of the Contractor.

F. No concreting shall be commenced until the formwork and reinforcement have been inspected by the Engineer. The Contractor shall give the Engineer two clear days notice of his intention to concrete.

Placing and Compacting Concrete

G. All concrete shall be vibrated unless otherwise specified. The vibration shall be carried out by experienced operators and with immersion type vibrations to the Engineer's satisfaction.

H. Placing of concrete shall be carried out in layers not exceeding 500mm deep and in sequence from one end of the form to the other.

I. Concrete in foundations and other underground work shall be protected from contamination with falling earth or rock during and after placing.

J. Any concrete which shows signs of initial setting before or during placing shall not be used and it shall be removed at the contractor's expense.

K. Sufficient vibrators shall be provided to correspond with the rate of deposition of concrete. The vibration shall be continuous throughout the placing of the concrete. Standby vibrators shall be on site during all concrete placing.

L. Vibration must not be allowed to disturb any recently placed concrete that has begun to set. Any water accumulating on the surface of newly placed concrete shall be removed by approved means and no further concrete shall be placed thereon until such water is removed.

CONCRETE WORK SPECIFICATIONS (CTD)

Placing and Compacting Concrete (ctd).

A. Suitable means shall be provided to ensure that the temperature of the concrete on placing does not exceed 30 deg.C (86 deg.F). All surface shall be thoroughly dampened immediately prior to placing fresh concrete to prevent excessive absorption of water.

Unformed finishes for Concrete

B. Where a concrete surface is specified as suitable for receiving a further applied finish or in all cases where no other finish is specified the concrete shall be uniformly levelled and screeded to produce a ridge surface. No further work shall be applied to the surface.

C. Where a concrete surface is specified as exposed with no further applied finish the concrete shall be uniformly levelled and screeded to produce a plain surface. After the concrete has hardened sufficiently the surface shall be hand or machine floated sufficiently only to produce a uniform surface free from screed marks.

Construction, Contraction and Expansion Joints

D. Construction joints will be permitted only at the positions shown on the drawings and as instructed on the site by the Engineer. These joints will in general be spaced to allow a maximum plan area for any bay of 100 sq.m. maximum length of 12m in any one dimension.

E. Vertical construction joints shall be properly made to form a vertical grout tight joint. Where reinforcement passes through the face of the joint the stopping off board shall be drilled so that the bars pass through or the board shall be made in sections with half round indentation in the joint.

F. Under no circumstances shall concrete when being deposited be allowed to 'tail off'. Construction joints formed with expanded metal or similar or will not be permitted for reinforced concrete work.

G. At all construction joints, both horizontal and vertical the surface of the already placed concrete shall be suitably roughened to remove laitance and by exposing the coarse aggregate to form a key for adjacent concrete. This work shall be carried out to the satisfaction of the Engineer by the following or other approved methods:

a) After the initial set has taken place but before final set the coarse aggregate shall be exposed by the use of a water jet brushing.

b) After final set has taken place the laitance shall be removed and coarse aggregate shall be exposed by bush hammering or chiselling.

In both cases the surface is to be thoroughly cleaned after roughening.

CONCRETE WORK SPECIFICATIONS (CTD)

Construction, Contraction and Expansion Joints

A. At least 72 hours shall be left between completion of concreting one bay and the start of concreting any adjacent bay if the Engineer deems fit.

B. Construction joints shall be formed as detailed where shown on the drawings.

C. Expansion joints shall be formed as detailed at the position on the drawings.

Curing and protecting Concrete

D. Immediately after compacting and for 7 days thereafter concrete shall be protected against harmful effects of weather including rain rapid temperature changes and from drying out. The methods of protection used shall be subject to the approval of the Engineer. The method of curing used shall prevent loss of moisture from the concrete.

E. During the curing period horizontal surface shall be protected by the following or other approved means:

a) Covering with damp hessian canvas sacks or similar absorbent materials kept constantly damp and wholly covering the exposed concrete surface or

b) Covering with an impermeable material raised approximately 50mm over the surface so as to prevent loss of moisture.

c) An approved membrane curing compound.

F. During the curing period other surfaces shall be protected by the following or other approved means:

a) Formwork in close application of water preferably in the form of a mist so as not to damage the surface.

b) Direct and continuous application of water preferably in the form of a mist so as not to damage the surface.

c) Covering as described for horizontal surfaces.

G. All concrete faces or edges, particularly those which are exposed without rendering in the final structure, shall be adequately protected from damage and discolouration at all times.

H. Concrete structure shall be loaded until the concrete is at least 21 days old or 28 days in the case of cantilevers. With the prior approval of the Engineer the structure may be loaded before this time but in no case will loading greater than the final design loading be permitted.

CONCRETE WORK SPECIFICATIONS (CTD)

Test of Defective Concrete

A. Additional tests may be necessary when there are physical defects in the finished concrete. These defects may be in the form of cracking while the member is still under props, excessive deflection or segregation and insufficient strength of concrete test cubes. If in the opinion of the Engineer these defects are as a result of the Contractor's bad workmanship, then the contractor will be required to carry out additional tests which the Engineer may deem necessary to establish the load carrying capacity of the member. All costs for the test or incurred thereof as a consequence of the test shall be chargeable to the contractor. Costs for tests shall be borne by the contractor immaterial of the outcome of such tests.

Concrete for Water Retaining Structures

B. Concrete and its constituents for water retaining structures, in addition to the general and particular provisions in this specification, shall comply with the following requirements in this section.

C. In addition to the requirements of clauses pages concrete in water retaining structures shall have a low drying shrinkage and absorption, as measured in accordance with B.S.812 or not greater than 3%.

D. The Engineer may before approval is given to an aggregate or at any time thereafter require that the aggregate be tested for absorption in accordance with B.S.812. Any aggregate failing to comply with this specification will be rejected.

E. In addition to the requirements of clauses page, concrete for the water retaining structures shall have a maximum cement content of 400kg/M3

F. Blinding concrete under water retaining structures shall be a minimum of 75mm thick and shall be in class 15/40 concrete.

G. Class 15/40 concrete shall comply with the following requirements:

Minimum works cube strength at 28 days 15N/MM2

Maximum size of aggregate 40mm

Mix proportions 1 cement:2.5 fine aggregate: 5 coarse aggregate.

This is a nominal mix and no cubes will be required to be taken.

H. For water retaining structures the provisions of clause page are modified. The construction joints will in general be spaced to allow a maximum plan area for any bay of 40sq.m. or maximum lengths of 7.5m in any one dimension.

I. A waterproofing additives - plastocrete DM by Sika or other similar approved shall be used for all reinforced concrete in water tank structures.

CONCRETE WORK SPECIFICATIONS (CTD)

Concrete for Water Retaining Structures (ctd.)

A. All additives shall be incorporated into the mix according to the manufacturer's instructions.

B. For water retaining structures the provisions of the clause are modified. At least 96 hours shall be left between completion of concreting any adjacent bay if the Engineer deems fit.

C. A kicker of minimum height 150mm shall be cast integrally with the base slab for all water retaining structures.

D. The surface of all concrete for water retaining structures shall not be permitted to dry out even after the 7 day curing period specified in clause.

E. All pipes passing through concrete walls or slabs for water retaining structures shall be cast in at the time of concreting and not subsequently fitted. All such pipes shall be provided with a puddle flange fitted to form a seal against the pipe and of an outside diameter 2.00mm greater than the outside diameter of the pipes.

F. Joint sealants shall be applied not less than 7 days after completion of the structure.

G. On completion of water retaining structure at a time decided by the Engineer it shall be tested for water tightness in the following manner. Structures which are elevated shall be filled at a uniform rate not exceeding 1 meter rise in head per 24 hours and allowed to absorb water for 3 days. After this period the water level shall be brought up to the top water level and left for 7 days. During this period the exposed faces shall show no signs of leakage and shall remain apparently dry. Structures founded on or in the ground shall be tested prior to backfilling unless otherwise stated. The structure shall be filled as specified above. After filling to top water level no further water shall be introduced for the next 7 days. The structure will be deemed to be watertight if at the expiration of this time the total drop in surface level does not exceed 100mm after making due allowance for evaporation and absorption and no sign of leakage are observed.

H. Water for testing shall be provided at the contractor's expense.

I. If the structure fails the test above any defects shall be made good or such action taken to eliminate leakage as the Engineer shall direct. All such work shall be at the Contractors expense.

J. After completion of any repairs the structure shall be tested using the procedure specified above.

K. Swimming pool should be tested prior to applying internal finishes.

CONCRETE WORK SPECIFICATIONS (CTD)

Precast Concrete

A. The material for precast work shall be similar to the materials for insitu work. The workmanship for precast work shall comply with C.P.116 except where this conflicts with this specification when the specification shall prevail.

B. The contractor shall prepare for any type of Precast units, a drawing indicating his proposed formwork construction, casting methods de-moulding and handling procedure for the Engineer's approval.

C. Moulds and formwork shall be so constructed that the dimensions of the finished concrete members are within the specified permissible tolerances given in Clause 407 of BS 8110.

D. Where precast concrete is described as "Fair Faced" the moulds shall be metal, or are to have metal or hardboard linings, or are to be other approved moulds which will produce a smooth, dense fair face to the finished concrete and free from all shutter marks, holes, pitting, etc.

E. Precast concrete shall be made of the mixes described on the Engineer's drawings in suitable mould, true in form of the shapes required, thoroughly tamped into the moulds and around reinforcement and vibrated.

F. All precast work shall be carried out under cover and the period before removal from forms and the period of storing shall be determined and agreed by the Engineer and Contractor with due regard to the type of unit, i.e. load bearing or non-load bearing, difficulties of casting, projections, holes and other points which require particular attention.

G. The method of lifting, positions of lifting points and Curing time before lifting shall be agreed with the Engineer before casting of any units.

H. Extreme care shall be taken when handling precast units and any units damaged during transportation and/or positioning shall be replaced at the Contractor's expense.

MEASUREMENTS PREAMBLES

General

A. Concrete work shall be measured generally in accordance with the method of measurements stated in the contract. The rates shall be deemed to include for complying with the specification in all respects. All testing and samples required by the Specification, whether covered by a particular item below or not, shall be deemed to be included within the rates or sums in the Bill of Quantities. Where the Engineer may instruct the contractor to test (such test not being mandatory) the materials or workmanship in accordance with the provisions of the Specifications the test of such costs will be borne by the employer, if the test result proves satisfactory and by the Contractor if the test result proves unsatisfactory. In either case no consequential costs or delay will be allowed, it being considered that testing covered by this Specification is of a usual or expected nature.

CONCRETE WORK SPECIFICATIONS (CTD)

Concrete

B. The rate for concrete shall include for all costs associated with the following:

C. Supply concrete of the required strength, manufactured with materials complying with the Specification.

D. Mixing, transporting placing, compacting, curing and protecting the concrete all as specified.

E. Forming construction joints and complying with the specified requirements for maximum bay size and interval between casting adjacent bays.

E. Providing test certificates for cement and aggregates.

F. Designing the concrete mix (where applicable) and carrying out trial mixes and preliminary tests.

G. Carrying out routine sampling and testing of concrete and its constituents.

H. Keeping on site sufficient cube moulds, slump cones and associated test equipment to comply with the Specification.

Mass Concrete

I. The rate for mass concrete in blinding shall, in addition to *B* to *H* above, include, for concreting the sub base.

J. The rate for mass concrete shall, in addition to *B* to *H* above, included for any formwork necessary unless otherwise stated in the item description.

Rod Reinforcement

K. The rate for rod reinforcement shall include all costs associated with the following:

L. Supply rod reinforcement complying with the Specifications.

M. Providing test certificates

N. Cutting, bending and fixing reinforcement including any welding where this is approved.

O. Providing and fixing all spacers, tying wire, chairs and stools.

MEASUREMENTS PREAMBLES (CTD)

Fabric Reinforcement

A. The rate for fabric reinforcement shall include for all costs associated with the following:

a) Supplying fabric reinforcement complying with the specifications.

b) Providing test certificates.

c) Cutting and fixing fabric reinforcement.

d) Providing and fixing all spacers, tying wire, chairs and stools.

e) Providing the specified laps, fabric will be measured as the net plan area.

Sawn Formwork

B. The rate for sawn formwork shall include for all costs associated with the following:

a) Supplying, fixing, easing and striking all temporary forms as specified together with all temporary construction required for their support.

b) Supplying details or calculations for formwork.

c) Coating with material to prevent adhesion of the concrete.

d) Complying with specified minimum period before removal of forms.

e) Back propping for multi-storey construction.

Wrought Formwork

C. The rate for wrought formwork shall include for all costs associated with the following:

a) Supplying, fixing, easing and striking all temporary forms as specified together with all temporary construction required for their support.
b) Supplying details or calculations for formwork.
c) Coating with material to prevent adhesion of the concrete.
d) Complying with specified minimum period before removal of forms.
e) Back propping for multi storey construction.
f) Providing sample panels of concrete as specified and removing on completion of the works.

CONCRETE WORK SPECIFICATIONS (CTD)

MEASUREMENTS PREAMBLES (CTD)

Precast Concrete

A. The rate of supply of precast concrete shall include for all costs associated with the following:

a) Supplying concrete including item on clause page.

b) Supplying rod reinforcement including on page above.

c) Supplying fabric reinforcement (if applicable) items on page above.

d) Supplying, fixing, easing and striking moulds and formwork as specified including replacement after multiple use.

e) Producing drawings and details as specified.

f) Coating moulds with material to prevent adhesion of the concrete.

g) Complying with specified minimum period before removal of forms or handling.

h) Providing and fixing any additional reinforcement required for lifting or handling.

i) All handling, lifting and fixing of precast units.

Composite floor Construction

B. The rate for composite floor construction is to include for all moulds, materials and all unspecified items necessary for the manufacturer of hollow concrete block by the contractor.

C. Another rate will be applicable in the vent of the contractor purchasing the block as specified from independent suppliers or manufacturers.

D. **Waffle Floor Construction**

The rate for waffle floor construction is to include for all moulds, materials and all items necessary for complying with the specification. The rate shall also be deemed to include for solid concrete margins, and bearing.

STRUCTURAL STEEL

QUALITY OF MATERIALS AND WORKMANSHIP

A. The quality of all materials and workmanship used in the execution of this Contract shall comply with the requirements of the most recent issues of the following British Standards and Codes of Practice, including all amendments to date of calling for Tenders.

BS.4 (Part 1)	-	Hot Rolled Sections
BS.4 (Part 2)	-	Hot Rolled Hollow Sections
BS.449	-	The use of Structural Steel in building
BS.638	-	Arc Welding plant, equipment and accessories
BS.639	-	Covered Electrodes for the Manual Metal Arc Welding of Mild Steel and Medium tensile steel
BS.916	-	Black Bolts, screws and nuts
BS.1449	-	Steel plate, sheet and strip
BS.1775	-	Steel Tubes for mechanical, Structural and General Engineering Purposes
BS.2994	-	Cold Rolled Steel Sections
BS.4190	-	ISO metric black hexagon bolts, screws and nuts
BS.4320	-	Metal Washers for general engineering purposes
BS.4360	-	Weldable structural Steel
BS.4848	-	Hot rolled structural steel sections
BS.4872	-	Approval testing of welders when welding procedure approval is not required
BS.5135	-	General requirements for the Metal Arc Welding of structural steel
BS.5493	-	Protection of iron and steel structures from corrosion

QUALITY OF MATERIALS AND WORKMANSHIP (CTD)

A. The Engineer may at any time require any materials to be tested in accordance with the requirements of the Standards listed above. The cost of all successful tests shall be borne by the Client, but the Sub-Contractor shall if required promptly supply at his own expense test pieces as required by the Engineer. The costs of tests on materials failing to comply with this Standard shall be borne by the Sub-Contractor. If in the opinion of the Engineer, faulty materials and /or workmanship have been used in the Works, the Sub-Contractor may be directed to dismantle and cut out the parts concerned and remove them for examination and testing. The cost of dismantling, cutting out and making good to the approval of the Engineer shall be borne by the Sub-Contractor.

FABRICATION

B. Cutting and Bending

All members, plates, brackets, etc, shall be neatly and accurately sheared sawn or profiled to the required shape as shown on the drawings. Where steel is oxy-cut to shape, care shall be taken to preserve the full finished sizes required. If the members or plates are bent or set, the bends or sets shall be correctly made to the radii or angles specified without leaving hammer marks. The material may be heated to permit this. Material that has been heated shall be annealed to approval.

C. Punching and Drilling

Holes for black bolts shall be drilled or punched 2mm larger in diameter than the bolt used. Holes for high tensile friction grip bolts shall be drilled or sub-punched and reamed to 2mm larger in diameter than the specified bolts sizes. All drilled holes shall be parallel sided and shall be drilled with the axis of the holes perpendicular to the surface. Badly drilled holes shall either be reamed out to approval and larger bolts fitted or otherwise as directed. All rough arises shall be ground off. Holes for bolts in material thicker than 15mm must be drilled. When holes are drilled in one operation through two or more thicknesses of material, the parts shall be separated after drilling and all burrs removed before assembly. Holes for bolts shall not be formed by a gas cutting process.

D. Tolerances

All members shall be fabricated with a tolerance in length of + 0mm and -3mm, all shall not deviate from straightness by more than 1 in 400.

QUALITY OF MATERIALS AND WORKMANSHIP (CTD)

A **Tolerances (ctd)**

The allowance for angular twist shall be (3+0.6L) mm where L is the length of the member under consideration in metres. Twist shall be measured by placing the member as fabricated against a flat surface measuring the difference between the two corners of the opposite end.

The above tolerances shall be adhered to unless otherwise specified on the Engineer's drawing.

FASTENING

B. **Bolting**

All bolts used shall be of such length that at least one full thread is exposed beyond the nut after the nut has been tightened. Where a nut or bolt head would bear on an inclined surface, a bevelled washer of the correct shape shall be interposed between the two surfaces. Bevelled washers shall not be allowed to get out of position during fabrication and erection and for this purpose may be spot welded to the steel surface. Bevelled washers for use with high tensile bolts may not be welded.

C. **Black Bolts, Nuts and Washers**

All black Bolts, Nuts and Washers shall comply with the requirements of BS.916 or alternatively BS.4190 ISO metric black hexagonal bolts screws and nuts.

D. **High Tensile Bolts, Nuts and Washers, Friction Grip Bolts**

All High Tensile steel bolts, nuts and washers used in joints shall comply with the requirements of BS.3139 and shall be used in accordance with BS.3294.

ELECTRIC WELDING

E. All welding shall be carried out in strict accordance with the requirements of BS.1856 and 938 and electrodes shall comply with BS.639.

F. Fusion faces shall be free from irregularities such as tears, fins, etc., which would interfere with the deposition of weld metal.

G. Fusion faces shall be smooth and uniform and shall be free form loose scale, slag, rust, grease, paint, and/or other deleterious material.

ELECTRIC WELDING (CTD)

A. All welds shall be of acceptable types, shall be of the finished sizes specified, and shall be carried out in such sequence that minimum distortion of the parts welded results.

B. Preparation of edges for welding shall be carried out by planning or machine flame cutting. Manual flame cutting may be permitted in certain circumstances.

C. Parts to be welded shall be maintained in their correct relative positions during welding, preferably by jigs.

D. Multiple run welds shall be carried out with each run closely following the previous run but allowing sufficient time for the proper removal of slag.

E. The Sub-Contractor shall ensure that each run is inspected and any unsatisfactory weld cut out and remade to approval.

F. Welds in material 25mm or greater in thickness shall be made by the Argon arc or similar approved process, and special precautions shall be taken to prevent weld cracking.

G. Unless otherwise shown, the minimum size of fillet shall be 6mm.

H. On completion, welds shall present a smooth and regular finish. Weld metal should be solid throughout with complete fusion between weld metal and parent metal and between successive runs throughout the joint.

I. Defects shall be cut out and made good to approval in sound weld metal.

J. The external faces of butt welds are to be ground smooth on completion and to be to the approval of the Engineer.

SHOP AND FIELD CONNECTIONS

ROLLED SECTIONS

K. All shop connections shall be electric welded or bolted with high tensile friction grip bolts.

L. No bolts used shall be less than 12mm diameter and no weld less than 40mm in length. At least two bolts shall be used in connections transmitting loads unless otherwise indicated by the Engineer.

M. No weld of length less than four times the nominal fillet size shall be deemed capable of carrying a load.

STRUCTURAL STEEL (CTD)

ROLLED SECTIONS (CTD)

A. Beam to column connections not detailed shall be on “Standard" top and bottom cleat connections with the load carried on the bottom cleat. "Standard" web connections shall be used for connecting beams to beams.

B. Field connections shall be as detailed, i.e. bolted with high tensile or black bolts in drilled holes. Black bolts in punched holes will only be permitted for connections carrying a designed load or for connections to timber members.

C. Structural Hollow Sections - Circular and Rectangular

D. Hollow sections shall be connected by electric welding unless shown otherwise.

E. The design of welds shall be in accordance with Clause 53 and 54 and Appendix C of BS.449.

F. Butt welds shall be made with the fusion surfaces of the ends of each member properly prepared and the members properly aligned.

ASSEMBLY

Trusses and Portal Frames

G. Trusses shall be carefully set out to the dimensions shown on the drawings.

H. Where it is required that trusses be cambered, such camber shall be provided by bending the bottom chord to the arc of a circle.

I. Notwithstanding any dimensioned spacing of purlin cleats, the Sub-Contractor shall ensure that purlin cleat spacing is satisfactory for the available stock lengths of roof sheeting. However, the Engineer's approval must first be obtained before any alteration is made in purlin spacing or sheeting sizes.

J. Splices in portal and other frames shall be made where shown on the details or where indicated.

Boxed Members

K. Abutting edges of boxed members shall be connected and scaled with a continuous weld to exclude the entrance of moisture. Where specified such welds shall be ground flush to approval.

STRUCTURAL STEEL (CTD)

Shop Assembly

A. Such assembly of units in the shop as is specified or necessary before transporting to the site will be inspected by the Engineer before painting. The work will be laid out in the shop or yard so that all parts are accessible for inspection and testing of the work.

B. The Sub-Contractor shall furnish all facilities for inspection and testing of the work and he must notify the Engineer on each occasion when the material is ready for inspection.

Marking

C. All members of the structure to be site assembled shall be match marked in accordance with the stop details and marking plans submitted for approval.

ERECTION

Site Dimensions

D. No erection shall commence before accurate Site Dimensions have been taken by the Sub-Contractor, and no claim will be considered should final dimension differ from those on the drawings. Any modifications to the structural steel required in order to comply with Site Dimensions shall be made on the ground to the Engineer's approval before erection is commenced.

E. **General Setting Out-Tolerances**

The temporary Bench Mark (TBM) which shall be located at the Structural Ground Floor Level (S.G.F.L.) having been agreed on site between the Architect, Engineer and Main Contractor, shall be considered as the site datum.

The datum points for the setting out of the datum lines passing through the T.B.M. at all floor and roof levels; plus or minus Om.

The permissible Deviation (P.D.) from the T.B.M. and D.L. shall be as follows:

a) Setting out on Plan at S.G.F.L.

All setting out dimensions with respect to each datum line (i.e. P.D. from "x" and "y" plan axes) plus or minus 10mm per 30 metres.

ERECTION (CTD.)

b) Transfer of T.B.M. to Structural First Floor, intermediate Floors and Roof Levels.

With respect to the T.B.M. at S.G.F.L. the T.B.M. at:

First Floor Level	-	Plus or minus 5mm
Intermediate Floor Levels	-	Plus or minus 10mm
Roof Level	-	Plus or minus 15mm

c) Setting out on Plan of Upper Floors With Respect to the Transferred T.B.M.

All setting out of dimensions with respect of each datum line plus or minus 10mm per 30 metres.

d) The clear distance between adjacent elements at any level where accuracy is required for doors, windows, services, secondary steelwork etc.:- plus or minus 5mm.

e) The P.D. with respect to the relevant T.B.M. of the upper or lower surface of any truss or element, taking into account specified cambers. plus or minus 10mm.

f) The Plumb vertical members plus 10mm per storey.

A. **Equipment**

All erection shall be carried out by competent and experienced men and the Sub-Contractor shall take every care to safeguard the public, workmen, and adjoining property.

All gear used shall be of adequate strength and shall comply with all Regulations current at the time.

The Sub-Contractor shall be held responsible for all damage caused to the structure, workmen, or buildings during erection.

STRUCTURAL STEEL (CTD)

ERECTION (CTD.)

A. **Storing and Handling**

Steel shall be stored and handled and erected in such a manner that no member is subjected to excessive stresses which could have an adverse effect on the properties of the steel. If in the opinion of the Engineer, the steel work has been subjected touch treatment, the contractor shall remove this steel from the site and replace it at his own expense.

B. **Erection Details**

No member or part of a member which has been bent or distorted shall be erected in that condition. All straightening shall be done in the ground.

Columns shall be wedged to line and level on steel or cast iron wedges and checked by the Engineer. After acceptance, column bases shall be grouted to approval before wedges are removed. Unless shown on the drawing, all columns shall be left truly vertical and correct to line and level. Beams, grits, etc., shall be erected level unless otherwise shown, and correctly positioned.

Trusses and open web joists shall be carefully handled at all times and when being erected shall be lifted at such points and in such a manner as will prelude any possibility of damage from erection stresses.

Immediately after erection, each truss shall be made secure by purlins, bracing, or guys to approval.

Bracing shall be placed in position as soon as dependent work will permit.

C. **Field Connections**

In making connections, drifting of unfair holes will not be permitted and holes not matching properly shall either be reamed or drilled out and a larger bolt inserted or otherwise as directed.

Holes formed or enlarged by oxy-cutting will be condemned and must be filled to approval by electric welding and red drilled.

Tightening and testing High Tensile Friction Grip Bolts.

Before assembly, the contact surface, including those adjacent to the washers, shall be descaled or carry normal tight mill scale. They shall be free from dirt, oil, loose scale, burrs, paint (except priming paint) pits and other defects that would prevent solid seating of the parts.

STRUCTURAL STEEL (CTD)

ERECTION (CTD.)

A. **Field Connections C'td**

Bolts shall be assembled with approved hardened flat or tapered washers as required between the bolt head and nut and the softer mild steel.

When bearing faces of the bolted parts have a slope of more than 1 in 20 with respect to a plane normal to the bolt axis, square smooth bevelled washers shall be used to compensate for the lack of parallelism.

All bolts shall be tightened by the "Turn of Nut" method. This method shall generally be as approved by the Engineer to achieve in all bolts a minimum tension equal to the proof load.

B. **Grouting**

Unless otherwise detailed on the drawings, a space of not less than twenty (20) mm and not more than forty (40)m shall be provided between undersides of column base plates and footings, and between all beam and roof truss bearings and concrete pads, etc.

After each column, beam, or roof truss has been wedged up to a line and level and fixed in position to approval, the space between footing or pad and the underside of the base plates or steel member shall be grouted with a mixture of Portland cement and approved washed sand.

The Portland Cement and sand shall be thoroughly mixed to approval in equal proportions by volume with only sufficient water to produce a mixture of "damp earth" consistency and shall be used within twenty minutes of mixing. The caulking mixture shall be packed to approval into the space between base plate and foundation and protected from damage until set.

PAINTING

C. **Painting Material**

All paints are to be supplied by a Supplier approved in writing by the Architect.

Paints are to be delivered to the site or the Structural Contractor's works in the original containers as supplied by the Manufacturer with seals unbroken and are to be used in strict accordance with the manufacturer's instructions.

STRUCTURAL STEEL (CTD)

PAINTING (CTD.)

A. **Painting Material C'td**

Manufacturer's representatives are to be free to visit the site and inspect materials and workmanship, and if necessary take samples of materials for laboratory analysis.

Paints are not to be thinned unless instructed by the Engineer.

No external painting is to be carried out during rain or when rain is likely to occur before the paint has had time to dry. All surfaces are to be dry and free from moisture at the time of painting.

B. **Preparation for painting**

All structural steel shall be thoroughly scraped and wire brushed to remove mill scale and rust. Dirt and grease or oil shall be washed off with white spirit and the steel allowed to dry.

C. **Painting process**

A first coat of Red Oxide Zinc Chromate primer shall be applied in the works immediately the steel preparation has been completed. A minimum of 24 hours shall elapse before the steel is moved from its position whilst painting has been carried out. After delivery to site, the steel shall be carefully examined and all areas where the priming coat has been damaged and/or where rust has developed shall be washed with white spirit and wire brushed as necessary and a further priming coat as for the first applied to completely cover the damaged areas.

During erection, surface of steel which are to be in contact shall be painted with one further coat of primer as previously described and the surfaces brought together whilst the paint is still wet.

Bolts, Nuts, Washers, etc., shall, after erection is completed to approval, be carefully degreased with white spirit and painted as for steelwork.

Steel purlins and sheeting rails shall generally be painted as for steelwork except for purlins and rails supporting aluminium sheeting when the following specification shall be used.

1st coat - Red Oxide Zinc Chromate Primer

2nd Coat - An approved Aluminium paint

The interiors of mild steel gutters shall be prepared as previously described for structural steelwork.

WALLING

A. Requirements of the following British Standards and Codes of practice and equivalent Kenya Bureau of Standards shall be observed:-

British Standard

B.	B.S. 3921 part 2	Bricks and blocks of fired brickwork clay or
C.	B.S. 1180	Concrete bricks and fixing bricks
D.	B.S. 4729	Shapes and dimensions of special bricks
E.	B.S. 2028, 1364 type B	Precast concrete blocks (for general use and load bearing walls above damp proof course)
F.	B.S. 2028 1364 type C	Precast concrete blocks (for internal non-load bearing walls)
G.	B.S. 1200 table 1 and 2	Sand for mortar for plain and reinforced brickwork, block walling and masonry
H.	B.S. 890 part 2	Building limes (Hydrated lime)
I.	B.S. 4721	Ready Mixed lime: sand for mortar
J.	B.S. 4887	Mortar plasticizers
K.	B.S. 4551	Methods of testing mortars and Specification for mortar testing sand
L.	B.S. 743	Materials for damp proof courses
M.	B.S. 1178	Milled sheet lead and strip for building purposes
N.	B.S. 1243 Fig. 1	Metal ties for cavity wall construction (vertical twist type)

Codes of Practice

0.	C.P. 111	Structural recommendations for load bearing walls
P.	C.P. 121 part 1	Walling

WALLING (CTD.)

Codes of Practice (ctd.)

A. C.P. 121, 202 part 1 Masonry - rubble walls

B. Walls and partitions of blocks and slabs C.P. 122

C. **NOTE**: The contractor's attention is drawn to Section "G" of the Standard method of Measurements

D. **WATER** Shall be as specified in "concrete work"

E. **CEMENT** Shall be as specified in "concrete work"

F. **SAND** Shall be as specified in "concrete work"

G. **Lime** Shall be non-hydraulic quick lime or hydrated limes for cement/lime mortars and comply with B.S. 890, semi-hydraulic class "B" calcium limes .

H. Concrete blocks shall be solid or hollow blocks to comply with the relevant standard as previously mentioned and shall be solid hard, true to size and shape and sharp arises in accordance with Ministry of Works Standard Specification for Metric sized concrete blocks for building dated September, 1972.

They shall be obtained from an approved manufacturer or manufactured on site in approved block making machines. The mix used shall be less than (1:9) by volume and maximum size of aggregate shall be 12mm size. The blocks on removal from the machine shall be laid on edge or racks under sheds erected by the Contractor and left for 3 days during which period they shall be kept constantly wet.

After this initial period they shall be placed on edge in the open racks and protected by sacking or other approved covering and kept wet for further 5 days.

Thereafter the blocks shall be left in the same position without wetting for a further 20 days. No blocks shall be used in the Works until 28 days old and until samples have been tested and approved by the Engineer.

The Contractor shall ensure that the blocks are stocked separately in their respective categories in the structure in the position shown on the drawings.

WALLING (CTD.)

A. Stone for walling shall be good hard local stone equal in standard and quality to "Nairobi Blue Stone". Stone shall be squared, dressed and joints chisel dressed on the face. Stone to receive render, shall be so dressed to reduce dubbing-out to a minimum.

The coursed stone shall not be less than 150mm deep and 305mm long. All stones shall be laid on their natural or quarry bed lines.

MORTARS

B. Gauged mortar shall be used for walling and shall be composed of one part Portland cement to two parts non-hydrated lime and nine parts sand. (1:2:9) measured in gauge boxes and thoroughly mixed dry preferably with an approved mechanical mixer or on a clean and approved mixing platform with water added afterwards until all parts are completely incorporated and brought to a proper consistency and used within the hour of mixing.

No partially or wholly set mortar will be allowed to be reused or re-mixed.

C. Cement Mortar Cement mortar (1:3) shall be composed of 42.5 Kgs. of Portland Cement to 0.085 cubic metres of sand. The cement mortar (1:6) shall be composed of 42.5 Kgs of Portland cement to 0.17 cubic metres of sand measured in specially prepared gauge boxes and thoroughly mixed in an approved mechanical mixer or mixed dry until all parts are completely incorporated and brought to a proper consistency. The use of retempering of wholly or partly set mortar will not be allowed.

D. All Stone shall be wetted before laying and the top of walling where left off, shall be wetted before re-commencing buildings, walls to be kept wet minimum 3 days after building.

E. All blocks and walling to be kept true, plump and level with all perpends vertical and in line and work shall not rise more than three courses above the adjoining Work and all such rising are to be properly racked back.

F. The Contractor must provide proper setting out or storey rods so that all work is coursed to cills, lintels and underside of beams thus reducing horizontal cutting to a minimum.

G. All walling must be carefully bonded together so that no vertical joint in any one course is nearer than 10mm from the joint in the course above or below.

WALLING (CTD.)

MORTARS (CTD)

A. All walling must be bedded in solid mortar with cross-joints well flushes up at each course as the work proceeds.

B. To walls less than 190mm thick the reinforcement shall consist of gauge 24 "Expamet" wall reinforcement horizontally in bed joints every alternate course and lapped over "Expamet" from column where abutting same.

C. Rates for walling are to include for reinforcement strips.

D. Labours on stone walling stated in the Standard Method of Measurement as to be included shall be deemed to include for redressing the beds of stones on site to the minimum extent necessary to obtain uniformly of coursing and for any redressing of faces necessary to bring the thickness within the tolerance specified.

E. Rates for walling of any description are to include for all expenses in connection with the provision and conveyance of samples of walling materials to the Ministry of Works, Materials Testing Laboratory, Kenya.

ASPHALT WORK

A. The requirements of the following British Standards shall be observed:-

British Standards

B.	B.S.1162, 1410 and 1418	Mastic asphalt for tanking and damp-proof courses (Natural rock asphalt aggregate)
C.	B.S.988, 1097, 1076 and 1451	Mastic asphalt for tanking and damp course (limestone aggregate)

Code of Practice

D.	C.P.102	Protection of building against water from ground
E.	Note:	The Contractor's attention is drawn to Section "J" of the Standard Method of Measurement.

All asphalt shall comply with the requirements of subsections B.S. 1418 and 1097 and C.P. 102 specifically dealing with tanking operations.

F. **Mastic asphalt for tanking**

(i) The Contractor shall arrange for the work to be executed by an approved Sub-Contractor. No other Sub-Contractor will then be permitted to be employed without the written authority of the Architect.

(ii) Tropicalised Mastic Asphalt is to comply with B.S. 1097/1966 and B.S. 1418 applied in three coats, in the case of horizontal work on and including sheathing felt; in the case of vertical work without. The third and final coat is to have a polished finish. All tanking operations to comply with C.P.102.

(iii) The Contractor is to take all necessary precautions to protect finished work, and it is his responsibility to ensure that no damage occurs to surfaces during subsequent building operations or any reasons whatsoever.

G. For tanking to basement lay over the whole area of the basement concrete floor horizontal damp proof course in three thickness laid with 150mm laps to a course of foundations on outer face of wall to cement with vertical damp proof course with a double angle fillet.

ASPHALT WORKS (CTD.)

A. Vertical face of basement walls shall then be covered with damp proof course applied in three thicknesses with 75mm laps to a total thickness of not less than 20mm.

B. Vertical damp-proof course shall be carried up to a minimum height of 150mm above ground level and connected at bottom to horizontal damp-proof coursed in walls with double fillet formed on top of foundations to form a complete tank to basement.

C. All junctions between horizontal and vertical asphalt shall be warmed, cleaned and properly made good with two-coat angle fillets at all internal angles.

D. Properly made good joints between lining pits and horizontal damp-proof course to floor shall be effected and double angle fillets to all internal angles maintained.

E. It is essential that continuity of tanking be maintained. Care must be exercised to see that such continuity is not destroyed by stanchions, pits, sumps etc.

F. Protect asphalt by the application of loading coats immediately each section of work is complete. Pumping of any water gaining access shall be continued until not only the asphalt work is complete, but also until loading coats are thoroughly set.

G. If the water level is near, such water level shall be maintained at not less than 0.3m below the level of the base concrete during the progress of tanking work to avoid the application of asphalt on wet surfaces and this pumping operation shall be maintained until the temporary sump has been filled and sealed.

ROOFING

BITUMEN BUILT-UP FELT ROOFING

A. Bitumen Felt

Bitumen felt where specified shall be to B.S. 747 part 2 and in addition shall be suitable for use on tropical conditions and from approved manufacturers. Types of bitumen felt shall be as specified on the working drawing.

B. Fibre Base Bitumen Felt

Shall comply to B.S. 747 part 2, Class 1, when fibre based bitumen felt is specified the roofing shall consist of two self finished bitumen felt under layers to B.S. 747, Class IC each weighing 13 Kg per 10 M2 and one mineral surfaces bitumen felt to same B.S. Class 1E weighing 36 Kg per 10 M2. All layers shall be completely bonded to one another and to the base with approved bitumen bonding compound or hot bitumen.

C. Asbestos Base Bitumen Felts

Asbestos base bitumen felts where specified shall comply to B.S. 747 Part 2, Class 2. Asbestos base bitumen felt when specified shall consist of two self finished bitumen asbestos under layers to B.S. 747, Part 2, Class 2C each weighing 13 Kg per 10 M2 and one mineral surfaced bitumen asbestos to same B.S. Class 2 E weighing 36 Kg per 10 M2. All layers shall be completely bitumen bonding compound or hot bitumen.

D. Edge Trim

Edge trims shall be of either aluminium to B.S. 1470 or 24 gauge galvanised mild steel sheet to B.S. 3033 of the sizes and patterns specified or shown on the drawings, and shall be approved gauges and manufacturer.

E. Concrete Paving Tiles

Concrete paving tiles shall comply to B.S. 1197, Part 2, nominal size 225 x 225 x 20mm, thick or other approved sizes. Tiles shall be bonded to built-up roofing with hot bitumen bonding compound but joints shall normally be 13mm wide, filled with hot bitumen.

F. Cement

As specified in the concrete section.

G. Sand

As specified in concrete section.

ROOFING (CTD.)

BITUMEN BUILT-UP FELT ROOFING (CTD.)

H. **Coarse Aggregate**

Shall be as specified in concrete section. However, when mineral aggregate chippings are specified, they shall be of approved colour, hard, angular and of a size to pass a 10mm sieve and be retained on a 6mm sieve.
Chipping shall be bonded over top layer of flat roofs with hot bitumen dressing compound. Chippings shall be bedded on the roof at the rate of 16Kg/M2.

A. **Bitumen Primer**

Bitumen primer for priming base shall be of either cut-back bitumen, maximum volatile solvent 60% by weight or bitumen emulsion of a type recommended by the manufacturer for priming purposes.

B. **Bitumen Bonding Compound**

Bitumen bonding compound for bitumen felt shall be to B.S. 3940m Type B and shall be of approved manufacturer.

C. **Bitumen Dressing compound**

Bitumen dressing compound for bedding chippings shall be cutback bitumen to B.SD. 3690 Grade 25.

D. **Approved Sub-Contractor**

Bitumen felt roofing work, unless otherwise directed, shall be carried out by an approved Sub-contractor. Laying shall be carried out generally in accordance with C|P.144.101. Bitumen built up felt roofing shall be guaranteed for one year from the end of the defects Liability period and such guarantee shall be given to the Architect in an approved form.

E. **Falls**

Before laying bitumen felt, the Contractor shall check and certify that the roof is laid to the correct falls. Minimum falls are:-

1.	For mineral surfaced felt roofs	1:30
2.	For protected felt roofs	1:60

F. **Preparation of Base**

Before laying bituminous roofing felt, the Contractor shall ensure that the base is dry and clean to the approval of the Architect. All pipes and outlets passing through the roof, formation of grooved, chases fillets and gutters must be completed and approved before any roof covering commences being laid. When reinforced wood wool slabs form roof base, all joints shall be filled flush with approved strips.

Minor movement joints shall be formed with 150mm strip of damp proof course laid over joints and bonded at edges only. Movements joints shall be formed with rubber or plastic piping inserted into joints or with twin kerbs all in general accordance with Code of Practice. 144 part 3.

ROOFING (CTD.)

A. Laying Bitumen Felt Sheet

Hot bonding compound shall not be heated to more than 220 degrees centigrade and shall be laid at 200 degrees centigrade.

B. Partial Bonding

Partial bonding shall not be allowed without prior written approval of the Architect.

C. Full Bonding

The first and subsequent layers of bituminous roofing felt shall be laid with a minimum of 50mm, side laps and 75mm end laps. The first layer shall be fully bonded with bituminous bonding compound in similar manner to the first layer and to one another. Bitumen bonding compound shall be rolled to remove any trapped air and surplus or squeezed out bonding compound shall be wiped clean.

D. Upstand and Flashings

Upstands shall be at least 150mm high and must be fully bonded to the structure. Top edges of flat flashings shall be tucked into chase, wedged at 600mm centres and fully bonded to upstand. Ends of upstands and flashings shall be lapped at least 100mm and shall be sealed and bonded with hot bonding compound. The chase shall thereafter be pointed in cement mortar (1:3)

E. Felt Eaves and Verges

When felt eaves and verges are specified on the drawings, the Contractor shall nail one edge of 225mm wide felt strip at 150mm centres to the roof base. The felt strip shall then be folded to form welt 50mm deep and sealed with bonding compound. The remainder of the felt shall be fully bonded to the base and covered with full thickness of built up roofing.

Pipes, Vent pipes, Etc., piercing the roof shall be primed with bitumen priming solution and a collar of hot bitumen shall then be formed up round them 45.deg. Roofing felt shall then be dressed over the hot bitumen collar to the pipes etc., and secured tight with stout copper wire. Such collars shall not be less than 150mm high and shall be made completely water tight.

F. Rainwater Outlets

Built up roofing felt shall be carefully dressed into all rain water outlets and sealed in hot bitumen bonding compound. The Contractor shall seal completely and make tight, all such outlets to the approval of the Architect.

G. Protection

After built up felt roofing has been complete, the Contractor, shall protect it from any damage whatsoever and no storage materials on the root will be allowed. Mixing of concrete mortar or heating materials on the roof will not be permitted whatsoever.

ASPHALT ROOFING

A. Butyl Sheet Damp Roofing

Butyl sheet shall be laid in accordance with the manufacturers printed instructions M/S Dunlop Kenya Limited. and shall be bonded in hot bitumen

B. Generally

The covering shall be executed complete by an approved roofing Sub-Contractor.

C. Asphalt Roofing

The mastic asphalt to be used shall comply with B.S. 988/1966 Table 3 column III Tropical Mastic Asphalt laid in two coats to a total thickness of 20mm on and including black sheathing felt.

D. Felt Underlay

The underlay shall be impregnated flax sheathing felt complying with B.S. 747 (Type 4A) (I) and shall be supplied by the Sub-Contractor and with 75mm laps at joints.

E. Preparation of Surfaces

All surface to receive asphalt are to be dry and roughened, grooved or otherwise prepared and finished to the entire satisfaction of the Architect.

F. Melting Asphalt

Asphalt blocks shall be broken into pieces of convenient size and carefully melted in cauldron on mechanically agitated melters on the site at a temperature not exceeding 215 deg. C. Molten material may be delivered to the site in mechanically agitated mixers.

G. Dusting of Buckets

Buckets used for carrying molten asphalt shall be dusted with a fine inert dust. On no account shall ashes or oil be used for this purpose.

ROOFING (CTD.)

A. **Laying Asphalt**

Asphalt shall be laid in bays generally not exceeding 2m wide and succeeding coats shall be laid breaking joint, junctions between bays and fillets shall be properly married, the laid asphalt being heated by the application of the hot material, the whole being worked so that the joints are neatly made. Air pockets, stains on the asphalt work shall not ring hollow over any parts of its surface.

Joints in all asphalt work shall be carefully made and complete fusion obtained to make them watertight joints shall be made around pipes passing through roofs etc.

"Resincot" Pre-painted mild steel sheeting

G.C.I. Sheeting

B. **Generally**

Pre-painted corrugated mild steel sheeting shall be No.24 Gauge of best quality in accordance with B.S. 3083, and shall conform to Kenya Bureau of Standards KS06-02: Part II 1976.

C. **laps**

Sheets shall be laid with 150mm end laps and side laps of 30mm corrugations on the side away from the prevailing wind.

D. **Fixing to steel and timber**

The sheets shall be fixed to mild steel angle purlins with 6mm diameter pre-painted mild steel hook bolts 50mm longer in the shank than the depth of the steel purlins to which they are fixed each with one diamond shaped bitumen washer one pre-painted steel washer, and one pre-painted steel nut. The sheets shall be fixed to timber purlins by using 14 gauge drive screws with bituminous felt washer backed by a cranked diamond shaped aluminium washer.

ROOFING (CTD.)

A. **Holes**

Holes for bolts or screws shall be punched from the inside of the sheet and through the ridges of corrugations not in the hollows. A clearance of 0.80mm on the bolt or screw must be allowed.

B. **Ridges, Valleys, Flashings**

The ridges, valleys and flashing etc., shall be formed of No.24 gauge pre-painted mild steel sheeting of a quality equal to the sheeting on each side at 450mm centres maximum with 6mm diameter seam bolts 20mm long each with one diamond shaped bitumen washer one pre-painted steel washer and one pre-painted steel nut.

Ridges and valleys shall be not less than 375mm girth.

C. **Bolts and Screw**

All fixing bolts and screws shall comply with B.S. 1494.

D. **Square Abutments**

At square abutments the last two corrugations of the corrugated iron sheets next to walls shall be flattened and turned up against wall and covered with 24 gauge pre-painted sheet iron apron flashing.

E. **Bat proofing**

Bat proofing shall consist of "Perspex" or other equal and approved translucent plastic corrugated sheeting.

TILED ROOFING

F. **Concrete single-pin tiles and fittings**

Shall comply to B.S. 473 and 550: Part 2 group B. Tiles are to be 381 x 229mm nominal unless otherwise specified.

Surface coating when specified must be firmly bonded. A full range of fittings are available from the manufacturer and must match the tiles with which they are laid.

ROOFING (CTD.)

TILED ROOFING

Concrete single-pin tiles and fittings C'td

A. Mangalore Tiles where specified they shall be interlocking clay tiles as manufactured by M/S Clay works Ltd. or other equal and approved. They shall be uniform in size, shape and colour, hard, well burnt and free from defects.

They shall be laid in accordance with the manufacturer's printed instructions.

Polythene shall conform to B.S. 3012: 500 gauge and of approved manufacture.

B. Nails for underlay: to B.S. 1202: Part 1

C. Tying wire - to B.S. 443, 1.6mm diameter (16 S.W.G.) iron wire.

D. **HERTALAN EPDM SHEETING SYSTEM**

Hertalan EPDM rubber sheeting roofing work, unless otherwise directed shall be laid by M/S Rooftech Kenya Limited P.O. BOX 75282, Nairobi, Telephone No.725697, Nairobi. Laying shall be carried out in strict adherence of manufacturer's instructions.

E. **Preparation of Substrate**

Before laying Hertalan EPDM sheeting, the Contractor shall ensure that the surface is cleaned of all loose particles such as stones, gravels, nails, and free of sharp-edged foreign materials etc. and that the substrate is dry and clean oil/free to the approval of the Architect. All pipes and outlets and gutters must be completed and approved before any Hertalan EPDM sheeting is laid.

When reinforced wood wool slabs form roof base, all joints shall be filled flush with approved strips.

ROOFING (CTD.)

A. Hertalan EPDM

The Hertalan EPDM sheeting shall be free from pinholes and blisters. The edges of the sheeting shall be straight with a sharply defined cut.

When rolled out on a flat horizontal surface, the sheeting shall exhibit no wrinkling. The sheeting shall show no porosity between plies. Neither shall porosity develop when sheeting is heat-aged at 121 deg. C for a period of 7 days.

The sheeting shall be such that when bonding adhesive, type KS 143 or other approved adhesive is applied to the four edges of a one square metre piece of sheeting, these edges shall not ripple or deform in any way so that a similar one square metre of sheeting, prepared in same way, can be totally bonded along all four edges without edges without the formation of "fish mouths". A period of 20 minutes (maximum) is allowed for the adhesives to dry.

B. Upstands and Flashings

Upstands shall be at least 300mm high and must be fully bonded to the structure. Top edges of EPDM flushing shall be tucked into chase, wedged at 600mm centres and fully bonded to upstand. Ends of upstands and flashings shall be lapped at least 100mm and shall be sealed and bonded. The chase shall thereafter be pointed in cement mortar (1:3).

C. Pipes, Vent Pipes, Flues etc. Piercing the Roof

Pipes, vent pipes, flues etc. piercing the roof shall be rapped with hertalan EPDM rubber using Conta adhesive and finally sealed with KS 87.

D. Rainwater Outlets

Hertalan sheeting shall be dressed around a PE-outlet-pipe with clamping tube. For details check working manual sheet No. 2.61.2.9g.

E. Protection and Painting

After the Hertalan EPDM single ply system has been installed, two coats of rubberized paint should be applied to give a grey finish. The Contractor should then protect it from any damage whatsoever and no storage of materials on the roof will be allowed. Mixing of concrete mortar or heating materials on the roof will not be permitted under any circumstances.

ROOFING (CTD.)

A. **Guarantee**

The Nominated Sub-Contractor shall be required to give a ten-year guarantee on Hertalan EPDM sheeting roofing.

VANDEX WATER-PROOFING

Specification for Waterproofing Concrete Structures

B. **Preparatory work**

All areas shall be examined for structural defects.

Shrinkage cracks exceeding 0.33mm (0.01") in width shall be cut or chiseled out at least 10mm wide and 15mm deep and washed out. Then a slurry coat of VANDEX Super shall be applied. Following this the groove is filled with a mixture of 3 to 1 sand and cement in stiff mortar consistency.

Over-poured forms, around columns and/or inverted beams, form grooves shall be cleaned out, rinsed with water and slurry coated with Vandex super. These grooves shall then be filled flush with a mixture of 3 to 1 sand and cement.

Any honeycombed concrete found in walls and/or inverted beams/columns shall be raked out to solid concrete, washed out with water, coated with a slurry coat of Vandex Super and filled out flush with a 3 to 1 mixture of sand and cement.

C. **Cleaning**

Concrete surfaces must be free from all form scale, laitance, algae growth, mould, oil, curing agents and any other foreign materials. The finish of the surfaces shall be a brush finish.

All laitance (cement scum) shall be removed as soon after pouring as possible.

D. **Pre watering**

Concrete shall be thoroughly wetted down in order to achieve the penetration of the activated chemicals, and thereby starting the crystalline growth throughout the capillary tracts.

All free lying water must be removed from surface, leaving the concrete in a damp condition just prior to Vandex application

VANDEX WATER-PROOFING C'TD

A. Mixing

Vandex super is mixed to slurry consistency. Add approximately 0.8 parts water to 2.0 parts powder or 9 litres to 25 Kg when mixing full bags, and mix thoroughly until the mixture is free from lumps.

B. Application

The application should be as even as possible trying to avoid thick and thin spots. Areas applied too thick will not cure right and when drying cracks and subsequently peeling may form.

The second coat may be applied when the first coat has set and is not drawn off by the second coat.

C. Curing and protection

Vandex applications must be protected against sun and rain. After the application is dry to the touch, cover with polyethylene sheet (Hessian cloth) or wet sand for five days. If this is not possible, sprinkle with water several times a day for five days. Do not apply Vandex materials at temperature below 5 degrees C or on super cooled structures.

D. Additional information

When concrete is poured in sections, it is recommended that each section is keyed. After keyed form is removed and just prior to pouring the next section the construction joint shall receive a slurry coat of Vandex Super (1.5Kg/sq.m).

This does not apply to control or expansion joints.

E. Master Hyseal 501

Master Hyseal 501 chemical crystalline waterproofing to be applied strictly as directed by the Engineer.

F. Index Fidia Spun bond

Index Fidia Spun bond polyester mineral surfaces waterproofing ditto.

CARPENTRY

A. The requirements of the following British Standards and Codes of Practice shall be observed:

British Standards

B.	B.S. 565	Glossary of terms relating to timber and woodwork
C.	B.S. 1860 part 1	Structural timber. Measurements of characteristics affecting strength (softwood)
D.	B.S. 4471	Dimensions for softwood
E.	B.S. 373	Methods of testing small clear specimens of timber
F.	B.S. 1202 part 1	Nails
G.	B.S. 1579	Connectors for timber

British Standards (ctd.)

H.	B.S. 4169	Glued laminated structural members
I.	B.S. 916	Black bolts

Codes of practice

J.	C.P. 112	The structural use of timber
K.	C.P. 98	Preservative treatment for construction timber

L. NOTE: The Contractor's attention is drawn to Section "L" of the Standard Method of Measurement.

M. All timber used for carpentry shall be sound, well conditioned, properly seasoned to suit the particular use and free from defects or combination of defects rendering it unsuitable for the purpose intended.

CARPENTRY (CTD.)

A. Timber used for carpentry shall be in accordance with the latest approved Grading Rules issued by the Government of Kenya. Timber used structurally shall comply with the requirements of the Export Grading Rules and also with B.S. 1860.

B. The following timber shall be used:

Podocarpus (podocarpus spp)
Cedar (Juniperus Procera)
Elgon Olive

TIMBER

C. All timber as it arrives on site shall be inspected by the Contractor, and any timber found not to comply with the specification or not approved must be removed forthwith from the site and only timber which has been approved shall be used.

D. Tolerances shall conform with the following extracts from the Government of Kenya Grading Rules:-

Softwood Grading: - Strength Grades, first and second grades.

Undersize: All timber to be sawn by 1.6mm per 25mm of thickness and width.

Not more than 3mm in thickness and not more than 6mm in width.

E. All timber shall be free of live borer beetle or other insect attack when brought upon on site. The Contractor shall be responsible to the end of maintenance period for executing at his own cost all the work necessary to eradicate insect attack of timber attacked or suspected to be attacked, notwithstanding that the timber concerned may have already been inspected and passed as fit for use.

F. Timber shall be seasoned to a moisture content of not more than 22%.

CARPENTRY (CTD.)

TIMBER (CTD.)

A. All carpentry timbers shall be treated with pressure impregnated "Celcure" or Tenalith" solution with a minimum wet retention of 5.46 KG. of dry salt per m3. If so required "charge sheets" issued after treatment with "Celcure" or "Tenalith" shall be submitted by the Contractor to the Architect for his retention. All out ends and other cut faces or timbers sawn after treatment shall be treated before fixing with "Celcure B" or "Wolmanol" solution brushed on.

B. The Contractor's rates for such timber hereinafter must allow for the above treatment.

C. All grounds shall be podocarpus or other light and approved hardwood.

D. Nails shall comply with the relevant standard as above.

E. Black bolts shall comply with B.S. 916. Rag bolts, coach screws and others shall comply with B.S 1494. Where used externally nails and screws shall be sherardized.

F. Timber shall be delivered early to the site, stored under cover clear of the ground and protected from the sun and dampness.

G. The Architect shall be given facilities and reserves the right for inspection of all works in progress whether in workshop or on site. The Contractor is to allow for testing of proto-types of special construction units and the Architect shall be at liberty to select any samples he may require for the purpose of testing i.e. for moisture content or identification, species strength etc., such tests will be carried out by the Forestry Department.

H. The Contractor is to clear out and destroy or remove all cut ends, shavings and other wood waste from all parts of the building and the site generally, as the work proceeds and at conclusions of the work.

This is to prevent accidental borer infestation and to discourage termites and decay.

I. All carpentry's work shall be accurately set out in strict accordance with the Drawings and shall be framed together and securely fixed in the best possible manner with properly made joints, all brads, nails, and screws etc., shall be provided as necessary directed and approved and the rates shall be deemed to allow for these.

J. All carpenter's work shall be left with sawn faces except where specified to be wrot.

CARPENTRY (CTD.)

A. All timber shall be as long as possible in order to minimise joints. Where joints are unavoidable surfaces shall be in contact over the whole area of the joint before fastenings are applied.

No nails, screws and bolts are to be fixed in any split end. If splitting is likely, or is encountered in the course of the work, holes for nails are to be prepared at diameter not exceeding 4/5th of the diameter of the nails. Clenched nails must be bent at right angles to the grain.

B. Lead Holes are to be bored for all screws. When the use of bolts is specified the holes are to be bored from both sides of the timber and are to be of the diameter D/16 where D is the diameter of the bolt. Nuts must be brought up tight but care must be taken to avoid crushing of the timber under washers.

JOINERY

A. The requirements of the following British standards and Codes of practice shall be observed:-

British Standards

B.	B.S. 565	Glossary of terms relating to timber and woodwork
C.	B.S. 4471	Dimensions for softwood
D.	B.S. 1186 parts 1+2	Quality of timber and workmanship in joinery
E.	B.S. 373	Methods of testing small clear specimen of timber
F.	B.S. 4512	Methods of test for clear plywood
G.	B.S. 1142 part 3	Fibre building board (Insulation board softwood)
H.	B.S. 3444	Block board and laminated board
I.	B.S. 459 part 1	Pannelled and Glazed wood door
J.	B.S. 1455	Plywood manufactured from tropical hardwoods
K.	B.S. 3794	Decorative laminated plastics sheet
L.	B.S. 459 part 2	Flush doors
M.	B.S. 459 part 3	Fire check flush doors and wood and metal frame (1.5. hour and 1 hour types)
N.	B.S. 1567	Wood door frame and linings
O.	B.S. 584	Wood trims (softwood architraves, skirting, quadrants etc)

British Standards

P.	B.S.1204 parts 1+2 Type MR-Moisture Resistant Type INT -Interior	Synthetic resin adhesive (phenolic and amino-plastic) for wood

JOINERY (CTD.)

British Standards

A.	B.S. 1210	Wood Screws
B.	B.S. 1494 part2	Fixing accessories for building purposes (bolts, screws, staples etc.)
C.	B.S. 4174	Felt tapping screws and metallic drive screws

Codes of Practice

D.	C.P. 201	Timber flooring
E.	C.P. 201 parts 1+2	Flooring of wood and wood products
F.	C.P. 151	Doors and windows including frames and linings
G.	NOTE:	The Contractor's attention is drawn to Section "M" of the Standard Method of Measurements

H. The timber for joinery shall be as specified in the Export Timber Ordinance of 1951 and obtained form an approve sawmill. All such timber shall be Prime Grade and reasonably straight grained and shall be purchased immediately the Contract is signed and is to be open stacked for such further seasoning as may be required.

Timber which in the opinion of the Architect does not satisfy the specification in character or condition is not suitable for the requirements of the work because of the blemishes it contains shall not be used.

I. **The following timber shall be used:-**

Podocarpus
Mvuli
Cedar
Elgon Olive
Camphor
Mahogany

JOINERY (CTD.)

A. All timber shall be wrot by machine dressing non exposed faces and machine marks shall be removed with hand plane and sanded out, unless otherwise specified.

The dimensions and thickness stated in the Bills of Quantities are the finished size (unless otherwise stated) and the Contractor will allow for all necessary waste.

B. The joinery shall be worked strictly in accordance with detail Drawings, and is to be framed up and put together as soon as possible and stored in the drying room, for as long as possible before being wedged up. All joints and angles are to be glued and where necessary cross tongued with hardwood tongues and surfaces finished clean and smooth, with machine marks sand papered out before fixing.

Should any of the joinery work shrink, warp, wind or deflect unduly before the end of the maintenance period of the Contract, the work is to be taken down and rectified at the Contractor's sole expense.

C. Tolerance in thickness shall conform with the following extracts from the Government of Kenya Grading Rules:

Hardwood Grading: (First and Second Grades)

The following tolerances in thickness will be admitted:-

(i) 1.6mm over size on pieces up to 25mm in thickness

(ii) 3mm over size on pieces over 25mm and up to 51mm in thickness.

(iii) 6mm over size on pieces over 51mm in thickness undersize will not be permitted.

Softwood Grading: Appearance Grades (first and Second Grades)

Undersize not allowed.

Oversize: All timber to be sawn oversize by 1.6mm per 25mm of thickness and width. Not more than 3mm in thickness and not more than 6mm in width.

JOINERY (CTD.)

A. Seasoning of timber shall be to moisture content of not more than 15%.

B. Pressure impregnation treatment shall be as for "Carpentry".

C. Where joinery is described as screwed this is deemed to include sinking the head of the screw and pellating with similar timber, and to grain in with the finished joinery.

D. All hardwood joinery shall be finished for oil paint, unless otherwise stated.

E. The rates shall be deemed to allow for all nails and screws and fixing all labour cuttings, notching, halving, morticing, tenoning and wedges except where otherwise provided.

F. All work described as plugged shall be fixed with screws to plugs formed by drilling concrete walls, etc., with the proper tool of suitable size at 750mm spacing and filling the holes completely with "Phil plug" rawl plastic or rawl plugs in accordance with the manufacturer's instructions. Alternatively and where so agreed by the Architect, hardwood dovetailed fixing slips in preservative and cut and primed or bedded in cement mortar (1:3) may be used.

G. The rates are to allow for all surfaces of joinery where in contact with walling or plaster, or where otherwise unexpected, being treated before fixing with two coats of approved wood preservative.

H. Laminated plastic sheeting shall be "Formica" manufactured by Thomas de la Rue and Co. or other equal and approved, 1.6mm thick and accurately fixed with approved typed waterproof impact adhesive and in the colours selected by the Architect.

I. Blackboard shall comply with the Standard as mentioned above.

J. Plywood shall comply with the standard as mentioned above. Bond M.R. Birch faced both sides unless otherwise stated.

K. Fibre board shall be 12.7 "Celotex" or other equal approved soft board.

JOINERY (CTD.)

A. **All joiner's work** shall be accurately set out and framed together as soon after commencement of the building as is practicable but not to be wedged up or glued until the building is ready for fixing same. Any portions that warp, wind or develop shapes or other defects within the maintenance period shall be removed and new fixed in their place together with other work which may be affected thereby, all at Contractor's expense.

All work shall be properly mortised, tennoned, housed, shouldered, dovetailed, notched primed, bradded, etc, as directed and to the satisfaction of the Architect and all glued up with the best quality glue.

B. Joints in joinery shall be as specified or detailed, and so designed and secured as to resist or compensate for any stresses to which they may be subjected. All nails strings, etc are to be punched and puttied. Loose joints are to be where provisions for shrinkage is necessary; glued joints where shrinkage need not be considered and where conditions may be damp must be of the resin type. For non-load-bearing joints or where dry conditions may be guaranteed resin or organic glues may be used. All exposed surfaces for joinery shall wrot and all arises "cased off" by planning and sand papering to an approved finish suitable to the specified treatment.

C. 3mm reduction of specified sizes will be allowed to each wrot face except in members 25mm thick or less or where, described as finished sizes in which case joinery shall hold up the full dimensions.

D. In fixing all beads, fillets and small members shall be fixed with round or oval brads or nails well punched in and stopped. All large members shall be fixed with screws. Brass screws shall be used for fixing of all hardwoods, to the heads in and pellated over with wood pellets to match the grain.

E. Rates shall include for bedding frames, sills etc., in mortar or dressing surfaces of walls etc. in lieu.

F. Round wood plugs shall not be used, and screws or plugs shall be spaced at 750mm centres.

G. All fixed joinery which in the opinion of the Architect is liable to become bruised or damaged in any shall be completely cased and protected by the Contractor at his own expense until completion of works.

H. Bottom edges of doors shall be painted or polished with two coats of approved primer before fixing.

ALUMINIUM WORKS

A. **STANDARDS AND DIRECTIVES**

All aluminium works are to be executed according to the valid standards, directives, government codes and building regulations, fire regulations and any other such applicable regulations as:-

DIN 107 - Methods of testing windows; mechanical tests
DIN 1055 - Design loads for buildings
DIN 1249 - Flat glass for building construction
DIN 1745 - Wrought aluminium and aluminium alloy plates, sheet and strip greater than 0.35mm thickness; properties, technical delivery conditions
DIN 1748 - Wrought aluminium and aluminium-extruded sections; design, permissible deviations
DIN 1783 - Strips, plates and sheets of aluminium and wrought aluminium alloys with thickness over 0.35mm, cold rolled; dimensions
DIN 4102 - Fire behaviour of building materials and building components
DIN 4108 - Heat insulation in buildings
DIN 4109 - Noise control in buildings
DIN 4113 - Aluminium constructions under predominantly static loading, static analysis and structural design
DIN 7863 - Non-cellular elastomer glazing and panel gaskets
DIN 16935 - Sheets of polylsobutylene used for damp-proofing
DIN 17611 - Anodized wrought products of aluminium and aluminium alloys with layer thickness
DIN 17615 - AlMgSi 0.5 precision profiles
DIN 18000 - Modular co-ordination in building
DIN 18055 - Windows; air permeability joints, water tightness and mechanical strain
DIN 18056 - Window walls; design construction
DIN 18103 - (Burglar resistant) Doors
DIN 18201 - Tolerances in building; terminology, principles, application, verification
DIN 18202 - Dimension tolerance; in building construction
DIN 18203 - Dimension tolerance; precast /reinforced/ prestressed concrete
DIN 18335 - Contract procedure for building works; general technical specification for steel construction works
DIN 18357 - Contract procedure for mounting aluminium fittings
DIN 18358 - Contract procedure for rolling shutter works
DIN 18360 - Contract procedure for locksmith works
DIN 18361 - Contract procedure for glazing works

ALUMINIUM WORKS (CTD.)

A. **STANDARDS AND DIRECTIVES (CTD.)**

DIN 18364	-	Contract procedure for works for protection against corrosion of steel and aluminium structures
DIN 18540	-	Sealing of exterior wall joints in building construction using joint sealants
DIN 18801	-	Steel construction in buildings; dimensioning, design, construction
DIN 18808	-	Steel structures consisting of hollow sections predominantly static loaded
DIN 55928	-	Protection of steel structures from corrosion by organic metallic coatings
VDI 2719	-	Sound insulation of windows or comparable British codes and standards e.g.
CP3	-	Code of basic data for the design of building
CP 118	-	The structural use of aluminium
CP 158	-	Windows and roof lighting
DD 22	-	Tolerance and fits for building
BS 1470	-	Wrought aluminium and aluminium alloys for general engineering purposes, plate, sheet and strip
BS 1474	-	Wrought aluminium and aluminium alloys for general engineering purposes, bars, extruded round tubes and sections
BS 3987	-	Specification for anodic oxide coatings on wrought aluminium for external architectural applications
BS 4873	-	Aluminium alloy windows, specification
BS 5950	-	Structural use of steelwork in building
BS 6262	-	Code of practice for glazing for buildings
BS 6375	-	Performance of windows
BS 6496	-	Specification for external architectural purposes etc.

The directives and guidelines of insulating glass suppliers. The guidelines of accident insurers for local authorities. The guidelines of window/facade system manufacturers.

ALUMINIUM WORKS (CTD.)

A. ALUMINIUM

Extruded aluminium profiles of alloy AlMgSi 0.5F22 in anodizing quality according to DIN 1748 and DIN 17615 are to be used, for anodized sheets ALMg1, for colour-coated ALMg1 or A199.5.

01 Special anodizing processes to be taken into account, if determined by the bill of quantities.

02 The aluminium system shall be capable of achieving different colours and finishes on the external/internal facade and within the same element.

B. STEEL

Steel parts for anchoring or bracing must either be non-corrosive or galvanized. During mounting all necessary welding points have to be painted with cold zinc galvanizing.

C. SELECTION OF PROFILES

All required sections are to be chosen according to foreseen application and data given by the system manufacturer. Thermally insulated outer and inner profiles must be continuously connected and shear-resistant by insulating bars.

The profiles must safely support all loads as described in DIN 1055. The effective moments of inertia given by the system manufacturer are to be considered when selecting the optimal profile. The principal of thermal break is to be respected in all points of construction. All thermally insulated profiles are determined by the groups of DIN 4108.

Ventilation and drainage of rebate base and front chamber must be foreseen in the aluminium construction system in order to drain off moisture to the outside. The insulating connection of outer and inner section must be water-proof and water-resistant without additional sealing if the connection uses the rebate or front chamber. When using insulating glass the ventilation of the rebate base is to be guaranteed as the insulating glass supplier specifies.

01 All minimum and maximum vent sizes and weights as listed in all B.S. profile system are binding.

02 The glazing guidelines of the insulating glass supplier and DIN 18056 determining the allowed deflection of mullions and transomes are to be observed.

ALUMINIUM WORKS (CTD.)

A. PROFILE CONNECTIONS

Corner cleats must have a cross section which corresponds to the interior profile contours. At the mitres a prefect sealing and gluing is required. In T-joints the seeping of water into the construction must be prevented by corresponding packing and elastic sealing.

B. VENT GASKETS

All gaskets are to be inserted in order to fulfil the specific window requirements (type, building height etc.) permanently. The gaskets are to be exchangeable.

01 Side hung, turn-tilt, bottom hung and double vent windows must have a middle gasket.

C. WIND LOADING

The system shall be so designed to suffer no permanent distortion or other damage. Deflections of longer pane edge are not to exceed 1/250 for double glazed units and 1/200 for single glazing. When subjected to positive and negative pressures as determined by and in accordance with BSCP 3 Chapter 5 part 2.

D. THERMAL MOVEMENT

The aluminium framework and glazing assemblies shall be constructed and installed in the prepared locations with sufficient tolerance and, where necessary, expansion joints incorporated within the couplings, to provide for expansion and contraction as will be caused by the climatic conditions and temperature changes, winter, summer, day to night, without buckling, distortion of joints, damage to the sealants or other detrimental effects over the temperature range - 15 deg. C. to 35 deg. C. The design shall accommodate, noiselessly, the thermal movement within the combination units and the curtain walling without distortion. Details shall be prepared based upon the dimensions at 20 deg. C. and take account of the ambient temperatures at the time of assembly and installation.

ALUMINIUM WORKS (CTD.)

A. DRAINAGE AND VENTILATION OF CONSTRUCTION

All profile rebates where water or condensate could seep in are to be drained off and ventilated by wind-protected slots or through cavities to the outside.

The system shall incorporate an integral and internal condensate collection drainage channel to remove the condensate from within the assembly to the external drainage system.

Provision for the continuity of drainage from the transome to the mullion is to be provided.

No perforation of the internal structural members within areas of drainage will be permitted.

All internal section junctions are to be adequately sealed.

Transome members within sloped glazed areas shall permit water to drain from one area to another without inhibiting the flow and creating pooling.

B. FITTINGS

Construction systems of B.S. are to be assembled or completed by compatible system fittings as specified. Other fittings may be selected but only if fulfilling DIN standards.

01 If not specified in the bill of quantities all fittings except handle and hinges are to be concealed.

02 The fittings are to be attached in its rebates tension and pressure-proof. If required because of profile wall thickness screw connections need nuts and washers.

C. GLAZING AND PANELS

Glass supply and glazing is described separately for each position of the bill of quantities.

01 The glazing is to be executed by permanently elastic, EPDM-gasket.

02 Guidelines and directives of insulating glass suppliers are to be strictly followed.

03 Supply and installation for fixed panels is always described in the position concerned.

04 All glass assemblies shall be tape sealed between the units and within the structural unit zone and prior to the installation of the external gasket and pressure plate.

ALUMINIUM WORKS (CTD.)

A. BUILDING DIMENSIONS

The exact measurement must be produced by the tenderer himself on site.

01 If the client requests the construction to be ready for mounting before the measurement on site can be carried out the tenderer shall determine the assembly dimension together with the client taking into account the tolerance of the building according to DIN.

B. WORKING DRAWINGS

After award of contract the contractor must submit working drawings for specific positions and details as requested by the architect or resident engineer.

C. INSTALLATION OF ELEMENTS

The anchoring of all aluminium elements must neutralize all movements of structure and the elements attached without loading or stress the aluminium construction.

01 All mounting of aluminium elements is to be executed exactly in horizontal and vertical alignment according to the measurement points provided by the client.

02 All attachment accessories necessary for mounting are to be calculated by the tenderer.

If described in the bill of quantities some anchor rails for attachments will be provided or will be fixed to the structure. In this case the contractor is requested to provide a location plan of required anchoring in time.

03 All connecting means, e.g. screws or bolts, must be non-corrosive zinc plated steel.

04 All attachments to neighbouring building parts are to be considered when calculating the positions in the bill of quantities.

ALUMINIUM WORKS (CTD.)

A. GASKETRY AND SEALING

Appropriate EPDM - gaskets or seals are to be inserted according to design, dimensions and its range of application. The gaskets or seals and their elasticity must fulfil all temperature requirements. The contractor shall ensure total alignment of the gasketry in all visible locations.

01 Permanent elastic sealing compounds on silicone or thiocol basis are to be applied for sealings. Joints within any area of the system are to be adequately bonded together to produce a watertight joint. The sealing must stick to the construction parts taking into account the shape of elements and the range of existing temperature without loosening when elements move caused by tension to be considered before. All guidelines or sealing compound suppliers are to be respected.

B. ANODIC OXIDATION

The aluminium profiles and sheets are to be anodized according to DIN 17611. Surface treatment, coating and protection is determined by the specifications as described in the bill of quantities.

01 After all of contract, the tone of colour is to be defined according to colour samples.

02 All visible fittings must suit the profile colour if available.

IRONMONGERY

A. The requirements of the following British Standards shall be observed:-

British Standards

B. B.S. 1227 part 1A Hinges

C. B.S. 2088 Performance test for locks

D. B.S. 2911 Letter plates

E. B.S.4112 Performance requirements for hardware for domestic furniture

F. NOTE: The Contractor's attention is drawn to Section "M" of the Standard Method of Measurement.

G. All locks and ironmongery shall be fixed with screws etc. to match, before woodwork is painted, handles shall be removed, carefully stored and refixed after completion of painting and locks oiled and left in perfect working order.

All keys shall be labelled with the door reference on labels before handing to the Architect on completion. All ironmongery shall be carefully protected until completion of the work and any damage is to be made good at the Contractor's expense.

H. Rates shall allow for easing and adjusting all doors etc. and for lubricating all locks, hinges etc. and leave in perfect working order.

I. Where descriptions fixing ironmongery include catalogue numbers, such items shall be obtained from the specified manufacturers if at all possible.

J. Rates shall include for labelling all keys with door reference as directed by the Architect.

METALWORK

A. The requirements of the following British Standards and Codes of practice shall be observed:-

British Standards

B.	B.S. 4 part 1	Structural steel, Hot rolled screws
C.	B.S. 4 part 2	Structural steel, Hot rolled hollow sections
D.	B.S. 325	Black cup and countersunk bolts and nuts
E.	B.S. 916	Black Bolts, screws and nuts
F.	B.S. 4174	Self tapping screws and metallic drive screws
G.	B.S. 405	Metal washers for general engineering purposes
H.	1161 and engineering	Aluminium and aluminium alloy Sections Addendum for general purposes
I.	B.S. 938	Metal ore welding of structural steel tubes
J.	B.S 1856	Metal or welding of mild steel
K.	B.S. 729 part 1	Hot dip galvanised coating iron and steel articles
L.	B.S. 1474	Wrot aluminium and aluminium alloy
M.	B.S. 990 parts 1+2	Steel windows (Domestic and similar buildings)

Codes of Practice

N.	C.P.499	Metal railings and balustrades
O.	C.P.117	Composite construction in structural steel and concrete
P.	C.P. 2008	Protection or iron and steel structures from corrosion
Q.	C.P. 3012	Cleaning and preparation of metal surfaces.

NOTE: The Contractor's attention is drawn to Section "P" of the Standard Method of Measurements.

METALWORK (CTD.)

A. Iron and steel where galvanised shall comply with the requirements of B.S 729, part 1 entirely coated with fine fabrication by complete immersion in a zinc bath in one operation and all excess carefully removed.

The finished surfaces shall be clean and uniform.

B. All work in aluminium shall comply with the requirements of the standard mentioned above.

C. All smithing and bending shall be soundly and neatly executed care being taken not to overheat.

D. All strap, bolts and similar work shall be forged neat and clean from the anvil.

E. All welded connections shall be ground to a smooth finish and rates shall be deemed to allow for this.

F. Steel windows shall comply with the requirements of the Standard mentioned above and shall be fixed in accordance with manufacturer's instructions.

G. All mild steel except galvanised shall be cleaned of rust and scale, painted one coat red lead priming paint before deliver to site and the rates shall include for this.

PLUMBING AND ENGINEERING INSTALLATIONS

A. The requirements of the following British Standards and Codes of practice shall be observed:-

British Standards

B.	B.S 416	Cast iron spigot and socket soil, waste and ventilating pipes (sand cast and spun) and fittings.
C.	B.S. 2871 part	Copper and copper alloy tubes (for water, gas and sanitation)
D.	B.S. 864 part	Capillary and compression fittings of copper and copper alloy
E.	B.S 1184	Copper and copper alloy traps
F.	B.S. 4576	Unplasticised P.V.C. rainwater goods
G.	B.S 3974	Pipe supports
H.	B.S 1494	Fixing accessories for building purposes (gutter bolts, pipe brackets)
I.	B.S. 1010	Draw-off taps and stop valves for water services (screw down pattern)
J.	B.S 1212	part 1 & 2 Ball valves (excluding floats)
K.	B.S 2456	Floats for ball valves (plastic) for cold water
L.	B.S 1125	W.C flushing cisterns
M.	B.S 417 Part 1 & 2	Galvanised mild steel cisterns, covers tanks and cylinders
N.	B.S 2760	Pitch-impregnated fibre pipes and fittings
O.	B.S 1387	Steel cubes and tubulars
P.	B.S 4514	Unplasticized P.V.C. soil and ventilating pipe, fittings and accessories
Q.	B.S 3505	Unplasticized P.V.C. pipes for cold water services

PLUMBING AND ENGINEERING INSTALLATIONS (CTD)

British Standards (ctd.)

A. B.S 143 and 1256 Malleable cast iron and cast copper alloy, screwed pipe fittings

B. B.S. 78 part 2 and Cast iron spigot and socket pipes

C. B.S. 1130 (vertically cast) and spigot and socket fittings

D. B.S 1010 parts 1+2 Draw-off taps and stop valves for water services

Codes of practice

E. C.P. 304 Sanitary pipework above ground

F. C.P. 310 Water supply

G. C.P. 305 Sanitary appliances

NOTE 01. The Contractor's attention is drawn to Section "Q" of the Standard Method of Measurements.

02. The whole of the work shall be executed by an approved licensed Sub-Contractor.

H. Galvanised mild steel pipes and fittings shall comply with the requirements of B.S 1387 Class "B". The pipes shall be screwed and socketed and put together in hemp and red lead.

I. Pitched-fibre pipes shall generally comply with requirements of B.S 2760 and shall be obtained from approved manufacturers. The pipes are to be jointed with couplings and fixed to walls with clips, strictly in accordance with the manufacturer's instructions.

J. P.V.C Pipes for soil and waste shall comply with the Standard mentioned above solvent welded together with seal ring joints where necessary to accommodate movement. Pipes shall be fixed to wall with galvanised mild steel holderbats all to the manufacturer's instructions.

K. 'Fulbora' Rainwater outlets shall be 100mm, and 150mm diameter as manufactured by Fulbora Limited. (UK) or other equal and approved.

L. The words "pipe" or "tube" shall be synonymous wherever used herein or in any of the Contract Documents. Pipe sizes stated herein are nominal bore.

PLUMBING AND ENGINEERING INSTALLATIONS (CTD.)

A. Rates shall allow for holder-bats at centres not exceeding 1000mm, cutting and priming to concrete block or in situ concrete walls and making good.

B. Rates for all tubing shall include for all joints in the running length.

C. Rates for galvanised mild steel tubing not exceeding 20mm diameter shall include for all sockets, connectors, back nuts, plugs, caps, elbows, bonds and made bends, made springs and made effects.

D. Rates for fittings on pipes shall include for all cutting and fitting of pipes to same.

E. The sizes stated of reducing fittings are those of tubes which will be attached to fittings and rates shall include for any additional socket reducers necessary to obtain the stated reduction should it be impossible, to accomplish this with only one fitting.

F. Pipes shall be fixed at least 25mm clear between socket and wall face. Cast iron holderbats shall be fixed at centres not more than 2 metres. Eared pipes must not be used.

G. All the plumbing and engineering installation shall be tested as instructed and any work not found satisfactory shall be made good at the Contractor's expense.

H. Where tubing is laid in trenches care shall be taken to ensure that fittings are not strained.

I. All tubing described as chased into walls shall have the wall face neatly out and chased, the tubing wedged and fixed and plastered over.

J. All formed bends shall be made so as to retain the full diameter of the pipe.

K. Cast iron pipes shall be jointed with asbestos yarn and called with another lead or jointed with special jointing compounds all to be approved.

L. All brasswork and fittings shall conform with the requirements of the Standard mentioned above. Such fittings shall be either high or low pressure, in accordance with the recommendations of the local Authority. At commencement of the Contract the Contractor shall ask the Architect for guidance on this point.

M. All sanitary fittings shall be properly cleaned, polished and left to the satisfaction of the Architect on completion.

ELECTRICAL INSTALLATION

NOTE: The Contractor's attention is drawn to Section "R" of the Standard Method of Measurement.

A. All electrical work shall be carried out under close supervision of a licenced operative of an approved firm of registered Electrical Contractors.

B. All electrical work shall be executed in strict accordance with the latest editions of the British Standards and other Government Regulations.

C. The main Contractor shall at all time co-ordinate his own work and that of all Sub-Contractors with the work of the Electrical Sub-Contractor.

D. Special care shall be executed to ensure that all necessary cable trenches are completed before other subsequent floors, paths etc. including the provision of cable ducts, chases, sinking and the like.

E. No patching up of floors, pavings, plasterwork etc. will be permitted and where, work has to be rebuilt or re-executed due to lack of planning of Sub-Contractor's work, the Contractor will be held responsible for all costs and expenses arising there from.

FLOOR, WALL AND CEILING FINISHES

A. The Contractor's attention is drawn to Section "S" of the Standard Method of Measurement and the requirements of the following British Standards and Codes of Practice shall be observed:-

British Standards

B.	B.S. 1191 Part 1 Class B	Gypsum building plaster (excluding premixed light weight plasters)
C.	B.S. 1193	Sands for internal plastering with gypsum plasters
D.	B.S. 1199 Table 1	Sands for external renderings, internal plastering with lime and Portland Cement, and floor screeds
E.	B.S. 1201	Aggregate for granolithic concrete floor finishes
F.	B.S. 1281	Glazed ceramic tiles and tile fittings for internal walls
G.	B.S. 1369	Metal lathing (steel for plastering)
H.	B.S. 890 Class A	Building limes
I.	B.S. 1187	Wood Block for floors

Codes of Practice

J.	C.P. 211	Internal plastering
K.	C.P. 221	External rendered finishes
L.	C.P. 204	In-situ floor finishes
M.	C.P. 202	Tile flooring and slab flooring
N.	C.P. 203	Sheet and tile flooring (cock, linoleum, plastics and rubber)
O.	C.P. 212 part 1 + 2	Wall tiling
P.	C.P. 209	Care and maintenance of floor surface

FLOOR, WALL AND CEILING FINISHES (CTD.)

Materials and workmanship

A. Cement shall be as described in "Concrete"

B. Sand shall comply with the requirements of the Standards mentioned earlier.

C. Lime shall be non-hydraulic lime to satisfy the Standards mentioned above. It shall be obtained from an approved source. It must be freshly burnt and shall be slaked at least one month before being used by drenching with water, well broken up and mixed and the wet mixture shall be passed through a sieve of 10 meshes to the square centimetre. Lime putty shall consist of freshly slaked lime as described above saturated with water until semi-fluid and passed through a fine sieve, it shall then be allowed to stand until superfluous water has evaporated and it has become of consistency of thick paste, in no case for a shorter period of one month before being used during which it must be kept damp and clean and no portion of it allowed to become dry.

Alternatively, hydrated lime with 70% average calcium oxide content may be used and it must be protected from damp until required for use. It shall be soaked to a putty at least 24 hours before use.

D. All concrete beds or slabs shall be thoroughly brushed clean, hatched if necessary and well wetted and flushed over with a cement and sand (1:1) grout immediately before screeds or paving are laid.

Screeds and cement paving shall be laid in accordance with the relevant British Standards and/or Code of Practice and in alternate bays generally not exceeding 3.0m during any period of dry hours with neat butt joints and shall be damp cured with sand or sawdust and kept damp for at least 7 days after laying.

As bays are formed batten strips must be used retain the exposed edge of the screed.

Thicknesses and mixes of screeds are adjusted to suit the various top dressing and the Contractor must first ascertain what finish is intended to each specific area before the work of the laying screeds is put in hand.

Screeds shall be finished with a wood float for wood blocks and steel trowel for thermoplastic and similar tiles.

E. All surface to be plastered must be brushed clean and well wetted before plaster is applied. Joints of walling shall be raked and concrete hacked to form a key. Care shall be taken to see that paving and plastering do not dry out prematurely. Adequate time intervals must be left between successive coats in two coat work in order that the drying shrinkage of the undercoat may be substantially complete.

FLOOR, WALL AND CEILING FINISHES (CTD.)

A. **Internal Lime Plaster**

i. To be applied in minimum two coats to finish not less than 12mm total thickness. The rendering coat shall be in the proportion of cement and sand (1:4) and the finishing coat not less than 1.50mm thick shall consist of fine sieved lime putty with 10% of cement thoroughly incorporated immediately before use, trowel led hard and smooth with a steel trowel and sprinkled with water during the process.

ii. The first coat must be well scored to form a key and at least fourteen days must elapse between the completion of any portion of the rendering coat and application of the finishing coat.

B. External cement and sand rendering shall consist of cement and sand (1:4) applied in two coats and finished with a wood float.

C. If required the Contractor shall prepare samples of the screeds, pavings and plastering as directed until the quality, texture and finish required is obtained and approved by the Architect, after which all work executed shall conform with the respective approved samples.

D. All screeds and pavings shall be finished smooth, even and truly level, unless otherwise specified and paving shall be steel trowel led.

E. Rendering and plastering shall be finished plumb, square, smooth, hard and even and junctions between surfaces shall be perfectly true straight and square.

All work not found to be of satisfactory standard shall be hacked away and made good at the Contractor's expense.

F. Partially or wholly set materials will not be allowed to be used or re-mixed. The plaster etc., mixes must be used within two hours of being combined with water.

G Granolithic topping is to be in two layers to the total thickness shown on the Drawings and the topping shall consist of one part coloured cement to two parts aggregate shall be 70% black trap and remainder approved local coloured stones.

Colours shall be as selected by the Architect.

Paving shall be rolled and trowel led to a dense even surface and rubbed down at completion, to a grit finished surface free from holes and blemishes. The paving shall be laid in squares divided by plastic strips anchored securely in the screed and having their top edge truly level with the finished floor surface. The granolithic work shall be laid and polished complete to the approval of the Architect.

FLOOR, WALL AND CEILING FINISHES (CTD.)

A. Wood block flooring shall comply with the requirements of B.S.1187 mentioned above and shall be dipped in a cold latex bitumen emulsion adhesive before laying. Any one package or bundle shall contain wood blocks of a single species, thickness, width length and type of manufacture only. The pattern shall be approved by the Architect.

B. Wood parquet flooring shall comply with relevant standards and shall be laid using an approved adhesive in accordance with manufacturer's instructions.

C. P.V.C. coverings shall satisfy the Standard mentioned above and shall be obtained from an approved manufacturer's agent. Floor tiles shall be Dunlop or other equal and approved. Rates shall include for two of an approved emulsion floor polish or other protective coating.

D. Glazed wall tiles shall be cushion edged and satisfy the relevant Standard as mentioned earlier. Tiles shall be well soaked in water laid with straight horizontal and vertical joints painted in white cement and cleared down at completion.

Tiles joints of 2mm width shall be formed and filled with the redding mix but using very fine, well screened sand, care shall be taken that tiles are not over soaked and water sheen shall be avoided during fixing.

The fixed tiles shall be kept damp for 4 days. Tiles as splash backs to lavatory basins, sinks, and baths shall be fixed with necessary rounded-edge and corner tiles.

Rates for linear items shall allow for all special fittings and cutting at angles and intersections.

E. Rates for insitu work shall allow for raking out joints walling or hacking of treating with an approved bonding fluid, hacking concrete to form key, dubbing out irregular surfaces of base to provide a finished surface in the same plane as the surrounding surface, cutting out cracks, making good and leaving the whole of the work sound and prefect on completion.

F. Rates shall also allow for fair edges, whether square, splayed or rounded, arrises, chamfered external angles not exceeding 25mm wide, rounded external angles not exceeding 25mm radius coved internal angles not exceeding 25mm radius, intersections to groins and the like, and for making good around pipe, brackets, floor spring boxes and all other items of a like nature.

G. Rates for all linear items shall allow for all short lengths, angles, end and arrises, metres and intersections and the like.

FLOOR, WALL AND CEILING FINISHES (CTD.)

A Rates for all paving shall allow for adequate covering protection during the progress of the works to ensure that the floors are handed over in perfect condition on completion.

B. Rates for external rendering shall allow for work at any height and for any scaffolding, ladders. cradles etc. required.

C. Terrazzo pavings: Aggregate for terrazzo shall be good quality marble or other natural stone of similar characteristics, hard angular in shape, free from clay, iron oxide and other foreign matter, graded from 10mm to 6mm unless otherwise specified and without excessive content of fines or dust. The source of supply and the colour are to be approved by the Architect before bulk ordering.
Terrazzo flooring must be laid and finished by an approved specialist Sub-Contractor.

All base surfaces must be thoroughly cleaned to remove dust, dirt, rust, oil and loose material.

Terrazzo shall be laid in two courses as follows:

(a) Base course: cement- sand screed 1:3, not less than 20mm thick, followed immediately by

(b) Topping terrazzo mix as specified, not less than 20mm finished thickness.

(c) Skirtings are to be 6mm thick on a screed not less than 10mm thick.

Terrazzo bays shall not be more than 1M2 and joints shall be formed with plastic or aluminium strips set out to an approved pattern. Strips must be carried through the backings screed and finish flush with the floor surface.

Tamp lightly immediately after laying and compaction trowel lightly, taking care to avoid excessive laitance on the surface. Not less than 3 days after laying, rough polish by an approved mechanical means using water. Grout with a fine mix reserved from the initial mix. Not less than 8 days after grouting, fine polish by an approved mechanical means using water to a texture approved by the Architect.

FLOOR, WALL AND CEILING FINISHES (CTD.)

A. Terrazzo floor tiles shall be to B.S. 4131 of approved manufacturer. The faces of tiles must be free from projections, depressions, flakes and crazes. The overall colour must be practically uniform in any one delivery. The facing level must not be less than 6mm thick after grinding.

Unless otherwise specified or approved by the Architect, tiles are to be 197mm x 197mm x 22mm.

B. Mosaic finishes: Mosaic finishes shall comply with the requirements of B.S Code of practice CP 212 part 2.

C Quarry tile finishes: Quarry tile finishes shall comply with the requirements of B.S 1286

D Granite cladding and flooring: Granite cladding and flooring shall be strictly in accordance with the requirements of CP 202 and CP 298.

Flooring granite shall have an abrasion factor not higher than 11%.

The exposed surfaces shall be finished in accordance with an approved sample at each situation.

GLAZING

A. The Contractor's attention is drawn to Section "T" of the Standard Method of Measurements and the requirements of the following British Standards and Code of Practice shall be observed:-

British Standard

B. B.S 952 Glass for glazing

C. B.S. 544 Linseed oil putty for use in wooden frames

Codes of Practice

D. C.P. 152 Glazing and fixing of glass for buildings

E. The whole of the glass shall be of the best quality and be free from bubbles, specks, waves, flaws or any other defects and shall comply with the requirements of the standard mentioned above.

F. All glass is to be accurately cut to fit easily into rebates. Glass shall be well puttied and sprigged with copper springs.

G. Glazing to wood frames shall be secured with glazing beads fixed with brass caps and screws and wash leather or approved "Neoprene" beading strips. Putty for glazing in wood frames shall be composed of pure linseed oil and powdered whiting, free from grittiness all in accordance with the standard mentioned above.

H. Glazing to metal frames shall be with clips, glass shall be properly back puttied and the front putty finished neatly and cleanly.

Putty for glazing in metal frames shall be quick hard setting tropical putty specially manufactured for use with steel windows.

Rebates of metal frames receiving glass shall be prepared and treated with primer for putty prior to glazing and putty shall be primed 10 days after glazing.

I. Rates for glazing Georgian wired glass shall include for aligning lines in adjoining panes both ways.

J. Glass panes shall be cut to sizes to fit the openings with not more than 1.6mm play all round. Clear sheet shall be ordinary glazing (O Q) quality and polished plate shall be (GG) quality.

GLAZING (CTD.)

A. **Mirrors**

To be selected glazing (S.G) quality plate glass mirrors of approved manufacturer with bevelled edge and fixed at all corners to walls with rawl plugs and brass screws with removable chromium plated dome heads.

B. Cut out all cracked or broken glass re-glazed to match and leave perfect on completion. On no account shall windows be cleaned by scraping with glass.

PAINTING AND DECORATING

A. The Contractor's attention is drawn to Section "U" of the Standard Method of Measurement and the requirements of the following British Standards and Codes of Practice shall be observed:-

British Standards

B.	B.S 2521 + 2523	Lead based joint
C.	B.S. 3698	Calcium plumbate priming paints
D.	B.S. 4756	Ready mixed aluminium priming paints for woodwork
E.	B.S. 1336	Knotting
F.	B.S. 3842	Treatment of plywood with preservatives
G.	B.S 4800	Paint colours for building purposes
H.	B.S. 2660	Colours for building and decorative paints
I.	B.S. 2524	Red-Oxide-Linseed oil priming paint
J.	B.S. 2525-7	Undercoating and finishing paints
K.	B.S. 1215	Oil stains

Codes of Practice

L.	C.P. 231	Painting for buildings
M.	C.P. 3012	Cleaning and preparations of metal surfaces

N. All work under this trade must be executed by an approved specialist unless otherwise permitted.

O. The Contractor's Programme in this area shall be so arranged that all other trades are completed and away from the area to be painted prior to the commencement of painting. Before painting the Contractor must remove all concrete and mortar droppings and the like from all work to be decorated and remove all strains from and obtain uniform colour to work to be oiled and polished.

PAINTING AND DECORATING (CTD.)

A. All plaster, metal, wood or other surfaces which are to receive finishes of paint, stain, polish, distemper or paint work of any description are to be carefully inspected by the Contractor before he allows any of his painters to commence work. The Contractor will be held solely responsible for all defective work as a result of his painters' failure to insist on receiving from the other trades surfaces in the proper condition to allow first class finishes to the various kinds specified being applied to them.

B. All painting and decorating schemes shall be carried out in colours selected by the Architects.

C. Paints shall be ready mixed, oil based priming paint shall comply with the requirements of the relevant standards mentioned earlier.

D. The oil shall comply with the requirements of B.S 1215.

E. All materials shall be of the best quality and shall be of an approved proprietary brand selected from the latest Schedule of Approved Paints issued by the Ministry of Works.

F. Materials to be applied externally shall be of exterior quality and/or recommended by the manufacturers for external use.

G. Materials shall be delivered to site intact in the original sealed drums or tins and shall be mixed and applied strictly in accordance with the manufacturer's instructions and to the approval of the Architect.

Unless specifically instructed or approved by the Architect, no paints, distemper etc. are to be thinned or otherwise adulterated, but are to be used as supplied by the manufacturers and direct from the tins.

H. If required by the Architect the Contractor shall provide at his own expense samples of paints etc. with containers and cases to be forwarded, carriage paid, by the Contractor for analysis to a laboratory.

I. The priming, undercoat, and finishing coats shall each be of differing tints, and the priming and undercoat shall be the correct brands and tins to suit the respective finishing coats, in accordance with the manufacturer's instructions. All finishing coats shall be of colours and tints selected by the Architect. Each coat must be approved by the Architect before the next coat is applied.

J. Each coat shall be properly dry and in the case of oil or enamel paints shall be well rubbed down with fine glass paper before the next is applied. The paintwork shall be finished smooth and free from brush marks.

PAINTING AND DECORATING (CTD.)

A. Colour cards of all paints etc. shall be submitted t, and samples prepared for approval of the Architect before laying on, and such samples, when approved, shall become the standard for the works.

B. All paints, emulsion paints, and distempers shall be applied by means of a brush or spray gun or rollers of an approved type, where so agreed by the Architect.

C. No painting is to be done in wet weather or on surfaces which are not thoroughly dry.

D. Woodwork to be painted shall be rubbed down and all knots and resin pockets shall be scorched back and coated with knotting. After priming all nail holes and other imperfections shall be stopped and the whole surface be rubbed down and all dust brushed off. The surface of woodwork shall be lightly sand prepared between the coats.

E. All woodwork in contact with walling or plaster shall be treated after cutting and preparations but before assembly or fixing with one coat of "Timside" wood preservative manufactured by Timsales, P.O. BOX 18080, Nairobi. the solution is to be brushed on all faces of all timbers, unless exposed to view and painted. The Contractor shall note that this solution is poisonous and shall take all necessary precautions and instruct his workmen accordingly.

F. Wax polish shall be furniture polish of an approved brand, and wood surfaces shall be clean smooth free from oil or grease or any other blemishes. A minimum of two coats shall be applied to approval.

G. Plaster surfaces shall be perfectly smooth free from defects and ready for decorations. All such surfaces shall be allowed to dry a minimum period of six weeks, stopped with approved plaster compound stopping and rubbed down flush as necessary, and then thoroughly, immediately prior to decorating.

H. Plaster Surfaces which are to be finished with emulsion, oil or enamel paint, shall be primed with an alkali resisting primer complying with the particular paint manufacturer's specifications and applied in accordance with their instructions.

I. Fibre board or similar surfaces shall be lightly brushed down to remove all dirt, dust and loose particles and have all nail holes or other defects stopped with an approved plaster compound stopping rubbed down flush and left with a texture to match surrounding materials and shall receive one coat petrifying liquid at last or two coats polyurethane or clear lacquer.

PAINTING AND DECORATING (CTD.)

A. All metal surfaces shall be thoroughly brushed down with wire brushes and scraped where necessary to remove all scale, rust etc. immediately prior to decorating. Where severe rust exists and if approved by the Architect a proprietary de-rusting solution may be used in accordance with the manufacturer's instructions.

B. Shop primed and unprimed surfaces shall be given one coat of metal chromate primer.

C. Galvanised surfaces shall be treated before painting with an approved proprietary or de-greasing solution before priming.

D. Coated surfaces already treated with bituminous solution shall be scrapped to remove soft parts and then receive two isolating coats of aluminium primer or other approved anti-tar primer.

E. Existing painted and decorated surfaces shall be prepared as described above. Painted plaster, metal or wood surfaces shall then be rubbed down to expose the material beneath and old paint burnt off with blow torches if necessary in the Architect's opinion.

F. Emulsion paint on ceilings and all undercoats of emulsions paint and complete oil painting on walls shall be completed before PVC floorings are laid. Final coats of emulsion paints on walls shall be applied after such flooring has been laid complete.

G. Three coats of emulsion paints shall be applied to receiving surfaces using a thinning medium or water only if and as recommended by the manufacturer. An approved plaster primer tinted to match may be substituted for the first coat.

H. Enamel paint shall be applied in two undercoats and one finishing coat after preparation and priming as specified above.

I. All ironmongery shall be removed from joinery steel windows and louvre before painting is commenced and shall be cleaned and renovated if necessary and refixed after completion of painting.

J. Rates for painting shall be deemed to include for preparing and priming surfaces above described.

K. Rates for paints, distemper etc. shall allow for covering up all floors, fittings, etc with dust sheets when executing the work and for removing, covering when no longer required and for cleaning off, touching up and leaving perfect at completion.

DRAINAGE

A. The contractor's attention is drawn to Section "V" of the Standard Method of Measurement and the requirements of the following British Standards and Codes of Practice shall be observed:-

British Standards

B.	B.S 556 Parts 1+2	Concrete cylindrical pipes and fittings (including manholes, inspection chambers and street gullies)
C.	B.S. 4101	Concrete unreinforced tubes and fittings (with ogee joints for surface water drainage)
D.	B.S. 437 part 1	Cast iron spigot and socket drain pipes and fittings
E.	B.S. 1247	Manhole step irons (in malleable cast iron)
F.	B.S. 2760	Pitch-impregnated fibre drainage pipes and fittings
G.	B.S 1211	Centrifugally cast (spun) iron pressure pipes for water, gas and sewage
H.	B.S. 1130	Cast iron drain fittings

Codes of practice

I.	C.P.301	Building drainage
J.	C.P. 2005	Sewerage
K.	C.P. 2010	Pipelines

L. The preambles and other clauses as directed to "Excavating" "concreting" "Walling" and paving are to apply where relevant to the items of this Bill.

M. Cast iron drain pipes shall be coated cast spigot and socket pipes conforming with B.S 437 in all respects and with fittings of B.S 1130 referred to above. Piles shall be jointed with asbestos yarn and caulked with molten lead or jointed with special jointing compound all to approval.

N. Concrete drain pipes shall be spigot and socket pipes of approved local manufacturer and complying with the requirements of the relevant Standard mentioned above. Pipes shall be jointed with tarred spun yarn and cement and sand (1:2) neatly haunched.

DRAINAGE (CTD.)

A. Pitch-impregnated fibre pipes shall comply with the requirements of B.S 2760 and of approved manufacturer. Joints shall be made with straight couplings in accordance with the Standard and the laying, cutting and jointing shall be carried out, strictly in accordance with manufacturer's printed instructions.

The pipes are obtainable from Key Terrain Limited. (UK) or Crown Paints Limited., Nairobi.

B. Drainpipes have been measured over all bends, junctions and other fittings and the Contractor shall include in his prices for all joints, short lengths, cutting and waste. Rates for bends, junctions etc. shall include for the extra joints, cutting and waste and any labour required.

C. Lines of drains shall be accurately set out and trenches excavated and bottom trimmed to accurate gradients to approval before pipe laying commences.

D. Generally the drainage is to be executed in suitable sections to cause the minimum interference to the continual use of any existing drains. The location and depths of any existing drains shall be ascertained before other work is commenced and the rates are to include for all costs of complying with this requirement.

E. Excavations for drain trenches shall be not less than 300mm wider than the external diameter of the pipes and rates shall include for grading ground under beds, carefully filling in earth to avoid damaging pipes, ramming and carting away surplus excavated material, keeping excavations free from water, if necessary executing such works and installing such pumps as may be required to keep the excavations dry at all times, and any necessary planking and strutting.

F. No subsoil water shall be discharged into the sewers without the written permission of the architect.

G. Excavations shall be made to such depths and dimensions as may be required by the Architect to obtain proper falls and firm foundations. No permanent construction shall be commenced on any bottom until the excavation has been examined and approved by the architect. Should Contractor in error or without the instructions of the Architect, make any excavation below the required level of the drain or bed, as the case be, he will be required to refill such excavation to the correct levels with concrete (1:4:8 - 38mm gauge).

Rates shall include for excavating in all materials met with and for trimming bottoms to the necessary falls and working space.

DRAINAGE (CTD.)

A. The first back filling of pipe trenches is to be soft material free from stone and shall be watered and carefully tamped over and around the pipes in 300mm layers until they are covered to a depth of 600mm. Subsequent filling is to be in 150mm layers watered and rammed, only materials approved by the Architect are to be used as backfilling.

B. Where hardcore is used for backfilling it is not to exceed 150mm gauge and all interstices shall be properly filled with small pieces and fine binder. Surplus excavated materials are to be removed from site.

If in the opinion of the Architect care has not been exercised in refilling trenches, he may order a fresh test to be made on the drain. In the event of the drain failing to pass the test the contractor will be required to remedy the fault at his expense.

C. Concrete beds and surrounds shall be of concrete 1:3:6 - 20mm gauge to the thickness falls, and widths specified. Hollows shall be left to receive the collar of the pipe, so that the pipes sufficiently wide to form hard-holds to permit the joining of pipes, and after resting drains shall be haunched to both sides to half the diameter of the pipe in similar concrete.

Where pipes are specified to the surrounded, the concrete shall be carried up from the bed in a square section with a minimum of 150mm in thickness over the barrel of the pipe.

D. Rates for beds and surrounds shall include for forming recesses and filling with concrete, for mortar layer etc. and for any necessary formwork.

E. Each pipe shall be carefully examined on arrival, any defective pipes shall be removed immediately from the site and not used in the works. Minor damage to the protective coating of cast iron pipes shall be made good by painting with hot tar; if major defects in the coating exists such pipes shall be rejected and removed from the site.

F. Drains are to be laid in a straight line from point to point and each pipe is to be properly bowed in so that the invert is a true and even gradient in order to achieve a fall giving a self cleansing velocity. The Contractor shall provide suitable equipment and set up and maintain all sight rails, bowing rods, and bench marks etc. necessary for the purpose.

G. All drains shall be kept free from earth Debris, superfluous cement and other obstructions or water during laying and until completion of the Contract when they shall be handed over in a clean condition.

DRAINAGE (CTD.)

A. Pipes shall be laid with sockets leading uphill and shall rest on solid and even foundations for the full lengths of the barrel, socket recesses shall be formed in the foundations, as short as practicable but sufficiently deep to allow the pipe jointer room to work right round the pipe. Such recesses shall be filled with cement mortar (1:4) on completion of laying.

B. All joints are to be accurately made by butting the pipes together, caulking with tarred rope neat cement finished externally with a bold fillet neatly pointed. As each pipe is laid it is to be drawn with a badger and left free of all obstructions.

C. Rates of bends junctions and other fittings in drains shall include all cutting and waste and extra joints.

D. The testing of drains shall be done at completion and before the trenches are filled in. They shall be tested in the presence of the Architect and a representative of the Local Authority by filling with water having a head not less than 1.5m at the highest point of the section under test. A second and similar test may be applied, after the drain trenches are filled in and the work complete.

E. Manholes shall be constructed in the positions indicated on the Drawings or as required by the Architects. Such chambers shall be to the depths required to obtain even gradients in the drain and of sufficient size to contain the requisite main channel and any branches thereto and all the entire satisfaction of the Architect and Local Authority.

F. Rendering to manholes shall be trowelled smooth coved at all internal angles and rounded at arrises.

G. Manholes are to be tested for water- tightness in the same way as to drains by filling with water but not exceeding 1.5m head. The contractor shall supply all testing apparatus and materials necessary for these tests and provide all labour and assistance required. Any failure whatsoever in the drainage system to withstand the specified tests and any defects appearing are to be made good and the drains re-tested to the satisfaction of the Architect and Local Authority.

H. For connections to public drainage the Contractor shall make all arrangements with the Local Authority and pay all fees that may be required for connections to main sewers.

EXTERNAL WORKS

A. Contractor's attention is drawn to the requirements of the following British Standards and shall be observed:-

British Standards

B.	B.S 1621	Bitumen Macadam (with crushed rock or slag aggregate)
C.	B.S. 340	Precast concrete kerbs, channels, edgings and quadrants.
D.	B.S. 368	Precast Concrete flags
E.	B.S. 4428	General Landscape operations (excluding hard surfaces)
F.	B.S. 3882	Recommendations and classification for top soil
G.	B.S 3936	Nursery stock
H.	B.S 3998	Recommendations for tree work

I. Preamble to preceding trades where applicable shall apply equally to the work contained herein.

PARTICULAR PRELIMINARIES

PARTICULAR PRELIMINARIES

		KSHS	CTS
A	**PRICING ITEMS OF PRELIMINARIES** Prices **SHALL BE INSERTED** against items of "Preliminaries" in the Tenderer's priced Bills of Quantities. Please note that failure to price any item of general particular preliminaries will be construed to mean that the Tenderer wishes to provide for that item free of charge.		
B	**VALUE ADDED TAX, WITHOLDING TAX, KBS LEVY, TRAINING LEVY, OTHER TAXES, DUTIES AND LEVIES IN FORCE** The Contractor shall be deemed to have included in all his Preliminaries and Bills of Quantities rates; All taxes, Duties and Levies including all aspects of Value Added Tax (V.A.T); in force at the time of tender. Please note that from every interim and the Final payment a 6% VAT shall be deducted and paid directly to the Commissioner of Value Added Tax (VAT) to the Contractor's account with Kenya Revenue Authority or as shall be advised from time to time Additionally, compliance with deduction of Withholding Tax to be paid directly to Kenya Revenue Authority shall be strictly adhered to.		
C	**MEASUREMENTS** In the event of any discrepancies arising between the Bills of Quantities and the actual works, the site measurements shall generally take precedence. However, such discrepancies between any contract documents shall immediately be referred to the "PROJECT MANAGER"		
D	**EXISTING BUILDING SERVICES** Special precautions shall be required throughout the contract period to avoid damage to the existing cables, drains and other services. The Contractor is referred to the General Specifications for Building Works 1976 Edition Pages B1 – B2 inclusive and must allow for all costs in complying with these clauses.		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**CONTRACT COMPLETION PERIOD** The Contract completion period will be in accordance with Conditions of Contract and must be strictly adhered to. The "PROJECT MANAGER" shall strictly monitor the Contractor's progress in relation to the progress chart and should it be found necessary, the "PROJECT MANAGER" shall inform the Contractor in writing that his actual performance on site is not satisfactory. In all such cases, the Contractor shall accelerate his rate of performance, production and progress by all means such as additional labour, plant, etc and working overtime all at his cost.		
B	**WORKING CONDITIONS** The Contractor shall allow in his rates for any interference that he may encounter in the course of execution of the works for the Client may in some cases ask the Contractor not to proceed with the works until some activities within the site are completed.		
C	**LABOUR CAMPS** The Contractor shall not be allowed to house labour on site. Allow for transporting workers to and from the site during the tenure of the contract. The mode of transport must comply with the current TLB, PSV and Traffic Police requirements currently in force.		
D	**MATERIAL FROM DEMOLITIONS** Any materials arising from demolitions and not re-used shall become the property of the Contractor. The Contractor shall allow credit for the materials from demolition.		
E	**PRICING RATES** The Tenderer shall include for all costs in executing the whole of the Works, including transport, replacing damaged items, fixing all to comply with the said Conditions of Contract.		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**URGENCY OF THE WORKS** The Contractor is notified that these Works are URGENT and should be completed within the period stated in the Appendix to Conditions of Contract. The Contractor should allow for any costs he deems he may incur by completing the works within the stipulated period.		
B	**PROJECT MANAGER'S, TRAVEL, SUBSISTENCE, AIRTIME, PRINTING AND DOCUMENTATION COSTS** Provide a Provisional Sum of Kenyan Shillings One Million Only for Project Manager's, Travel, Subsistence, Airtime, Printing and Documentation costs to be expended as directed by the Project Manager Add: Contractor's Cost and Profit for the above _____%	**1,000,000**	**00**
	CARRIED TO COLLECTION		

		KSHS	CTS
	COLLECTION Brought forward from 182 Brought forward from 183 Brought forward from 184		
	TOTAL FOR PARTICULAR PRELIMINARIES CARRIED TO MAIN SUMMARY		

GENERAL PRELIMINARIES

GENERAL PRELIMINARIES

		KSHS	CTS
A	**THE PROJECT TEAM** **The "Employer":-** **KENYA MEDICAL TRAINING COLLEGE.** **P. O. BOX 30195 – 00100** **NAIROBI.** **The "Project Manager":-** **ARCHBUILD LIMITED.** **P. O. BOX 14575 – 00100** **NAIROBI.** **The "Project Architect"** **ARCHBUILD LIMITED** **P. O. BOX 14575 – 00100** **NAIROBI.** **The "Quantity Surveyor":** **CONSTRUCTION & ALLIED CONSULTANTS** **P. O. BOX 101646 – 00101** **NAIROBI.** **The " Civil / Structural Engineers":** **FRADER CONSULTING LIMITED** **P. O. BOX 4162 – 00506** **NAIROBI.**		
	CARRIED TO COLLECTION		

		KSHS	CTS
	THE PROJECT TEAM (CONT'D) **The "Contractor"** The person or persons, partnership,, firm or company whose tender (offer) for the work is accepted and who consequently enters into a written contract with the employer to carry out the works.		
A	**DISCLAIMER** The above information is given as a guide only. Tenderers are expected to verify all information given above from the drawings, specifications and bills of quantities. The client or his agents will not be held liable for any losses or inaccuracies arising from the use of the above information.		
B	**SCOPE OF CONTRACT AND DESCRIPTION OF THE WORKS** The works in this contract comprise the construction of : Administration Block and Classrooms - 966 M^2 Associated External Works, Electrical and Mechanical Installations		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**LOCATION OF SITE** The site of the proposed Works is located at Nyandarua, – Nyandarua County The Contractor shall be deemed to have visited the site and satisfied himself as to: a) the nature of the site. b) the amount of bush, rubbish or debris to be cleared away before commencement. c) the nature, current usage, proximity and size of adjoining property and buildings. d) the nature of existing communication by road or otherwise. The availability of land for the erection and positioning of all temporary structures and materials necessary for the execution of the Works.		
B	**ACCESS TO SITE** Access to site is through the main security manned gates and no other entrance will be used by the Contractor unless expressly permitted by the Employer at his own discretion. The Contractor must allow for keeping clean at all times the existing access to the site and for hosing down the wheels of all vehicles which may use such roads. The Contractor must allow here for all costs incurred in maintaining the access to the site.		
C	**DRAWINGS** The Contractor will be deemed to have examined the drawings before tendering and to have satisfied himself regarding their details and regarding the nature and extent of the works and the method of construction involved. No claims rising out of misapprehension in these respects will be allowed		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**FORM OF CONTRACT** The Contractor Agreement in use for this contract is based on the STANDARD TENDER DOCUMENT FOR PROCUREMENT OF WORKS (BUILDING AND ASSOCIATED CIVIL ENGINEERING WORKS) issued by PULIC PROCUREMENT DIRECTORATE, MININSTRY OF FINANCE AND PLANNING (NOVEMBER 2002) of the Government of the Republic of Kenya. Some amendments have been made to the Standard Contract to suit the requirements of the project. In particular, two clauses dealing with nominated sub-Contractors and suppliers have been introduced. The Contractor full Contract form with the citation of all the clauses is included in these bills of quantities (these index pages at the beginning of this document). Reference to Contract clauses appearing hereunder, is to the public procurement contract. Any deviations, deletions or additions appearing herein having been made to suit the specifics of the project and should override any contract provisions in the Standard Public Procurement Contract.		
B	**CLAUSES OF THE STANDARD FORM OF CONTRACT** The Contractor's attention is drawn to the clauses of the Conditions of Contract and deletions, additions and modifications thereto which shall be read as incorporated herein and he shall allow any sums which he considers necessary for the observance of such conditions. (the full contract clauses are contained elsewhere in this document) Clauses 1 **Definitions** Clause 2 **Interpretation** Clause 3 **Language and law** Clause 4 **Project Manager's Decisions** Clause 5 **Delegation** Clause 6 **Communication** Clause 7 **Sub-Contracting**		
	CARRIED TO COLLECTION		

		KSHS	CTS
	Clause8 **Other Contractors** Clause 9 **Personnel** Clause10 **Works** Clause 11 **Safety and Temporary Works** Clause 12 **Discoveries** Clause 13 **Work program** Clause 14 **Possession of Site** Clause 16 **Instructions** Clause 17 **Extension or Acceleration of Completion date** Clause 18 **Management Meetings** Clause 19 **Early Warnings** Clause 20 **Defects** Clause 21 **Bills of Quantities** Clause 22 **Variations** Clause 23 **Payment Certificates, Currency of Payments and Advance Payments** Sub-clause 23.3 The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days.		
	CARRIED TO COLLECTION		

		KSHS	CTS
	CLAUSES OF THE STANDARD FORM OF CONTRACT (CT'D) Clause 24 **Compensation Events** Sub-clause 24.1(f), 24.5 shall not apply in this contract Clause 25 **Price Adjustment** This is a strictly "Fixed Price" contract. As such no price adjustment will be allowed whatsoever. The tenderer shall be deemed to have priced for cost escalation either here or in his other rates. This will apply for the entire contract period including any extension granted and any variations issued in accordance with the contract provisions. This clause shall therefore not apply to this Contract: it is therefore deleted entirely. Clause 26 **Retention** Clause 27 **Liquidated Damages** Clause 28 **Securities** Clause 29 **Days Work** The Clause is not applicable in this contract Clause 30 **Liability and Insurance** Sub-Clause 30.1 is not applicable in this contract Clause 31 **Completion and Taking Over** Clause 32 **Final Account** Clause 33 **Termination** Clause 34 **Payment Upon Termination** Clause 35 **Release from Performance** Clause 36 **Corrupt Gifts and Payment of Commissions**		
	CARRIED TO COLLECTION		

		KSHS	CTS
	Clause 37 **Settlement of disputes** Clause 38 **Alternative Dispute Resolution**		
A	**<u>WORKMANSHIP</u>** The standards of workmanship and materials used are expected to be of the highest levels achievable to be commensurate with the best standards in the building industry in Kenya. The Employer shall have the right under this contract to hire others to carry out work falling under the contract if the contractor fails to achieve the required standards of materials and workmanship.		
B	**<u>SUFFICIENCY OF TENDER</u>** The Contractor shall be deemed to have satisfied himself before tendering to the correctness and sufficiency of his Tender for the woks ad of rates and prices stated in the priced Bills of Quantities, which rates and prices shall over all his obligations under the contract and all matter and means necessary for the proper completion and maintenance of the Works. The rates and prices shall not be changed whatsoever after tender opening		
C	**<u>DEFINATIONS AND ABREVIATIONS</u>** Abbreviations used in these Bills of Quantities shall be interpreted as follows: "Approved" shall mean approved by the Project Manager. "As directed" shall mean as directed by the Project Manager. "B.S" shall mean the current British Standard specifications published by the British Standard Institution, 2 Park Street, London W. 1, England. mm shall mean millimetres cm shall mean centimetres m shall mean metres M1 shall mean linear metres M2 shall mean square metres M3 shall mean cubic metres Kgs. shall mean kilograms NO. shall mean number Prs. shall mean pairs		
	CARRIED TO COLLECTION		

		KSHS	CTS
	DEFINATIONS AND ABREVIATIONS (CONT'D) B.S. shall mean current British Standard Specification published by the British Standard Institution, 2 Park Street, London, WI England K.B.S. shall mean the current Kenya Bureau of Standards DITTO shall mean the whole of preceding description except as qualified in the description in which it occurs. Where it occurs in description of succeeding items it shall mean the same as in the first description of the series in which it occurs expect as qualified in the description concerned. Where it occurs in brackets it shall mean whole of the preceding description which is contained with the appropriate brackets		
A	**SAMPLES** The Contractor shall furnish at the earliest possible opportunity before the relevant section of the work commences and at his cost, any samples of material or workmanship that may be called for by the Project Manager for his approval and any further samples in the case of rejection until they are approved. Such samples, when approved shall be the minimum standard for the work to which they apply.		
B	**EXISTING SERVICES** Prior to commencement of any wok the Contractor shall ascertain from the relevant authorities and from a keen observation of the building the exact positions, depths and levels of all existing electric cables, water pipes and other services in the building and shall make whatever provisions may be necessary and those that may be required by the authorities concerned for the support and protection of such services. Any damage or disturbance caused to any service/installation shall be reported immediately to the project manager, the Employer and the relevant authority and shall be made good to their satisfaction at the Contractor's expense. In addition to the above requirement, the Contractor is required to program any disconnection and reconnection of services in such a manner that it shall not in any way affect the continuity of the operations of the buildings.		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**MATERIALS, TOOLS, PLANT AND SCAFFOLDING** The Contractor shall be responsible for the provision of all materials, scaffolding, tools, plant, transport and workmen required for the works except insofar as may be stated otherwise herein. All materials and workmanship use in the execution of the works shall be of the best quality and description. Any materials condemned by the Project Manager shall immediately be removed from the site at the Contractor's cost All plant, tools and scaffolding shall comply with all regulation whether general or local which are in force throughout the period of the contract and shall be altered or adapted during the contract as may be necessary to comply with any amendments in or additions to such regulations		
B	**LOCAL REGULATIONS AND BY LAWS** The Contractor is to comply with all local authority regulations and by-laws including serving of notices and paying of fees where applicable		
C	**SUPERVISION** The works shall be executed under the direction and to the entire satisfaction of the Project Manager who shall, at all times, have, access to the works		
D	**TRANSPORT TO AND FROM THE SITE** The Contractor shall allow in his rates and prices for the transport of materials, workmen etc. to and from the site for the proposed works, at such hours and by such routes and means as are permitted by the authorities.		
E	**FAIR WAGES** The Contractor shall pay rates and wages and observe hours and conditions of labour not less favourable than the minimum rates of remuneration and minimum conditions of employment applicable within the jurisdiction of the Local Authority as stipulated y the Minister for Labour. The Contractor shall comply with the Regulation of Wages and Conditions of Employment Act, Building and Construction Industry Wages Council.		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**FAIR WAGES (CONT'D)** Should a claim be made to the employer alleging the Contractor's default in payment of Fair Wages of any Workman employed on the Contract and if proof thereof satisfactory to the Employer is furnished by the Labour Department the Employer may, failing payment by the Contractor, pay the claim out of any money due or which may become due to the Contractor under the Contract. The Contractor shall furnish to the Project Manager if called upon to do so such particulars of the rates of wages, hours and conditions of labour referred to above.		
B	**PUBLIC AND PRIVATE ROADS, PAVEMENTS, ETC.** The Contractor shall make good at his own expense any damage he may cause to public and/or private roads and pavements in the course of executing this contract.		
C	**SECURITY OF THE WORKS** The Contractor shall be entirely responsible for the security of the works, materials, plant, and personnel.		
D	**POLICE REGULATIONS** The Contractor shall comply with all instructions and regulations of the police Authorities and shall pay any fines and costs arising from non-compliance of the same which may arise in the course of executing this Contract.		
E	**PROGRESS SCHEDULE** Immediately after signing the contract, the Contractor is to prepare a Time and Progress Chart showing the time and order in which he proposes to carry out the works within the total construction time stated in the Contract. The chart shall show in detail the order in which each section, element or activity of the works is to be carried out. 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 stage and sections of the work. The Contractor shall also show upon the chart or on a different sheet to be made available to the Project Manager and the Employer the anticipated weekly labour strength required (divided into labourers and craftsmen) and shall similarly mark up the actual numbers employed		
	CARRIED TO COLLECTION		

		KSHS	CTS
	PROGRESS SCHEDULE (CONT'D) The Contractor shall obtain the Project Manager approval of the chart and then shall supply copies to the Project Manager, the Quantity Surveyor, the Engineer and the Employer, and he shall pin one copy upon the site where directed. He shall thereafter adhere strictly to the approved schedule. In the event of the work falling behind the approved programme or any reason whatsoever the Contractor shall, within a week of the deviation becoming apparent prepare a revised schedule showing how lost time would be made up within the overall Contract Period Upon commencement of the works, the Contractor shall be required, in addition to other requirements on the recording of progress contained herein, to compile and submit to the Project Manager and the Employer Site Weekly Reports upon which shall be recorded daily activities on site including the labour and machinery (if any) on site, deliveries of materials on site and the extent of work achieved at the close of the working day. The records shall e filed with the relevant parties not later than the Wednesday of the subsequent week. The Contractor is required to execute the work with speed and dispatch to take as short a time on the project as possible. The Contractor may arrange overtime working with the Employer to achieve this. Any overtime payments should be allowed for in the rates and prices. No extra payment beyond the Contract Sum shall be allowed in connection thereto.		
A	**OVERTIME** Unless overtime is directed by the Employer or the Project Manager on his behalf for reasons other than the Contractor's own interest to complete the work within the Contract period, the Contractor will be responsible for any extra cost there from. If overtime is worked in accordance with an explicit written instruction issued by the Project Manager, the Contractor shall be reimbursed in respect of such overtime to the extent only of the additional NET cost of productive time payable over and above the basic hourly rates as laid down by the Regulation of Wages and Conditions of Employment Act, Building and Construction Industry Wages council, and excluding any bonuses, profits and overheads.		
B	**WATER FOR THE WORKS** The Contractor shall provide all water required for the works at his own cost. All water shall be fresh, clean pure, and of potable quality, free of earthy, vegetable or other organic matter, acid or alkaline substance in solution or suspension		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**LIGHTING AND POWER** The Contractor shall provide all temporary power as may be necessary from his own sources and at his own cost or the purpose of the works. He shall also pay all fees and costs and shall obtain all permits in connection therewith.		
B	**ACCESS TO SITE AND TEMPOARY ROADS** The Contractor will be deemed to have inspected the site and all access means and allowed in his rates or in this clause any costs associated with this item.		
C	**TEMPORARY STRUCTURES AND STORAGE OF MATERIALS** The Contractor shall provide adequate storage facilities of approved specification to the satisfaction of the Project Manager. The facilities shall be for his use and those of the Sub-Contractors.		
D	**SANITATION OF THE WORKS** The Contractor shall make his own arrangements for sanitary conveniences for his workmen. Any arrangements so made shall be in conformity with the public Health requirements for such facilities. He shall be solely liable for any infringement of the requirements.		
E	**PROTECTING AND CLEANING THE WORK** The Contractor shall cover up and protect all finished work liable to damage including provision of temporary roofs, gutters, drains, etc, as necessary until the completion of the works. In the event of any damage occurring to the works, materials, sewers, drains, gullies, paths or other works on the site in temporary possession of the Contractor or purpose of this Contract, either from the weather, want of proper protection, defects or insufficiency of the works or any other cause whatsoever during the progress of works, the Contractor alone shall be responsible and shall, without extra charge, make good all damage and pay all costs which may be levied.		
F	**PREVENTION OF NUISANCE** The Contractor shall take all possible precautions to prevent any nuisance, inconvenience or injury to the occupiers/users of the building generally; users of adjacent and neighboring properties, and to the public, and shall use proper precautions to ensure the safety of all wheeled traffic and pedestrians.		
	CARRIED TO COLLECTION		

		KSHS	CTS
	PREVENTION OF NUISANCE (CONT'D) All work operations which may produce undue levels of noise, dust, vibration, welding flushes or any other discomfort to the occupiers of the neighbouring buildings or the general public must be undertaken at suitable times which shall be determined in close liaison with the Project Manager and the Employer.		
A	**PREVENTION OF NOISE** In addition to the above provision on nuisance, the Contractor shall keep the general noise emanating from the site operations at all times to a level that does not cause discomfort to the average person. He shall take all necessary measurers to muffle the noise from his tools, equipment and workmen to the reasonable satisfaction of the Project Manager and the Employer.		
B	**REMOVAL OF PLANT, RUBBISH, ETC** The Contractor shall, upon completion of the Works, remove and clear away all plant, rubbish, cans and unused materials, and shall leave the building and generally the whole of the site of the works in a clean and tidy state to the satisfaction of the Project Manager and the Employer. During site operations, he shall also remove from the site all rubbish and dirt as it is produced to maintain the tidiness of the premises and its immediate environ.		
C	**TRAINING LEVY** The Contractor's attention is drawn to Legal Notice No 237 of October 1971, which requires payment by the Contractor of a Training levy on all contracts of more than Kshs. 50, 000.00 in value and he should allow in this section of these Bills of Quantities for all costs arising or resulting therefrom.		
D	**LABOUR AND PLANT RETURNS** The Contractor shall deliver to the Project Manager detailed weekly returns showing the supervisory staff and the numbers of the several classes of labour and plant employed on the Works.		
E	**VISITORS BOOK AND SITE DIARY** The Contractor shall keep on the site a visitors book for recording the names of all person who visit the site for the purpose of the project. He shall also maintain on site a diary in which he shall record site activities on a daily basis and particularly any occurrence which bears on the progress of the works in any way. The visitor's book and the diary shall be surrendered to the Project Manager at the completion of the project or at any other time that he may direct.		
	CARRIED TO COLLECTION		

A	**SAFETY HEALTH AND WELFARE OF WORKPEOPLE** The Contractor shall allow for providing for the safety, health and welfare of work people and for complying with any relevant Ordinance, Regulations and Union Agreements.	**KSHS**	**CTS**
B	**WARRANTY AND PERFORMANCE STANDARDS** The Contractor shall furnish the Employer with a general written warranty covering qualities of workmanship, materials and equipment, and be compelled thereby for a five year period after practical completion of the contract, except for latent defect which shall be warranted for ten years . The Contactor must make good, at his own expense, such repairs and replacements as may be required as a consequence of negligent workmanship or defective materials. The Contractor must also procure such warranties and guarantees as described in the specifications section of these Bill of Quantities and relevant codes of practice. The Contractor must also comply will all tests or materials as required and/or as directed by the Project Manager.		
C	**NATIONAL INSURANCE, HEALTH INSRANCE AND PENSIONS** The Contractor shall allow for making any National Social Security Fund and National Health Insurance Fund payments due in respect of workpeople.		
A	**PROTECTION OF WORKS AND PERSONS** The Contractor shall allow for the protection of his own and his Sub-Contractor's work liable to damage, including provision of temporary roofs, gutters, drains, etc., if necessary and shall case-up, cover or in other suitable ways protect all finished work liable to injury, to the completion of the works, the same shall be under the entire care and control of the Contractor, who shall take all possible precautions to prevent any nuisances, inconvenience or injury to the holders or occupiers of surrounding properties and to the public in generally , and shall at all times keep all paths and roads affected by the works in a safe and clear state, and shall use proper precautions to ensure the safety of all wheeled traffic and pedestrians.		
	CARRIED TO COLLECTION		

		KSHS	CTS
	PROTECTION OF WORKS AND PERSONS (CONT'D) The Contractor shall allow for providing all watching, lighting, barriers, covering open fences and protection of the works, including sub-Contractor works as may be necessary for the safety of the works and for the protection of the public and his own and Sub-Contractor's employees. In the event of any damage or loss occurring to the works or to materials or to any sewers, gullies, drains, paths, or other works on the site in temporary possession of the Contractor for the purpose of this Contract either form the weather, want of proper protection, defects, theft, insufficiency of the works or any other cause whatsoever during the progress of the works, or for any accident or damage to property or persons by reason of the said works, the Contractor alone shall be responsible and shall without extra charge, make good all damage and pay all costs incurred.		
B	**HOLIDAYS AND TRANSPORT FOR WORK PEOPLE** The Contractor shall allow for providing holidays and transport for workpeople and for complying with any relevant Ordinance, Regulations and Union Agreements.		
C	**SITE OFFICES** The Contractor must allow for erecting and maintaining on the site in such position as may be directed, adequate site offices (minimum $80M^2$ plinth area) for the use of his own site staff and removing the same at completion and making good all surfaces disturbed. The site office shall be of sufficient size and shall have sufficient furniture to permit the Project Manager to hold site meeting in it. The Contractor shall also allow for providing, erecting and maintaining where directed a lock-up hut containing a pedestal type water closet and wash basin for the sole use of the Project Manager and other consultants, including making temporary connection stop drains and water supplies and paying all charges for connections, conservancy and water consumed. The Contractor shall also allow for providing services of a sweeper, for keeping both office and closet in a clean and sanitary condition from the commencement to the completion of the works; and for dismantling at completion and making good all disturbed surfaces. The office and closet shall be completed before the Contractor will be permitted to commence the works.		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**SHEDS FOR STORAGE OF MATERIALS** The Contractor shall provide, erect and maintain on the site, in such positions as may be directed, ample temporary watertight, lock-up sheds for the proper storage and protection of cement and other materials liable to damage, and shall remove same at completion and make good all surfaces disturbed. He shall also provide space for storage accommodation which Sub-Contractors may wish to erect for themselves.		
B	**NO WORKMEN TO BE HOUSED ON SITE** No labour with the exception of a watchman may be housed on the site. The cost of transporting labour to and from the site or elsewhere will be deemed to be included in the tender.		
C	**WORK TO BE OPENED UP AT THE REQUEST OF THE PROJECT MANAGER** The Contractor shall, at the request of the Project Manager within such time as the Project Manager shall name, open of inspection any work covered up, and should the Contractor refuse or neglect to comply with such request, the Project Manager may employ workmen other than those employed by the Contractor to open up the same. If the said work has been covered up in contravention of the Project Manager instructions, or if, on being opened up, it be found not in accordance with the drawings or Bill of Quantities or the instruction of the Project Manager, the expenses of opening and covering it up again whether done by the Contractor or by the Project Manager shall be borne by and be recoverable from the Contractor or may be deducted from any monies due to the Contractor. If the work has not been covered up in contravention of such instructions and be found in accordance with the said drawings and Bill of Quantities , then the expenses aforesaid shall be borne by the Employer, and be added to the Contract Sum; provided always that, in the case of foundations or of any other urgent work so opened up and requiring immediate attention, the Project Manager shall within a reasonable time after the work has been opened, make or cause to be made the inspection thereof, and at the expiration of such time, if such inspection shall not have been made the Contractor may cover up the same and shall not be required to open it up again for inspection except at the expense of the Employer.		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**HOARDING** The Contractor shall allow for providing and clearing away on completion such hoarding, fencing, gates etc. as may be required for the security of the site and as instructed by the Project Manager. The exact location of these items are to be negotiated with the Local Authority by the Contractor who will also be responsible for paying any fees or taxes in respect of the hoarding, fencing or gates. The Contractor shall allow for thoroughly maintaining the hoarding and gates throughout the Contract and clearing away and making good disturbed ground on completion. All materials arising will remain the property of the Contractor and he should allow credit against this accordingly.		
B	**SCAFFOLDING** The Contractor shall allow for providing, erecting, and dismantling all general scaffolding required for the works. The Contractor must allow here or in his rates for providing all special scaffolding required by his sub-Contractor		
C	**SIGNBOARD** The Contractor must allow for providing, erecting and maintaining a site signboard, the size, type of construction and lettering of which shall be to the Project Manager's design. The names of the Consultants are to be in lettering 50mm high. The board is to be fixed in an elevated position on the site where indicated by the Project Manager. On completion of the works, the notice board shall be removed and making good shall be carried out as necessary.		
D	**WORKS TO BE DELIVERED UP CLEAN** On completion of the contract, the site and the works shall be cleared of all plant, scaffolding, rubbish and unused materials and shall be delivered up clean and in perfect condition in every respect to the satisfaction of the Project Manager, particular attention is to be paid to leaving all windows and floors clean and removing all paint and cement stains.		
E	**APPROVAL OF PROJECT MANAGER FOR EMPLOYMENT OF SUB-CONTRACTORS** The Contractor will be required to obtain the approval of the Project Manager/Engineer in writing before employing any of his own Sub-Contractors for any portion of the work.		
	CARRIED TO COLLECTION		

		KSHS	CTS
A	**EXISTING PROPERTY** The Contractor shall take every precaution to avoid damage to all existing property including roads, cables, drains and other services and he will be held responsible for all damage arising from the execution of this contract to the aforementioned, and he shall make good all such damage where directed at his own expense to the satisfaction of the Project Manager.		
B	**TESTING** Allow for all expenses in connection with the testing of materials as detailed in specifications and as required by the Project Manager including the supply and preparation of materials to be tested, the cost of materials and their packing and conveyance to the nearest approved testing laboratory, laboratory charges, etc.		
C	**WORK RE-MEASUREMENT** All work in this contract shall be re-measured on completion and a final account of the contract prepared by the Quantity Surveyor. The Contractor will be given the opportunity to be present for all re-measurements. The final contract sum will be based on the final quantities for ordering of materials as the quantities may change in course of the contract. Neither should the Contractor use the Quantities in the Bill of Quantities for executing work on site. The use of the bills of quantities by the Contractor for the above purposes shall be at the Contractors own risk and no claims arising from any losses arising therefrom shall be accepted.		
D	**COPYRIGHT** The copyright of these documents is vested in **CONSTRUCTION & ALLIED CONSULTANTS,** the **QUANTITY SURVEYOR** for the Projec This document may not be reproduced in whole or in part without their written permission. It shall also not be used for any other purpose other than **PROPOSED ADMINISTRATION & CLASSROOMS BLOCK FOR KENYA MEDICAL TRAINING COLLEGE - NYANDARUA CAMPUS as** measured and described in these Bill of Quantities.		
	CARRIED TO COLLECTION		

		KSHS	CTS
	SUMMARY Brought forward from 186 Brought forward from 187 Brought forward from 188 Brought forward from 189 Brought forward from 190 Brought forward from 191 Brought forward from 192 Brought forward from 193 Brought forward from 194 Brought forward from 195 Brought forward from 196 Brought forward from 197 Brought forward from 198 Brought forward from 199 Brought forward from 200 Brought forward from 201 Brought forward from 202 Brought forward from 203		
	TOTAL FOR GENERAL PRELIMINARIES CARRIED TO MAIN SUMMARY		

BILL NO.1
BUILDER'S WORK

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No.1 : Substructure (All Provisional)				
	Site Clearance				
a	Clear site of small bushes and grub roots of small trees and cart away	1,187	**m^2**		
	Excavations				
b	Excavate to reduce levels not exceeding 1500mm deep starting from ground level	1,187	**m^3**		
c	Excavate for column bases not exceeding 1.5m deep starting from reduced level	243	**m^3**		
d	Excavate for strip foundations not exceeding 1.5m deep starting from reduced level	381	**m^3**		
e	Extra over excavations for excavating in rock of any class at any depth	11	**m^3**		
	Disposal of excavated materials				
f	Return, fill in and ram selected excavated materials	558	**m^3**		
g	Ditto but imported fill, rolled, levelled and compacted in 150mm layers to make up levels	261	**m^3**		
h	Cart away surplus excavated materials and spread as directed on site	992	**m^3**		
	Planking and Strutting				
i	Allow for Planking and strutting to sides of all excavations including keeping excavations free from fallen materials		**Item**		
	Disposal of Water				
j	Allow for keeping excavation free from all water by pumping, bailing or otherwise		**Item**		
	Hardcore filling				
k	300mm thick fillings, rolled, levelled and compacted in 150mm layers to make up levels	871	**m^2**		
l	50mm quarry dust blinding	871	**m^2**		
	Carried to Collection				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No.1 : Substructure (All Provisional)				
	Damp Proof Membrane				
a	Single layer of 500 gauge polythene sheeting laid on blinded hardcore with 150 mm side laps to receive concrete	966	**m^2**		
	Anti - termite treatment				
b	Treat surface of imported backfill with 'Termidor 250EC' or similar approved anti-termite solution applied strictly in accordance with the manufacturer's instructions	966	**m^2**		
	Vibrated reinforced concrete class 15/20 with minimum cube crushing strength of 15N/mm² at 28 days				
c	50mm thick blinding to column bases	122	**m^2**		
d	Ditto to strip foundations	190	**m^2**		
	Vibrated reinforced concrete class 25/20 with minimum cube crushing strength of 25N/mm² at 28 days				
e	Column bases	25	**m^3**		
f	Columns	12	**m^3**		
g	Strip foundations	38	**m^3**		
h	Tie Beam	28	**m^3**		
i	150mm thick ground floor slab	966	**m^2**		
	Supply and fix steel bar reinforcement including bending, hooking, tying wire, cutting, spacers and supporting all in position				
	Thermo-Mechanically Treated bar reinforcement to B.S. 4449 :-				
j	Assorted diameter steel bars as per Structural Engineer's Bar Bending Schedule	13,035	**kgs**		
	Carried to Collection				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No.1 : Substructure (All Provisional)				
	Sawn formwork to: -				
a	Sides of strip foundations	127	**m^2**		
b	Sides of column bases	65	**m^2**		
c	Sides of columns	176	**m^2**		
d	Sides of tie beam	283	**m^2**		
e	Edges of slab 75 - 150mm high	242	**m**		
	Medium chisel dressed natural stone walling with a minimum of 5.0 N/mm^2 (average) compressive strength to BS 5390 : bedded and jointed in cement and sand (1:4) mortar including reinforcing with hoop iron ties every alternate course.				
f	200mm Thick walling	634	**m^2**		
	Cement/sand (1:3) mortar				
g	22mm Thick external rendering to plinth surfaces finished smooth with a wood float	363	**m^2**		
h	Prepare and apply two coats of bituminous paint to rendered surfaces externally	363	**m^2**		
	Carried to Collection				
	COLLECTION				
	Brought Forward From Page 1/1				
	Brought Forward From Page 1/2				
	Brought Down From Above				
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 2 : Reinforced Superstructure Concrete				
	Vibrated reinforced concrete class 20/20 with minimum cube crushing strength of 20N/mm² at 28 days				
a	Lintols, Intermediate & Ring beams	42	**m^3**		
b	Gutters	25	**m^3**		
c	Columns	1	**m^3**		
d	Extra ditto for approved waterproofing admixture as SIKA 1 or approved equivalent in concrete gutters (m/s)	94	**m^2**		
	Supply and fix steel bar reinforcement including bending, hooking, tying wire, cutting, spacers and supporting all in position				
	Thermo-Mechanically Treated bar reinforcement to B.S. 4449 :-				
e	Assorted diameter steel bars as per Structural Engineer's Bar Bending Schedule	5,220	**kgs**		
	Sawn formwork as described to:-				
f	Sides and soffits of beams	419	**m^2**		
g	Sides and soffits of gutters	99	**m^2**		
	Wrot Formwork to:-				
h	Sides of circular columns and surfaces of decorative concrete mouldings & arches	17	**m^2**		
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 3: Superstructure Walling				
	Selected fine dressed natural stone walling with a minimum of 7.0 N/mm2 (average) compressive strength to BS 5390 : bedded and jointed in cement and sand (1:4) mortar				
a	200mm thick walling Externally	488	**m^2**		
b	Ditto Internally	308	**m^2**		
c	Ditto in piers	41	**m^2**		
	Damp proof course				
d	200 mm wide hessian based bituminous fell damp proofing course laid and bedded on cement sand (1:4) mortar	351	**m**		
	Collapsible Partitions				
e	Allow a provisional sum of Five Hundred Thousand Shillings for collapsible partitions in classrooms to Architect's specifications		**Sum**		500,000
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 4: Roofing & Rainwater Disposal				
	Sawn cypress, seasoned and celcured timber with and including all joints, connection accessories, galvanized steel cleats, gusset plates, bolts, boring holes, fixing tight and all other necessary accessories				
	The following in Trussed Rafters (As Per Structural Engineer's Drawings) including hoisting 3250mm above ground level				
a	100 x 50 mm trussed rafters	866	**m**		
b	Ditto joists	645	**m**		
c	Ditto struts and ties	1,118	**m**		
	Non- trussed members				
e	100 x 50 mm Purlins (provisional)	2,190	**m**		
f	Ridge and valley members	410	**m**		
	250 x 25mm fascis board	137	**m**		
g	100mm x 50mm wall plate bedded in cement sand mortar mix (1:3) bolted to concrete with and including 10mm diameter bolts at 1200mm centres	242	**m**		
	Gauge 26 accessories and boxed profile sheets as IT5 prepainted galvanised roofing sheets manufactured by Mabati Rolling Mills (MRM) Ltd. of Nairobi or other equal and approved; fixed to mild steel purlins (m.s) with and including 70x6mm galvanised drive screws with PVC washers as described in:-				
h	Roof covering at 30 degrees from horizontal	1,092	**m^2**		
i	380mm stiffended roll top ridge cover	203	**m**		
j	Ditto but plain valley flashing	38	**m**		
	Carried to Collection				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 4: Roofing & Rainwater Disposal - Cont'd				
a	Box gutters 850 mm girth, 5 times bent along length including necessary collared and sealed expansion joints complete including brackets, welding, end closures etc	137	**m**		
b	100 x 100mm x Gauge 26 boxed downpipe fixed to columns	48	**m**		
c	Ditto Extra Over for 300 x 300mm Drop Box	16	**nr**		
d	Extra over ditto for swanneck 600mm projection	16	**nr**		
	Prepare and apply one coat of calcium plumbate primer and paint two undercoats and one finishing coat gloss paint on metal work				
e	Downpipe surfaces to match	225	**m^2**		
	Carried to collection				
	COLLECTION				
	Brought Forward From Page 1/6				
	Brought Down From Above				
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 5: Windows				
	In mild steel				
	Supply and fix the following purpose made cottage type steel casement windows to match steel doors (m/s) in standard Z-Sections complete with intergrated burglar proofing in double 30 x 6mm thick flat bars in small panes to match door average 200 x 150mm high , lugs, hinges, approved brass window stays and handles, with built-in permanent vents at top all primed with red lead oxide after fabrication				
a	Window overall size 1500 x 1700mm high (**Classrooms, Deputy Principal, Principal, Principal's Secretary, Boardroom, Staffroom, Procurement, Kitchen, Accounts**)	38	**nr**		
b	Window overall size 300 x 1700mm high (**Boardroom, Principal, Accounts, Staff Gents**)	10	**nr**		
c	Window overall size 450 x 900mm high (**Washrooms**)	15	**nr**		
	Glazing				
d	5mm thick clear sheet glass in panes not exceeding 0.5Sq.M and glazing to metal with putty	101	**m^2**		
e	Ditto but 5mm thick obscure sheet glass	7	**m^2**		
	Window Cills				
f	150 mm wide x 20 mm clay window cill with three labours sunk, weathered and throated cill bedded in cement and sand (1:4) mortar.	79	**m**		
	Wrot mahogany with three labours				
g	150 x 20mm window board plugged	79	**m**		
h	20mm Diameter quadrant beading ditto	79	**m**		
	Curtain Railing				
i	Double metal railing complete with holders, rollers and paintwork to Architect's details **(Administration Offices)**	28	**m**		
	Carried to collection				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 5: Windows - Cont'd				
	Painting and decorating				
	Prepare and apply three coats gloss oil paint to metal surfaces				
a	General surfaces of windows both sides measured both sides	216	**m^2**		
	Prepare and apply three clear matt polyurethane lacquer varnish paint to timber surfaces				
b	Surfaces 100 - 200mm wide	79	**m**		
	Carried to collection				
	COLLECTION				
	Brought Forward From Page 1/8				
	Brought Down From Above				
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 6: Doors				
	In mild steel				
	Supply, assemble and fix the following heavy gauge casement framed doors primed before fixing, complete with 40 x 3mm thick m.s flat burglar proofing in small panes to match window panes average 200 x 150mm high welded on frame and all necessary fittings, including fixing framing to concrete or masonry, making good disturbed surfaces and 25mm permanent vents with two layers of 1 and 5mm mosquito gauze all to Architect's details				
a	Composite double leaf metal casement door overall size 1500 x 2400mm high in two equal leaves glazed with 5mm thick clear glass (m/s) and 75 x 50 x 3mm thick rebated frame plugged all round and to include bush hinges, padlocking bolt and rebated for proprietory steel door lock (m/s) all to Architect's details **(Staffroom, Secretary, Classrooms)**	8	**nr**		
b	Single leaf metal casement door overall size 900 x 2400mm high glazed with 5mm thick clear glass (m/s) and 75 x 50 x 3mm thick rebated frame plugged all round and to include bush hinges, padlocking bolt and rebated for proprietory steel door lock (m/s). **(Procurement, Accounts, Kitchen, Staffroom, Ladies, Gents)**	7	**nr**		
	Timber Doors				
	Supply and fix the following solid core flush doors faced both sides with 5 panel moulded HDF Sapele veneer door skins and hardwood lipped all round all as PG Bison No. YM109 all to Architects details and approval				
c	Door overall size 850 x 2000mm high **(Principal, Deputy Principal, Boardroom, Secretary, Washrooms)**	20	**nr**		
	Carried to collection				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 6: Doors - Cont'd				
	Frames & Finishings				
	Wrot mahogany with three labours				
a	100 x 50mm frame with four labours	96	**m**		
b	Ditto transome	8	**m**		
c	45 x 20mm Rounded architrave with two labours	88	**m**		
d	20mm Diameter quadrant beading ditto	88	**m**		
	Glazing				
e	5mm thick clear sheet glass and glazing to metal with putty	38	**m^2**		
f	Ditto but glazing to timber door fanlights with appropriate glazing beads	2	**m^2**		
	Ironmongery				
	Supply and fix the following ironmongery complete with matching screws all as per "ASSA ABLOY/UNION" catalogue or other equal and approved				
g	Brass double washered 100 x 76 x 2mm hinges Cat No. HN-DW-403020	30	**prs**		
h	Two lever lockset with martin design aluminium handles Cat. No. 680 - 06 - 95 AS	20	**nr**		
i	Steel door lock with handles - left hand Cat No. 05-22934	15	**nr**		
j	Oval brass - floor mounted door sto Cat No. V2058	31	**nr**		
k	Wall mounted door stop (DSW-021) Cat No. DH021SS	12	**nr**		
l	Coat & hat hook rubber tip - satin anodized Cat No. CH 8722SA	12	**nr**		
m	Rectangular Female sign 150 x 75mm brass Cat No FSR -150-75-PB	2	**nr**		
n	Rectangular Male sign 150 x 75mm brass Cat No MSR -150-75-PB	2	**nr**		
o	800 x 200mm satin brass kick plate Cat No. KP-800-200-PB	12	**nr**		
	Carried to collection				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 6: Doors - Cont'd				
	Steel plate holder bats				
a	25mm wide x 150mm long x 3mm thick once bend and fish tailed at one end nailed onto back of frames	120	**nr**		
	Painting & decorating				
	Prepare and apply one coat aluminium primer on back of wood before fixing				
b	Surfaces 100 - 200mm girth	96	**m**		
	Knot, prime, stop and apply three clear lacquer paint to woodwork as described				
c	General surfaces of timber	68	**m^2**		
d	General surfaces over 100 - 200 mm girth	104	**m**		
	Prepare and apply three coats gloss oil paint to metal surfaces				
e	General surfaces of steel doors	88	**m^2**		
	Carried to collection				
	COLLECTION				
	Brought Forward From Page 1/10				
	Brought Forward From Page 1/11				
	Brought Down From Above				
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 7: External wall finishes				
	15 mm thick cement and sand (1:4) as described to:-				
a	Sides of masonry and concrete surfaces	764	**m^2**		
b	Window & door jambs 100 - 200mm girth	367	**m**		
	Prepare and apply three coats 'CROWN PAINTS' permaplast exterior emulsion paint or approved equivalent to:				
c	Plastered masonry and concrete surfaces	764	**m^2**		
d	Window & door jambs 100 - 200mm girth	367	**m**		
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 8: Internal wall finishes				
	Plaster				
a	Sides of masonry or concrete surfaces smooth trowelled	1,160	**m^2**		
b	Window & door jambs 100 - 200mm girth	481	**m**		
c	Ditto in backing to receive ceramic wall tiles (m/s) separately)	280	**m^2**		
	Painting and decorating				
	Prepare and apply one gypsum plaster undercoat and two coats 'CROWN PAINTS' silk vinyl paint to:				
d	Plastered walls	1,160	**m^2**		
e	Window & door jambs 100 - 200mm girth	481	**m**		
	Approved "Saj" ceramic coloured wall tiles as described				
f	Supply & Fix ceramic approved ceramic wall tiles to walls on prepared backing (m.s) with proprietary adhesive; jointed and pointed in matching coloured proprietary grouting: including pvc spacers as necessary: all to Architect's approval	280	**m^2**		
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 9: Floor finishes				
	Screeding				
	Cement and sand (1:4) screed as described in:-				
a	32mm thick backing to receive ceramic floor tiles	684	**m^2**		
b	Ditto to receive terrazzo floor finish	221	**m^2**		
	Approved "Saj" ceramic coloured floor tiles as described				
c	Supply & Fix ceramic approved ceramic floor tiles to floors on prepared backing (m.s) with proprietary adhesive; jointed and pointed in matching coloured proprietary grouting: including pvc spacers as necessary: all to Architect's approval	684	**m^2**		
d	Ditto in 100 x 25mm moulded skirting plugged to walls	355	**m**		
	Polished terrazzo paving consisting of 'Snowcrete' and marble chippings (1:2), coloured with 'Cementone No. 1' colouring compound mix in the proportion of 1:10 compound to cement.				
e	Paving to Corridors	221	**m^2**		
f	8 x 150mm High Skirting with rounded top coved at junction with paving	237	**m**		
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 10: Ceiling finishes				
	Ceiling Boards				
a	10mm PVC T& Ceiling secret nailed to and including 50 x 50mm cypress brandering as required nailed to truss joists(m/s) and including all accessories	684	**m^2**		
b	Extra over ceiling for trap door size 700 x 700mm.	6	**m^2**		
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 11 - Mechanical Installations				
	Plumbing, Drainage & Sanitary Fittings Installations				
	Builder's Work in Connection With Mechanical Installations (All Provisional)				
	Chasing and making good for small pipes in:				
a	Stone or concrete block walls	172	**lm**		
	Holes for small pipes through				
b	Ceramic wall tiles	18	**no**		
	Holes for large pipes through;				
c	Ceramic wall pipes	13	**no**		
	Holes and sleeves for small pipes through				
d	Stone or concrete block walls	18	**no**		
	Holes and sleeves for large pipes through				
e	Stone or concrete block walls	13	**no**		
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	Element No. 12 - Electrical Installations				
	Builder's Work in Connection With Mechanical Installations (All Provisional)				
	Cut away for and attend in all trades on the Sub - Contractor installing the following points in a mainly concealed system, including chases, holes & recesses, notching timber etc and making good all finishes				
a	25 x 25mm deep chase in solid concrete block or stone walling for conduits	186	**lm**		
b	50 x 50mm deep ditto	56	**lm**		
c	75 x 75 x 50 mm deep recess in solid stone walling for switches, sockets etc	75	**no**		
d	900 x 500 x 100mm adaptable box for distribution board	1	**no**		
e	600 x 450 x 200mm ditto for consumer units	2	**no**		
	TOTAL CARRIED TO BILL N^{O} 1 SUMMARY				

	Bill N^{O} 1: BUILDER'S WORK	Qty	Unit	Rate (KES)	Amount (KES)
	BILL N^{O} 1 SUMMARY		**From Page**		
1	SUBSTRUCTURES		**1/3**		
2	REINFORCED CONCRETE SUPERSTRUCTURE		**1/4**		
3	WALLING		**1/5**		
4	ROOFING & RAINWATER DISPOSAL		**1/7**		
5	WINDOWS		**1/9**		
6	DOORS		**1/12**		
7	EXTERNAL WALL FINISHES		**1/13**		
8	INTERNALL WALL FINISHES		**1/14**		
9	FLOOR FINISHES		**1/15**		
10	CEILING FINISHES		**1/16**		
11	MECHANICAL INSTALLATIONS		**1/17**		
12	ELECTRICAL INSTALLATIONS		**1/18**		
	TOTAL FOR BUILDER'S WORK CARRIED TO GRAND SUMMARY				

BILL NO. 2
EXTERNAL WORKS

	Bill N^{O} 2: EXTERNAL WORKS	Qty	Unit	Rate (KES)	Amount (KES)
	SEPTIC TANK				
	Earthworks				
a	Clear site of small bushes and grub roots of small trees and cart away	18	**m²**		
b	Excavate pit commencing from ground level: not exceeding 1.5 m deep	21	**m³**		
c	Ditto exceeding 1.5m but not exceeding 3.0m deep	14	**m³**		
	Disposal of excavated materials				
d	Return, fill in and ram selected excavated materials	0	**m³**		
e	Cart away surplus excavated materials and spread as directed on site	35	**m³**		
	Vibrated reinforced concrete class 15/20 with minimum cube crushing strength of 15N/mm² at 28 days				
f	50 mm Thick blinding	15	**m²**		
	Vibrated reinforced concrete class 25/20 with minimum cube crushing strength of 25N/mm² at 28 days				
g	150 mm Thick base slab	15	**m²**		
h	150 mm Thick roof slab	12	**m²**		
i	100mm scum baffle walls	5	**m²**		
	Supply and fix steel bar reinforcement including bending, hooking, tying wire, cutting, spacers and supporting all in position				
	Thermo-Mechanically Treated bar reinforcement to B.S. 4449 :-				
j	Assorted diameter steel bars as per Structural Engineer's Bar Bending Schedule	266	**kgs**		
k	Mesh reinforcement No. A192: in floor slab: including all necessary supports.	30	**m²**		
	Carried to Collection				

	Bill N^{O} 2: EXTERNAL WORKS	Qty	Unit	Rate (KES)	Amount (KES)
	SEPTIC TANK - Cont'd				
	Medium chisel dressed natural stone walling with a minimum of 5.0 N/mm^2 (average) compressive strength to BS 5390 : bedded and jointed in cement and sand (1:4) mortar including reinforcing with hoop iron ties every alternate course.				
a	200 mm Thick walls	22	**m^2**		
	Sawn formwork as described to:-				
b	Edges to floor bed: surfaces over 75 but not exceeding 150 mm	16	**m**		
c	Soffits of roof slab	10	**m^2**		
d	Scum baffle walls	10	**m^2**		
	Finishes				
	Waterproofed cement and sand (1:4) screed:				
e	40 mm Thick finishing to slabs: smooth finished	15	**m^2**		
f	12 mm Thick plaster to walls: smooth finished	22	**m^2**		
g	Ditto to soffites of slabs	10	**m^2**		
	Manhole Covers as 'Sterling'				
h	600 x 450 heavy duty manhole cover	4	**nr**		
	Carried to Collection				
	COLLECTION				
	Brought Forward From Page 2/1				
	Brought Down From Above				
	TOTAL CARRIED TO BILL N^{O} 3 SUMMARY				

	Bill N^{O} 2: EXTERNAL WORKS	Qty	Unit	Rate (KES)	Amount (KES)
	SOAK PIT				
	Earthworks				
a	Clear site of small bushes and grub roots of small trees and cart away	18	**m²**		
b	Excavate pit commencing from ground level: not exceeding 1.5 m deep	4	**m³**		
c	Ditto exceeding 1.5m but not exceeding 3.0m deep	4	**m³**		
d	Ditto exceeding 3.0m but not exceeding 4.5m deep	4	**m³**		
	Disposal of excavated materials				
e	Return, fill in and ram selected gravel/rock material	10	**m³**		
f	Cart away surplus excavated materials and spread as directed on site	10	**m³**		
g	**Vibrated reinforced concrete class 15/20 with minimum cube crushing strength of 15N/mm² at 28 days**				
h	100mm thick foundation footing	3	**m²**		
	Vibrated reinforced concrete class 25/20 with minimum cube crushing strength of 25N/mm² at 28 days				
i	900mm radius x 150 mm cover slab with 450 x 450mm opening	1	**nr**		
	Supply and fix steel bar reinforcement including bending, hooking, tying wire, cutting, spacers and supporting all in position				
	Thermo-Mechanically Treated bar reinforcement to B.S. 4449 :-				
j	Assorted diameter steel bars as per Structural Engineer's Bar Bending Schedule	18	**kgs**		
k	Mesh reinforcement No. A142: in floor slab: including all necessary supports.	6	**m²**		
	Carried to Collection				

	Bill N^{O} 2: EXTERNAL WORKS	Qty	Unit	Rate (KES)	Amount (KES)
	SOAKPIT - Cont'd				
	Medium chisel dressed natural stone walling with a minimum of 5.0 N/mm^2 (average) compressive strength to BS 5390 : bedded and jointed in cement and sand (1:4) mortar including reinforcing with hoop iron ties every alternate course.				
a	200 mm Thick walls	3	**m^2**		
	Sawn formwork as described to:-				
b	Sides of foundation footing curved to radius	1	**m^2**		
c	Edges of cover slab 75 - 150mm girth curved to radius	6	**m**		
d	Soffites of cover slab cut to radius	3	**m^2**		
	Manhole Covers as 'Sterling'				
e	450 x 450	1	**nr**		
	Carried to Collection				
	COLLECTION				
	Brought Forward From Page 2/3				
	Brought Down From Above				
	TOTAL CARRIED TO BILL N^{O} 3 SUMMARY				

	Bill N^{O} 2: EXTERNAL WORKS	Qty	Unit	Rate (KES)	Amount (KES)
	BILL N^{O} 2 SUMMARY		**From Page**		
1	SEPTIC TANK		**2/2**		
2	SOAK PIT		**2/4**		
	TOTAL FOR EXTERNAL WORKS CARRIED TO GRAND SUMMARY				

BILL NO. 3
SANITARY FITTINGS, PLUMBING & DRAIANGE

	Bill N^{O} 3: SANITARY FITTINGS, PLUMBING & DRAINAGE	Qty	Unit	Rate (KES)	Amount (KES)
1	**SANITARY FITTINGS:**				
	Supply, deliver and install the following appliances including their support brackets, screws etc. Where necessary items such as mastic, silicon, grouting etc. must be included in the rates. All connections to water supply, waste/soil drainage and electrical power supply are to be the responsibilty of the contractor and must be priced for.				
	NOTE: TRADE NAMES				
	Where Trade Names are mentioned below, it is only intended to indicate the level of quality anticipitated. The contractor MAY supply alternatives which MUST be approved by the Engineer / Architect				
	WC				
A	"NOVA VISTA" White vitreous china, close coupled wash-down action with open flushing rim WC pan with horizontal outlet, fixing screws and mastic. WC pan to be complete with cistern, seat & cover - *WITH flush valve*	No.	13		
B	WC Straight Connector to drain pipe for horizontal outlet WC Pan as NOVA Bathrooms Ltd Ref. No. 10012F12F45	No.	13		
	Wash Hand Basins				
C	"NOVA VISTA" wall mounted white vitreous china 500 x 450 mm basin with 1No. centre taphole	No.	13		
	WHB Accessories				
D	"Eurobath" monobloc basin mixer for divided flow Ref. No. # 32052-000	No.	13		
E	UPVC heavy cast 1½" sink grid waste, 70 mm diameter flange, 45 mm long shank, unslotted with plug, chain and backnut.	No.	13		
F	"Cobra Watertech" Ref. No. 340 PVC 1¼" bottle "P" trap with 75 mm deep seal, and 200 mm long tail pipe, cap-nut and wall flange.	No.	13		
	Mirrors.				
G	5mm thick, polished plate glass, silver-backed mirror with beveled edges, size 1650 x 450mm plugged and screwed to wall with 4No. chromium plated dome-capped screws, and 5mm thick foam back rest.	No.	4		
H	Ditto but 600 x 600mm	No.	1		
	TOTAL CARRIED FORWARD TO COLLECTION				

	Bill N^{O} 3: SANITARY FITTINGS, PLUMBING & DRAINAGE	Qty	Unit	Rate (KES)	Amount (KES)
2	**INTERNAL PLUMBING :**				
	Supply, deliver and install PPR PN20 Ariete 20 system of pipes and fittings.Polypropylene Type 3PN20 to DIN 8077- 8078 A1 and DVGWE 534 standards with polyfusion welding.				
	Tenderers must allow in their pipework prices for all the couplings, connectors, unions, nipples, sockets, endcaps, bridges, expansion loops, jointing materials etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, collars, holderbats plugged and screwed, and pipe sleeves through structural members.				
A	20 mm nominal diameter (25mm diameter PPR pipe)	LM	31		
B	25 mm nominal diameter (32mm diameter PPR pipe)	LM	68		
	Extra Over PP-R PN 20 Tubing for the following:-				
C	25 mm PP-R elbow,90°/45°	No.	24		
D	32 mm ditto	No.	40		
E	32 x 25 x 32 mm diameter PP-R unequal tee	No.	26		
F	25 x 25 x 25 mm ditto	No.	15		
G	32 x 25 mm diameter PP-R reducer	No.	26		
H	25mm x ½" diameter PP-R male/female adaptors	No.	26		
I	32mm x ¾" ditto	No.	26		
J	25mm x ½" diameter PP-R male threaded elbow	No.	10		
K	½" diameter Angle Regulating Valve as 'Pex' marking neutral; complete with a 300 mm long WC Flexible Connector as 'Taq' HG 1212 - ½" x ½" diameter with external stainless steel braid .	No.	28		
	TOTAL CARRIED FORWARD TO COLLECTION				

	Bill N^{O} 3: SANITARY FITTINGS, PLUMBING & DRAINAGE	Qty	Unit	Rate (KES)	Amount (KES)
3	**FOUL WATER DRAINAGE:**				
	Supply and fix uPVC soil system to BS 4660 and 4515; and MuPVC waste systems to BS 5255 with screwed and socketed joints to BS 21.Solvent welded joints shall be as per the systems manufacturer's written instructions.				
	Tenderer must allow in their pipe work prices for all the couplings, connectors, joints etc as required in the running lengths of pipe work and also where necessary, for pipe fixing clips, holder bats plugged and screwed.The installation must comply with BS 5572.				
	MuPVC Waste System Heavy Gauge Pipework Class 41.				
A	32 mm diameter waste pipe	Lm.	26		
B	40 mm diameter waste pipe	Lm.	24		
C	50 mm diameter Waste pipe	Lm.	26		
	Extra Over MuPVC Waste Pipework for the following:-				
D	32 mm diameter 90°/135° Sweep Bend	No.	18		
E	40 mm ditto	No.	18		
F	50 mm ditto	No.	10		
G	32 mm diameter Wye Tee	No.	18		
H	32 mm diameter Access Plug	No.	4		
I	40 mm diameter Wye Tee	No.	4		
J	40 mm diameter Access Plug	No.	10		
K	40 x 32 mm diameter Light Grey Reducer	No.	0		
L	50 mm diameter Wye Tee	No.	4		
M	100 x 50mm Trapped Floor Gully with 3 No. 40 mm dia. inlets and 50 mm diameter outlet c/w 150 x 150 mm Floor Gully with 100 mm diameter inlet	No.	5		
N	WC "S" or "turned P" connector to drain pipe for horizontal outlet WC Pan as Twyfords Bathrooms Ltd Ref. No. WF 1241 WH.	No.	13		
O	100 mm diameter Light Grey Soil Pipe	LM	21		
P	**Extra Over uPVC Soil Pipework for the following: -**				
Q	100 x 40 mm diameter Light Grey Single Boss Connector	No.	6		
R	100 x 50 mm ditto	No.	6		
S	100mm diameter Light Grey Tee	No.	12		
T	100mm diameter Light Grey Wye Tee	No.	18		
U	100mm diameter Light Grey Access Cap	No.	6		
V	100 mm diameter Light Grey 90°/135° Sweep Bend	No.	18		
	TOTAL CARRIED FORWARD TO COLLECTION				

	Bill N^{O} 3: SANITARY FITTINGS, PLUMBING & DRAINAGE	Qty	Unit	Rate *(KES)*	Amount *(KES)*
4	**COLLECTION PAGE**				
A	TOTAL BROUGHT FORWARD FROM PAGE No. 3/1				
B	TOTAL BROUGHT FORWARD FROM PAGE No. 3/2				
C	TOTAL BROUGHT FORWARD FROM PAGE No. 3/3				
	TOTAL CARRIED FORWARD TO SUMMARY PAGE				

	Bill N^{O} 3: SANITARY FITTINGS, PLUMBING & DRAINAGE	Qty	Unit	Rate *(KES)*	Amount *(KES)*
5	**COMMON STACK PIPES AND EXTERNAL DRAINAGE** Supply and fix uPVC soil system to BS 4660 and 4515; and MuPVC waste systems to BS 5255 with screwed and socketed joints to BS 21.Solvent welded joints shall be as per the systems manufacturer's written instructions. Tenderer must allow in their pipe work prices for all the couplings, connectors, joints etc as required in the running lengths of pipe work and also where necessary, for pipe fixing clips, holder bats plugged and screwed.The installation must comply with BS 5572. **uPVC Soil System Heavy Gauge Class 41 Pipework**				
A	100 mm diameter Light Grey Soil Pipe	LM	12		
	Extra Over uPVC Soil Pipework for the following: -				
B	100 mm diameter Light Grey 90°/135° Sweep Bend	No.	5		
C	100 mm diameter Light Grey Weathering Slate	No.	5		
D	100 mm diameter Light Grey Vent Cowl	No.	5		
	uPVC Buried Drain System Heavy Gauge Class 41 Pipework				
E	100 mm diameter Golden Brown Buried Drain Pipe	LM	161		
	Extra Over uPVC Buried Drain Pipework for the following:-				
F	100 mm diameter Golden Brown Sweep Bend	No.	13		
	Manholes				
G	Excavate for, construct manhole average invert 1.0m concrete class 1:3:6 slab, 100mm concrete slab, 150mm thick solid block wall in cement mortar, screed, 600 x 450mm heavy duty double seal manhole cover and frame, bed in cement mortar (1:3) cover in grease and sand, backfill and remove surplus materials.	No.	19		
	Gully Traps				
H	Gully trap comprising of 100mm diameter golden brown uPVC gully piece, 100mm diameter uPVC trap spigot outlet with screws and washers, and 300 x 300mm masonry gully trap chamber with mild steel plate and a heavy duty iron cover.	No.	5		
	TOTAL CARRIED FORWARD TO SUMMARY PAGE				

	Bill N^{O} 3: SANITARY FITTINGS, PLUMBING & DRAINAGE	Qty	Unit	Rate *(KES)*	Amount *(KES)*
6	**INCOMING MAINS**				
	Supply, deliver and install Galvanized mild steel class "B" pipes(OR PPR-N), socketed joints to BS21 and galvanised malleable iron fittings including fixing and jointing with unistered PTFE tape to B.S. 4375..				
	Tenderers must allow in their pipework prices for all the couplings, unions, connectors, nipples, sockets, hexnuts, joints, etc. in running lengths of pipes and also where necessary for fixing clips, holderbats plugged and Screwed. Pipe to be buried in ground and protected against corrosion with bitumen and woven glass.Contractor to allow for excavation, backfilling and reinstating the ground.				
A	40 mm nominal diameter pipe	LM	64		
	Extra Over GMS tubing for the following: -				
B	40 mm diameter elbow/bend	No.	16		
D	40 mm diameter approved high pressure screw-down fullway non-rising stem, solid wedge disc gate valve. Valve to be as "Pegler" and to be complete with matching diameter GMS union	No.	1		
E	Allow for masonry valve chamber, size 400 x 400 x 300 maximum depth with reinforcement concrete cover with mild steel frame conforming to Local Water and Sanitation Company requirements.	No.	1		
F	32 mm nominal diameter (40mm diameter PPR pipe)	LM	34		
	Extra Over PP-R PN 20 Tubing for the following:-				
G	40 mm diameter PP-R elbow,90°/45°	No.	18		
H	40mm x 1¼ diameter PP-R male/female adaptors	No.	18		
I	Polyethylene rectangular loft tank tested to BS 2782 of nominal capacity of 920 Litres (200 Gallons) of size 1270 x 1270 x 580mm high as manufactured by "ROTO MOULDERS LTD" with lid and complete with inlet, outlet and overflow connections as described below: - - 32mm diameter inlet pipe connection - 32mm diameter outlet pipe connection - 40 mm diameter overflow pipe connection	No.	7		
K	Bricon 1-1/2" (40mm) diameter high pressure cast brass float valve MOH Pattern with 1¼" shank as complete with Bricon 4½" diameter high pressure polypropylene plastic float.	No.	7		
i	40 mm nominal diameter (32mm diameter PPR pipe) - overflow pipe	LM	12		
ii	50mm nominal diameter (40mm diameter PPR pipe) - supply pipe	LM	42		
	Extra Over PPR PN20 Tubing for the following:-				
iii	40 mm diameter PP-R elbow,90°/45°	No.	13		
iv	32 mm ditto	No.	2		
		4			
	TOTAL CARRIED FORWARD TO NEXT PAGE				

	Bill N^{O} 3: SANITARY FITTINGS, PLUMBING & DRAINAGE	Qty	Unit	Rate (KES)	Amount (KES)
	Total Brought Forward from Previous Page				
v	32 x 32 x 32 mm diameter PP-R tee	No.	8		
vi	32 mm x 1" diameter PP-R male/female adaptors	No.	10		
vii	Sensus 405S/20 1 1/4" water meter to M.E's approval	No.	1		
	TOTAL CARRIED FORWARD TO SUMMARY PAGE				

	Bill N^{O} 3: SANITARY FITTINGS, PLUMBING & DRAINAGE	Qty	Unit	Rate *(KES)*	Amount *(KES)*
7	**SUMMARY PAGE**				
A	Total Brought Forward from Page 3/4 - SANITARY FITTINGS, PLUMBING AND INTERNAL DRAINAGE				
B	Total Brought Forward from Page 3/5 - STACK PIPES AND EXTERNAL DRAINAGE				
C	Total Brought Forward from Page 3/7 - WATER RETICULATION				
	TOTAL FOR SANITARY FITTINGS, PLUMBING & DRAINAGE CARRIED TO GRAND SUMMARY				

BILL NO. 4
ELECTRICAL INSTALLATIONS

	Bill N^{O} 4: ELECTRICAL INSTALLATIONS	Qty	Unit	Rate (KES)	Amount (KES)
	Supply,install,test and commission the following:				
1.0	**LIGHTING POINTS**				
1.1	Lighting points wired in 3x1.5 mm^2 SC/PVC cables in concealed 20mm diameter HG/PVC conduits including all necessary accessories but excluding switches and lighting fittings for:				
	a) One way switching.	4	No		
	b) Two way switching	58	No		
2.0	**SWITCHES**				
2.1	10A, polished brass finish switch plates as Crabtree Range or approved equivalent as follows:-				
	a) one gang one way	19	No		
	b) one gang two way	4	No		
3.0	**LIGHTING FITTINGS**				
3.1	**Supply, install, set to work, test and commission the following as specified and described below :-**				
3.2	Pendant complete with ceiling roses, 300mm long 3 core 1.5sq. mm flex cable, screw type lamp holder and 60w energy saving PL lamp as Massive or equal and approved, ceiling mounted as type '3'.	0	No.		
3.3	1 x 36w,1200mm HPF switchstart bare batten flourescent fitting ceiling mounted as Philips or equal and approved, type '4'	58	No.		
3.4	2 x 36w,1200mm HPF switchstart bare batten flourescent fitting ceiling mounted as Philips or equal and approved, type '4'	0	No.		
3.5	1 x 36w,600mm HPF switchstart bare batten flourescent fitting ceiling mounted as Philips or equal and approved, type '4'	0	No.		
3.6	Vandal resistant fluorescent outdoor bulkhead fitting, complete with 2x28w PL lamp as Massive or equal and approved, type "E"	8	No.		
4.0	**POWER POINTS**				
4.1	**SOCKET OUTLETS**				
4.2	Socket outlet points wired in 3x2.5 mm^2 SC/ PVC copper cables drawn in concealed25mm diameter HG/PVC conduits as follows:				
	a)Twin outlet	29	NO		
4.3	13A polished socket outlet plates, flush mounted as Crabtree or approved equivalent as follows:				
	a) Twin switched	29	NO		
	b) Twin switched waterproof	0	NO		
	Sub-Total carried forward to next page				

	Bill N^{O} 4: ELECTRICAL INSTALLATIONS	Qty	Unit	Rate *(KES)*	Amount *(KES)*
	Sub-Total carried forward from previous page				
5.0	**KITCHEN**				
5.1	Supply, install and connect 32A cooker control unit complete with cooker connection uit and 6.0 sq mm PVC single core cables	1	No.		
5.2	20A double pole Cooker switch complete with neon indactor lamp as Crabtree or approved equivalent.	1	No		
6.0	**TELEPHONE/DATA AND TV WORKS**				
6.1	16 SWG, (300 x 300 x 100) mm^3 galvanised steel draw box for telephone, data works and TV works.	2	M		
6.2	Telephone/Data outlet point comprising of concealed 20 mm dia. HG PVC conduits plus draw wire.	2	No		
6.3	RJ45, Data/Telephone Moulded plate as BG, CLIPSAL or approved equivalent.	2	No		
6.4	Supply and install a T.V antenna outlet point done using 20mm dia PVC heavy gauge conduits concealed in the floors and wall with a draw - wire left inside but without the T.V antenna outlet plate .	1	No		
6.5	Supply and install a T .V antenna outlet plate complete with 75 ohm coaxial (TV aerial) cables from TV plate to Amplifier, Splitter and Aerials for item 1.14 above, for flush mounting and as MK Cat No 3520 WH1	1	No		
7.0	**INTERNAL POWER DISTRIBUTION**				
7.1	**CONSUMER UNIT/DB**				
7.2	15-way SPN Consumer Unit for Ground floor with 100A integral isolator as Crabtree or approved equivalent	1	NO		
	Supply, install, connect-up complete 100 Amp 8 ways TP/N MCB distribution board for normal power supply to ***Main House***, complete with integral isolator and MCB units as specified on schematic wiring diagram	1	NO		
7.3	Miniature circuit breakers				
	a) 10A SP MCB	6	NO		
	b) 20A SP MCB	4	NO		
	f) SP Blanking plates	5	NO		
8.0	**SUBMAIN CABLING**				
8.1	Standard Cable Loop Box (CLB) to Engineer's approval	1	NO		
8.2	1000 X 600 X 150mm G.I Fully Recessed power Draw box cw gamma rail and other necessary accessories	1	NO		
8.3	**Submain** wiring from the CLB to the Consumer Units in 16mm² 2-C PVC/SWA/PVC copper conductor cables drawn in concealed 32mmØ HG/PVC conduit conduit	20	M		
	a) Metallic cable glands for the cable above	8	No		
	TOTAL FOR CARRIED TO ELECTRICAL INSTALLATIONS SUMMARY				

SUMMARY PAGE

ITEM		DESCRIPTION	KSHS
i		Sub-total brought forward from Pg-5	
ii		Allow for labling all the sub-circuits	
iii		Allow for as installed drawings	
		TOTAL FOR ELECTRICAL INSTALLATIONS CARRIED TO GRAND SUMMARY	

GRAND SUMMARY

GRAND SUMMARY

	ITEM	PAGE NO.	*KES*
	PARTICULAR PRELIMINARIES	**185**	
	GENERAL PRELIMINARIES	**204**	
BILL NO. 1	BUILDER'S WORK	**1/19**	
BILL NO. 2	EXTERNAL WORKS	**2/5**	
BILL NO. 3	MECHANICAL INSTALLATIONS	**3/8**	
BILL NO. 4	ELECTRICAL INSTALLATIONS	**4/3**	
	TOTAL CARRIED TO FORM OF TENDER		

CONTRACTOR ----------

ADDRESS ----------

DATE ----------

WITNESS NAME ----------

SIGNATURE ----------

ADDRESS ----------

DATE ....