



TENDER DOCUMENT

FOR

**PROPOSED RENOVATION WORKS TO TUITION COMPLEX, AT
KCA UNIVERSITY MAIN CAMPUS, RUARAKA, NAIROBI
COUNTY
(PHASE I)**

TENDER NUMBER: KCAU/NCB-004/2025

**KCA UNIVERSITY
THIKA ROAD, RUARAKA
P.O. BOX 56808, 00200 NAIROBI.**

EMAIL: supplychain@kcau.ac.ke

**CLOSING DATE: TUESDAY, 16TH DECEMBER, 2025
AT 11:00 AM**

DATE _____

TENDER REF NO. KCAU/NCB/004/2025**TENDER NAME: Proposed Renovation Works to Tuition Complex, at KCA University Main Campus, Ruaraka, Nairobi County (Phase I)**

- 1.1 The KCA University invites sealed bids from eligible candidates for the **Proposed Renovation Works to Tuition Complex, at KCA University Main Campus, Ruaraka, Nairobi County (Phase I)**
- 1.2 Interested eligible candidates may obtain further information and inspect the tender documents with detailed Requirements at the procurement office located at the:

KCA University Main Campus

TPC Building

Thika Road, Ruaraka

Nairobi, Kenya.

website: www.kcau.ac.ke

A complete set of bidding documents in English may also be obtained from the KCA University website www.kcau.ac.ke

- 1.3 Interested firms or bidders are required to download the complete set of tender documents from the KCA University website <http://www.kcau.ac.ke/tenders> and upon payment of the non-refundable fee of Kenya Shillings Five thousand only (KES 5,000.00)
Swift Code : BARCKENX

The Tender A/C Number/Registration No is: T2024 or KCAU001**Bank Accounts to use are:**

Account Name - **KCA UNIVERSITY Bank:** Standard Chartered, Thika Road Mall Branch
Account number 0102001171100, bank code: 002, Swift code: SCBLKENX

Account Name - **KCA UNIVERSITY Bank:** NCBA, Wabera street - Accounts
number 6432280015, bank code: 007, Swift code: CBAKENX

Account Name - **KCA UNIVERSITY**, Account Number-**1352178**, Bank: **ABSA BANK – SARIT BRANCH**, Branch Code: 073

Tender Account No /Registration number use is T2024**The payment receipt/bank deposit slip MUST be attached to the tender document.**

- 1.4 Prices quoted must be inclusive of all taxes and should remain valid for at least Two Hundred and Ten (210) days after the deadline of submission of the tenders.
- Twi **Tenders must be accompanied by a security in the form and amount specified in the tender documents, and deposited in the Tender Box located at the KCA University Main Campus Supply Chain Management Office located at the TPC Building on or before 11.00 am on the closing date as indicated.**

Tenders will be opened immediately thereafter in the Supply Chain Management Office in the presence of candidates' representatives, who choose to attend.

Tender Documents submitted after 11.00am, 16th December, 2025 shall not be accepted for evaluation irrespective of circumstances.

- 1.6 Completed Tender documents should be submitted in plain sealed envelopes and clearly marked “KCAU/NCB/004/2025” and addressed to:

The Vice Chancellor & CEO

KCA University,

Thika Road, Ruaraka

P.O. Box 56808- 00200,

NAIROBI

KCA University reserves the right to accept or reject any tender without giving reasons thereof and does not bind itself to accept the lowest or any tender.

Any canvassing or giving of false information will lead to automatic disqualification.

Vice Chancellor & CEO

KCA University

PROPOSED RENOVATION WORKS

TO

TUITION COMPLEX

AT

KCA UNIVERSITY MAIN CAMPUS,
RUARAKA, NAIROBI COUNTY

BILLS OF QUANTITIES
(PHASE 01)

PROJECT CONSULTANTS

LOCUS STUDIO
P. O. BOX 18689 – 00100
NAIROBI

DECEMBER 2025

BILLS OF QUANTITIES

Supplied as part of the contract documents for **PROPOSED RENOVATIONS TO TUITION COMPLEX AT KCA UNIVERSITY MAIN CAMPUS, RUARAKA, NAIROBI COUNTY**

ISSUED BY: **KCA UNIVERSITY**
P .O. BOX 56808 - 00200
NAIROBI

The contract for the above mentioned works, entered into this day of 20..... by the undersigned parties refers to these bills of quantities which shall be read and construed as part of the said contract.

CONTRACTOR.....
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.....
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EMPLOYER.....
.....
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.....
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DATE.....

DATE.....

SPECIAL NOTES

The contractor is required to check the number of pages of these tender documents and should he find any missing or in duplicate or with figures indistinct or should he be in doubt about the precise meaning for any reason whatsoever he must inform the Employer at once and have the same rectified or correct meaning established before the date for submission of tenders.

No liability will be accepted nor any claim allowed in respect of errors in the contractor's tender due to mistakes in the Tender Documents which should have been rectified in the manner described above.

The bills of quantities, general specifications and drawings shall be read and construed together and whenever the descriptions in the bills of quantities do not agree with the descriptions in the general specifications and the drawings, the bills of quantities shall override the general specifications and whenever the drawings do not agree with the general Specifications then the drawings shall override the general specifications and the bills of quantities.

INSTRUCTIONS TO TENDERERS.

1. General

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

Tenderers shall include the following information and documents with their tenders, unless otherwise stated in the letter of invitation to tender:

- (a) copies of certificates of registration, taxes and principal place of business;
 - (b) financial information (accounts) of the last two years;
 - (c) experience in works of a similar nature and size for each of the last two years, and clients, consultants who may be contacted for further information on these contracts;
 - (d) qualifications and experience of key site management and technical personnel proposed for the Contract;
 - (e) Tender security of **Kenya Shillings Nine Hundred Seventy Five Thousand (Kshs. 975,000.00)** only valid for **210 days** from the date of tender opening in form of a guarantee from a Bank / Insurer recognized and / or regulated by the Central Bank of Kenya and Insurance Regulatory Authority.
- 1.2 The Tenderer shall bear all costs associated with the preparation and submission of his tender, and the Employer will in no case be responsible or liable for those costs.
- 1.3 The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the Works and its surroundings, and obtain all information that may be necessary for preparing the tender and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Tenderer's own expense.

2. Tender Documents

- 2.1 The complete set of tender documents comprises the documents listed here below and any addenda issued in accordance with clause 2.4 herebelow:-
- (a) These instructions to tenderers
 - (b) Form of Tender
 - (c) Conditions of Contract and Appendix to Conditions of Contract
 - (d) Drawings as attached
 - (e) Bills of Quantities
 - (f) Pre-qualification information as required in section 1.2 above.

- 2.2 The Tenderer shall examine all instructions, forms and specifications in the tender documents. Failure to furnish all information required by the tender documents may result in rejection of his tender.
- 2.3 A prospective Tenderer requiring any clarification of the tendering documents may notify the Employer in writing or by cable, telex or facsimile at the address indicated in the letter of invitation to tender. The Employer will respond to any request for clarification received earlier than seven [7] days prior to the deadline for submission of tenders. Copies of the Employer's response will be forwarded to all persons issued with tendering documents, including a description of the inquiry, but without identifying its source.
- 2.4 Before the deadline for submission of tenders, the Employer may modify the tendering documents by issuing addenda. Any addendum thus issued shall be part of the tendering documents and shall be communicated in writing or by cable, telex or facsimile to all Tenderers. Prospective Tenderers shall acknowledge receipt of each addendum in writing to the Employer.
- 2.5 To give prospective Tenderers reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend, as necessary, the deadline for submission of tenders in accordance with clause 4.2 here below.

3. Preparation of Tenders

- 3.1 All documents relating to the tender and any correspondence shall be in English Language.
- 3.2 The tender submitted by the Tenderer shall comprise all the documents as detailed in section 2.1.
- 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, except VAT, payable by the Contractor under 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 not be subject to any adjustment during the performance of the Contract. This shall be a fixed price contract. ALL RATES SHALL BE INCLUSIVE OF VAT
- 3.5 The unit rates and prices shall be in Kenya Shillings.
- 3.6 Tenders shall remain valid for a period of 210 days from the date of submission. However, in exceptional circumstances, the Employer may request that the Tenderers extend the period of validity for a specified additional period. The request and the Tenderers' responses shall be made in writing.

- 3.7 The Tenderer shall prepare one original of the documents comprising the tender documents as described in these Instructions to Tenderers.
- 3.8 The original 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. All pages of the tender where alterations or additions have been made shall be initialed by the person or persons signing the tender.

4. Submission of Tenders

- 4.1 The tender duly filled and sealed in an envelope shall;-
- (a) be addressed to the Employer at the address provided in the invitation to tender;
 - [b] bear the name and identification number of the Contractor as defined in the invitation to tender; and
 - [c] provide a warning not to open before the specified time and date for tender opening.
- 4.2 Tenders shall be delivered to the Employer at the address specified above not later than the time and date specified in the invitation to tender.
- 4.3 The tenderer shall not submit any alternative offers unless they are specifically required in the tender documents.
- Only one tender shall be submitted by each tenderer. Any tenderer who fails to comply with this requirement will be disqualified.
- 4.4 Any tender received after the deadline for opening tenders will be returned to the tenderer un-opened.
- 4.5 The Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with sub-clause 2.5 in which case all rights and obligations of the Employer and the Tenderers previously subject to the original deadline will then be subject to the new deadline.

5. Tender Opening and Evaluation

- 5.1 The tenders will be opened in the presence of the Tenderers' representatives who choose to attend at the time and in the place specified in the invitation to tender.
- 5.2 The Tenderers' names, the total amount of each tender and such other details as may be considered appropriate, will be announced at the opening by the Employer. Minutes of the tender opening, including the information disclosed to those present will also be prepared by the Employer.
- 5.3 Information relating to the examination, clarification, evaluation and comparison of tenders and recommendations for the award of the Contract shall not be disclosed to Tenderers or any other persons not officially

concerned with such process until the award to the successful Tenderer has been announced. Any effort by a Tenderer to influence the Employer's officials, processing of tenders or award decisions may result in the rejection of his tender.

5.4 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's representative, 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/Quotation, 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 Builders' 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 forfeited.

5.5 To assist in the examination, evaluation, and comparison of tenders, the Employer at his discretion, may request [in writing] 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 tender price or substance of the tender shall be sought, offered or permitted.

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

6. Award of Contract

- 6.1 The award of the Contract will be made to any bidder.
- 6.2 Notwithstanding the provisions of clause 6.1 above, the Employer reserves the right to accept or reject any tender and to cancel the tendering process and reject all tenders at any time prior to the award of Contract without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the action.
- 6.3 The Tenderer whose tender has been accepted will be notified of the award prior to expiration of the tender validity period in writing or by cable, telex or facsimile. This notification (hereinafter and in all Contract documents called the "Letter of Acceptance") will state the sum [hereinafter and in all Contract documents called the "Contract Price" which 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. The notification of award will constitute the formation of the Contract, subject to the Tenderer furnishing the Performance Security and signing the Contract Agreement.
- 6.4 The Contract Agreement will incorporate all agreements between the Employer and the successful Tenderer. It will be signed by the Employer and sent to the successful Tenderer, within 30 days following the notification of award. Within 21 days of receipt, the successful Tenderer will sign the Agreement and return it to the Employer.
- 6.5 Within 21 days after receipt of the Letter of Acceptance, the successful Tenderer shall deliver to the Employer a Performance Security amount stipulated in the Appendix to Conditions of Contract.

FORM OF TENDER

TO: **VICE CHANCELLOR & CEO;
KCA UNIVERSITY**

PROPOSED RENOVATIONS TO TUITION COMPLEX AT KCA UNIVERSITY MAIN CAMPUS, RUARAKA, NAIROBI COUNTY

Dear Sir/ Madam,

1. In accordance with the Conditions of Contract, Specifications, Drawings and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to undertake such Works and remedy any defects therein for the sum

Of KShs.

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and a completion ofWEEKS

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

Dated this _____ day of _____ 20_____

Signature _____ in the capacity of _____

duly authorized to sign tenders for and on behalf of
.....

P.O. BOX

Witness; Name _____

Address _____

Signature _____

Date_____

FORM OF AGREEMENT

THIS AGREEMENT, made the _____ day of _____ 20 _____

Between KCA UNIVERSITY of [or whose registered office is

Situated at P.O. BOX 56808 – 00200 NAIROBI (hereinafter called “the Employer”) of the
one part

AND

.....
.....

Of [or whose registered office is

Situated at] P.O. BOX

(Hereinafter called “the Contractor”) of the other part.

WHEREAS THE Employer is desirous that the Contractor executes “RENOVATION OF
TUITION COMPLEX”

(Hereinafter called “the Works”) located at KCA UNIVERISTY MAIN CAMPUS,
RUARAKA, NAIROBI 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

KshsKenya

Shillings.....

.....

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) Employer's LPO
 - (iii) Form of Tender
 - (iv) Conditions of Contract
 - (v) Appendix to Conditions of Contract
 - (vi) Drawings
 - (vii) Priced Bills of Quantities
3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

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

The common Seal of _____

Was hereunto affixed in the presence of _____

Signed Sealed, and Delivered by the said _____

Binding Signature of Employer _____

Binding Signature of Contractor _____

In the presence of (i) Name _____

Designation _____

Address _____

Signature _____

SPECIFICATIONS & TRADE PREAMBLES

NOTES:

Descriptions of the measured works in these Bills of Quantities shall be read in conjunction with these preambles. Where there is a conflict between the said descriptions and these preambles, clarification should be sought from the Architect. Should the Contractor find no parallel specification for items described in the Bills, he should notify the Architect and seek further directions before pricing and/or proceeding with the work.

Any work which may be condemned because of the Contractor's failure to observe the provision hereabove shall be rectified at the Contractor's cost.

The term Engineer wherever used in this section refers to the project Structural Engineer

TRADE PREAMBLES GENERAL

GENERALLY

Generally for the purpose of the proposed buildings the following British standard specifications are referred to or their equivalent Kenya Bureau of standard specifications.

Glossary of general building terms to conform to B.S. 3589.

Schedule of weights of Building materials to conform to B.S. 648

Glossary of formwork terms to conform to B.S. 4330

Schedule of weights of Building materials to conform to B.S. 648.

Glossary of formwork terms to conform to B.S. 4330.

Glossary of terms relating to timber preservation to conform to B.S. 426.

Glossary of terms relating to builder's hardware to conform to B.S. 3827, Part 1-4.

Glossary of terms relating to internal flooring, external rendering and floor screeding to conform to B.S. 4049.

Glossary of terms applicable to sanitation to conform to B.S. 4118.

Glossary of terms used in glass industry to conform to B.S. 3447.

Glossary of terms applicable to paint to conform to B.S. 2015.

Glossary of terms applicable to landscapes work shall conform to B.S. 3975.\

Methods of testing plasters top to conform to B.S. 2782.

Fire tests on building materials and structures to conform to B.S. 476 part 2, 3, 4, 5, 6, and 7.

EXCAVATIONS AND EARTHWORKS

STANDARDS APPLICABLE

The following British standard specifications are referred to herein after.

Methods of tests for stabilized soils B.S. 1924.

The following codes of practice are referred to:

Earth works to conform to C.P. 2003.

Foundations and substructure to conform to C.P 101

Protection of building against water from underground to conform to C.P. 102.

Excavations for foundations to conform to C.P. 204

INSPECTION AND SITE VISIT

The Contractor shall be deemed to have visited the site and have ascertained the nature of the soil and/or materials in which excavations are required.

SETTING OUT

Setting out for excavations for the column bases the strips foundations shall be approved by the Architect and Structural Engineers before work is commenced and all excavations, filling and hardcore shall be approved before being concreted or covered up. **Any excavations made in excess of Architects instructions shall be filled with concrete class 1:4:8 at Contractor's expense.**

Excavations for the bases shall be to the widths, depths and levels shown of the Architects and Engineer's drawings.

FILLING

Filling back where required shall be with selected hard dry materials from excavations.

Hardcore filling where required shall consist of hard broken blocks, broken stone, or other inert materials broken to gauge 100 mm downwards before being placed. It shall be laid in layers not exceeding 200 mm thick, well watered, rammed and compacted to the Engineer's approval.

RATES FOR FILLING

The rates for filling or disposal of any material shall include for any double handling. Disposal of all surplus excavated materials, etc., shall be as instructed and rates shall include for loading and removing from site to approved dumping sites.

RATES FOR CART AWAY

Rates for cart away shall include for loading and carting off the site to a tip to be provided by the Contractor. Contractor's attention is drawn to the City Council requirements pertaining to tips, spreading and leveling on site of surplus excavated material may be carried ONLY with the approval of the Architects.

BLINDING

The surfaces of hardcore arising from hardcore fill or from hardcore exposed after breaking up floor bed shall be leveled and properly graded as required and blinded with good quality laterite material, gravel or murram which shall be watered before concreting.

INSECTICIDE TREATMENT

All the blinded surfaces of hardcore shall be treated with 'Dragnet FT' or other equal approved insecticide in accordance with the manufacturer's instructions.

POLYTHENE SHEETS D.P.M.

On all floor beds the Contractor shall provide and fix a damp proof polythene sheet damp proof membrane of the gauge specified in the measured works section of these Bills of quantities. The membrane shall be laid over blinding within plinth and with minimum laps of 300 mm.

PROTECT WORK

The Contractor shall protect all the works in this trade from any damage whatsoever.

GROUND WATER LEVEL

The Contractor shall make all necessary enquiries concerning ground water level on the site, and shall take all necessary precautions and allow for variations from normal level when working on any part of the site.

APPROVAL OF EXCAVATIONS

The Contractor shall inform the Architect when excavations are complete, and shall obtain Architect's approval before commencing any filling or concreting work.

CLASSIFICATION OF EXCAVATION

Excavations measured in these Bills of Quantities shall be as follows:

Rock or hard material. This shall comprise excavation in all materials which cannot be removed except by blasting or by use of metal wedges and sledge hammers or by mechanical compressed air equipment.

In normal or soft material, this shall include excavations in materials which can be removed without recourse to methods described for rock above.

The Architect will determine the class and extent of each type of excavated material. When the Contractor considers that the excavated material is of class (a) above, he must inform the Architect in sufficient time for the Architect to determine the class and precise extent of such material.

CONCRETE WORK

GENERALLY

A competent Foreman who shall be fluent in spoken English shall be employed on the site whose first duty will be to supervise all stages of preparation and placing of the concrete. Credentials of the foreman shall be issued to the Architects before commencement of the works.

Before construction commences the Contractor shall supply to the Engineer for his approval, the proposed layouts of his concreting plant and on site workshops, details of formwork systems and the construction equipment e.g. cranes, chutes, scaffolding which he proposes using for the structural work.

The Contractor is to check all drawings carefully before any part of the work is carried out. Should there be any discrepancy in the information shown on the drawings the Contractor will be responsible for pointing this out to the Engineer before any of the work which is affected is carried out. Only when the Engineer has corrected the discrepancy in writing may this work be carried out.

Bending schedules will be issued and these are to be checked by the Contractor. Should there be any discrepancy between the bending schedule and drawings, the drawing will take precedence, but the discrepancy must be pointed out to the Engineer before the work affected is carried out.

Under no circumstances is the Contractor to proceed with concreting without obtaining the final approval of the Engineer in writing with regard to reinforcement, formwork, plant, etc.

CODES OF PRACTICE

In situ concrete shall be in accordance with B.S. Code of practice BS 8110: Part 1, 1985 and in accordance with any amendments to this which may have been issued at the time of inviting tenders.

Precast concrete shall be in accordance with Section 5 of BS 8110: part 1, 1985 and in accordance with any amendments to this which have been issued at the time of inviting tenders.

MATERIALS

Samples of materials the Contractor proposes using throughout the job shall be tested and/or approved by the Engineer in writing before deliveries to the site are commenced.

CEMENT

Unless otherwise specified, cement shall be ordinary Portland Cement in Accordance with B.S. 12 part 1971.

The Cement manufacturer's name shall be given to the Engineer before work commences and no other manufacturer's cement will be allowed on the site without approval of the Engineer. Cement should not be older than six (6) months from the date of manufacture.

No two types of cement may be used together in combination. All cement shall be delivered to the site in the original sealed bags of the manufacturer or in bulk containers approved by the Engineer. Re-bagged cement shall not be used for the works.

Cement shall be stored in a dry shed or container, the floor of which shall be raised above the ground and it shall at all times be protected from deterioration due to moisture or other causes. It shall as far as possible be used in the order in which it is delivered to the site and cement which upon inspection by the Engineer is considered by him to have deteriorated in any way shall be removed from the site with immediate effect.

WATER

Water for mixing and curing concrete shall be clean and fresh and shall only be obtained from the Municipal Council mains. Where doubts exist as to the suitability of the water it shall be tested at the Contractor's expense in accordance with B.S. 3148. 1959.

AGGREGATES

Aggregates shall conform to the requirements of B.S. 882 1965 and are to be approved in all respects by the Engineer before work commences.

All aggregates are to be obtained from one source for the whole of the works and are to be uniform in colour and hardness

The grading of aggregates shall be one within the limits set out in B.S 882 and as later specified and the grading, once approved, shall be adhered to through out the works and not varied without the approval of the Engineer.

Fine aggregates shall be clean, coarse siliceous sand of good sharp hard quality and shall be free from lumps of stone, earth, loam, dust, salt, organic matter or any other deleterious substances.

Coarse aggregates shall be good, hard, clean approved black-trap or similar stone, free from dust, decomposed stones, clay, earthy matter, foreign substances, fibre and thin elongated or laminated pieces.

If in the opinion of Engineer the aggregate meets with the above requirements but is dirty or adulterated in any manner it shall be screened and/or washed with clean water if he so directs at the Contractor's expense.

Fine aggregates shall be of grading zones 1 to 3. Sand of grading zone 4 may not be used unless the Contractor can show by trial mixes that by the use of this he can produce concrete which is of the required quality.

Coarse aggregates shall be of 18 mm. Maximum size down to 4.5 mm and shall be graded according to B.S. 882.

Aggregates shall be stored on concrete paved areas with dividing walls between each type. On no account shall aggregates be stock piled on the ground.

BATCHING

All materials for concrete shall be measured separately 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%

ADDITIVES

No additives other than those specified shall be used in the concrete without the written approval of the Architects and/or Engineer.

CONCRETE MIXES

Preliminary design mix cubes shall be made using the proportions of material as ascertained from the grade analysis. Six cubes are to be made for each mix, three to be tested at 7 days and three to be tested at 28 days. The preliminary cube test results shall exceed the works cube strength specified in the table below by at least 33.3%.

No structural concrete shall be made until the Engineers have approved the preliminary works cube test results. Thereafter these approved proportions shall be adhered to throughout the works, and may only be varied on the instructions of the Architect.

The mixes for concrete in the various parts of the works are listed below. The 28 days strengths refer to tests made on 6 in or 4 in cubes made in accordance with B.S.1881.

Concrete mixes shall be designed in accordance with BS 8110 and proportions of cement, fine aggregates, coarse aggregate and water shall be chosen by the Contractor to achieve the specified minimum cube crushing strength together with the appropriate workability.

	Grade/ Location	Minimum work Cube Strength at 28 days	Nominal size of Coarse aggregate	Maximum Cement per Cubic M.	Minimum Cement per Cubic M,	Slump
	Reinforced Concrete (Design Mix)	25.0N./ M2	20 mm	540 Kg./CM	240Kg/CM	25mm
	Reinforced Concrete (Nominal Mix)1:2:4	21.0 N./ M2	20mm	-	-	25mm
	Blinding and Mass concrete 1:3:6	21.0 N/M2	40mm	-	-	-

WORKABILITY

The concrete shall be just sufficiently workable for it to be placed and compacted without difficulty to produce the densest finished concrete consistent with the method of compaction specified.

The slump test is to be used as a guide for maintaining constant workability and the tolerance on the slumps specified shall not exceed (20mm).

MIXING

When the aggregate natural water content exceeds the specified dry condition the amount of water added to the mix shall be adjusted to maintain the correct consistency as determined by the slump test.

All mixing shall be done by power operated rotating drum mixers which shall be fitted with an accurate water gauge to be checked at weekly intervals. Mixing shall continue until the concrete is of an even colour or consistency or for the period recommended by the manufacturer of the mixer or for 2 minutes, whichever is the longer. The entire mix shall be discharged before charging the mixer. The volume of the mixed materials shall not exceed the rated capacity of the mixer.

At all times mixers must be maintained in a clean condition. Prior to the first mix 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.

READY MIXED CONCRETE

Ready mixed concrete may only be used with the permission of the Engineer. The use of ready-mixed concrete shall not relieve the Contractor of any of his obligations and the appropriate clauses of this specifications shall apply to the Ready-Mixed concrete supplier. Concrete test tubes shall be taken on the 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 works.

FINISHES

The surface finish of the concrete on the various parts of the works will be as follows:

Normal finish- This finish is obtained from the use of properly designed moulds of closely jointed sawn boards. Small surface blemishes caused by entrapped air will be permitted but the surface shall be free of voids, honey combing or other large blemishes.

Fair Faced Finish - This finish is to be obtained by the use of properly designed moulds having a hard smooth surface. The concrete surface shall be smooth and even with sharp, true arises.

Only very minor surface blemishes should occur and there shall be no staining or discoloration.

EXPOSED AGGREGATE FINISHES

An exposed aggregate finish may be obtained by the use of approved cement which shall be applied to the face of the formwork. Once the formwork has been struck, and in accordance with the retarding agent's manufacturer's instructions, the surface shall be brushed and/or washed to remove the surface cement and expose the aggregate.

STRENGTH AND SOUNDNESS

The strength and soundness of the concrete will be generally determined by cube tests, Schmidt hammer tests or by any other method which the Architect considers to be appropriate and suitable. The opinion of the Architect regarding the soundness and acceptability of the finished concrete shall be final.

MAKING GOOD

No patching or making good shall be undertaken without the written permission of the Architect. It may only be done by a method to be approved by the Architect and if the Contractor wishes to make good any part of the work he will be required to submit to the Architect for his approval full details of the proposed methods of carrying out the making good.

COVER

The cover to reinforcement shall be as stated on the drawings subject to a tolerance of -0 +5mm

TOLERANCES

All concrete surfaces in the finished structure shall be within 5 mm of the theoretical position shown on the drawings.

TRANSPORTING AND PLACING CONCRETE

All machinery platforms, barrows, buckets and shovels used in the transporting and placing of concrete shall be cleaned before concreting commences and on cessation of works.

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

Concrete shall be compacted in its final position as soon as possible and before 30 minutes from the time when agitation ceases. When ready-mixed concrete is supplied in purpose agitators and in accordance with B.S. 1926: 1962 the total time taken between the introduction of cement to mix and compaction shall not exceed two hours.

No extra water shall be added to the mix after it has left the mixer. Concreting shall be carried out continuously up to all approved joints.

Should the concreting be stopped due to mechanical malfunctions, accidents, etc., the

Architect shall be informed 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.

Concrete shall not be dropped from a height which causes segregation, undesirable finish or defective structural quality. When flexible chutes are used they shall be kept free from coatings or hardened concrete.

Pumping of concrete will only be permitted with the written approval of the Engineer.

Notwithstanding any of the above 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.

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

COMPACTION

Unless otherwise specified all concrete is to be vibrated. The vibration shall be carried out by experienced operators and with immersion type vibrators to the Engineer's approval. The concrete shall be carefully rammed and vibrated in layers so that a homogenous dense mass is obtained.

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 water is removed.

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

The Contractor is responsible for maintaining the reinforcement in its correct position, according to the drawings before and during concreting. During concreting a competent steel fixer must be in attendance on the concretors to adjust and correct the positions of any reinforcement which may be displaced. Conduits must be similarly adjusted and cared for. The Contractor must allow for all expenses in connection with vibrating in his rates for concrete and no claim in respect of his not doing so will be allowed

CURING

Concrete shall be protected from adverse weather conditions after placing. Steps shall be taken to prevent excessive rates of evaporating of water from all surfaces due to high temperatures and/or drying winds.

Concrete shall be protected for at least 4 days unless the Engineer approves a lesser

period.

During the curing period, horizontal surfaces shall be protected from excessive evaporating of water by:

- a) Formwork in close contact with the concrete, or
- b) Direct continuous application of water, preferably in the form of a mist so as not to damage the surface, or
- c) Covering with an absorbent material kept damp, or an impermeable sheet, close Enough to the surface to prevent excessive circulation of air, or
- d) Other approved means

JOINTS IN CONCRETE

Construction joints shall be permitted only at the position pre-determined on the drawings and as instructed on the site by the Engineer.

Under no circumstances shall concrete when being deposited, be allowed to 'tail off' but it shall be deposited against stopping-off boards to the Engineer's approval.

Before placing new concrete against concrete already hardened, the face of the old concrete shall be thoroughly hacked and cleaned, and scum and loose aggregate removed there from and immediately before placing the concrete the face shall be thoroughly wetted and a coating of 1:11/2 cement grout 25 mm thick applied thereto. The concrete shall be well rammed against the prepared face before grout sets.

The details and position of all movements joints and special requirements in relation to joints shall be as shown in the Architect's drawings, and no variation from these details shall be permitted.

CONCRETING IN HOT WEATHER

Suitable means shall be provided to ensure that the temperature of the concrete on placing does not exceeding 32 degrees Celsius (90 degrees Fahrenheit)

Concrete shall not be placed around reinforcement of against surfaces which are too hot to touch. All surfaces shall be thoroughly dampened immediately prior to placing the fresh concrete to prevent excessive absorption of water.

Concrete shall be maintained in a damp condition for a minimum of 4 days after placing.

PROTECTION

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

REINFORCEMENT

Steel reinforcement shall consist of:-

Mild steel bars complying with B.S.4449: 1969

Cold worked, square twisted, bars to B.S. 4461; 1969. High tensile bars shall have a minimum yield stress of 60,000 Ib/sq. in (410 N/mm²)

Welded fabric reinforcement to B.S. 4483: 1969

Note: Square twisted bars shall be formed by a 'Torsion controlled' process.

If required by the Architect the Contractor shall provide test certificates from an approved testing authority for the reinforcement being used in the works.

BENDING

Bending of reinforcement shall be carried out at ambient temperatures. The bending dimensions shall apply with B.S. 4466: 1969 unless otherwise specified on the bending.

Temporary bending and subsequent straightening of reinforcement shall be avoided whenever possible. When permitted by the Architect this shall be carried out at ambient temperatures and the internal radius of such bends shall not be less than 4 diameters for mild steel and 6 diameters for cold worked bars.

WELDING

Where welding of plain mild steel bars is approved it shall be carried out in accordance with B.S. 1856: 1964. In the case of steel other than mild steel, details of the welding techniques to be used shall be submitted for approval, and such trials made as required to demonstrate the effect of the welding.

FIXING

All bars and fabric shall be fixed in the position shown on the drawings within the tolerances specified in B.S. 4466. In no case shall the cover specified on the drawings be reduced by more than 5 mm.

Displacement of reinforcement beyond the specified tolerances shall be prevented by supporting the bars sufficiently and securely fixing them together at intersections where necessary.

Spacers shall be used to maintain the cover to all steel and shall be of dense cement mortar unless otherwise other materials are approved by the Architect.

Unless otherwise indicated on the drawings steel fabric shall be lapped at least 300 mm

at the ends and sides of square meshes.

Chairs, stools, etc. shall be used to maintain clearance between two or more layers of reinforcement. These in addition to all tying wire must be provided by the Contractor and deemed to be included in the rates for reinforcement.

The fixing of reinforcement shall be checked before and during concreting and particular attention shall be given to the position of top steel in cantilever sections. No steel shall be surrounded by concrete unless it is in its correct position and free from mud, oil paint, retardant, loose rust, or other foreign matter.

No laps shall be made in the reinforcement except where shown on the drawings or where approved by the Engineer.

POSITION OF ELECTRICAL CONDUITS

Unless otherwise instructed by the Engineer or his representative, all electrical conduits to be positioned within the reinforced concrete shall be fixed inside the steel cages and beams and columns and between the top and bottom steel layers in slabs and similar members. The proposed positions shall be shown accurately on a plan to be submitted to the Engineer or his representative, whose approval shall be obtained before any such conduits are placed.

CONCRETE COVER TO REINFORCEMENT

Unless otherwise directed the concrete cover to rod reinforcement over main bars in any face shall be:

Foundation against each face	75 mm
Foundation against blinding	59 mm
Columns	40 mm
Beams	25 mm
Slabs	15 mm

FORMWORK

All formwork shall be of sufficient thickness and with joints close enough to prevent undue leakage of liquid from the concrete and fixed in proper alignment, level and plumb and supported on sufficiently strong bearers, shores, braces, plates, etc., properly held together with bolts or other fastenings to prevent displacement, vibration or movement by weight of materials, men and plant on the same and so wedged and clamped to permit ease of removal of the formwork without jarring the concrete. All formwork shall be treated with an approved mould oil to facilitate efficient easing and removal.

Ribbed walls shall be formed with linings of fibre glass, or steel sheet or other approved materials on the ribbed face. Ribs formed by nailing or screwing timber fillets to main formwork shall not be used for the works.

‘Fair face’ surfaces shall be clean, smooth, even, true to form and free from all board marks, joint marks, honey combing , pitting, formwork ties, etc. and the Contractor is to provide smooth lining to the forms which will achieve the required finish.

Great care shall be taken to make and maintain all joints in the formwork as tight as possible, to prevent the leakage of grout during vibration with consequent honey combing.

The faces of formwork next to the concrete must be sufficiently true to leave the concrete even enough to take the plaster or finishing’s as afterwards described herein.

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

The erection, easing and striking of the 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.

No patching or making good of concrete is to be done before inspection of the stripped concrete surface by the Engineer. Only chases, holes and cast-in items as described and detailed on the Engineer’s drawings will be allowed. Additional requirements by the Contractor or Sub-Contractors require the Engineer’s approval before incorporating in the works.

Should any concrete fail to comply with this specification or in the opinion of the Architect is not up to the standards of this specification, the faulty concrete shall be broken down and replacing any concrete shall be the responsibility of the Contractor at his own cost.

STRIKING FORMWORK

Formwork shall be struck at such a time and in such a manner as to cause no damage to the concrete.

In any case formwork shall not be removed before the following minimum times have elapsed

Sides of beams, columns and edges of slabs	2 clear days
Soffits of beams and slabs	14 days
Vertical props	21 days

TESTING CONCRETE

The Contractor shall allow for making 4 No. 150 mm test cubes during each day on which concreting takes place for each mixer in operating and these shall be made and stored as described in B.S. 1881.

One cube is to be tested at 7 days and three at 28 days. Cubes are to be marked with the date of casting and a reference number and forwarded, carriage paid to an approved testing laboratory and a record kept of the position from which the concrete for each cube was placed or about to be placed.

Copies of Works cube testing results shall be forwarded to the Engineer and a copy retained on site.

If the strengths required above are not attained or maintained throughout the contract, the Contractor will be required to re-design the mix as to give a concrete which does comply with requirements of this specification. The Contractor may be required to remove and replace at his own cost any concrete which fails to attain the required strength as ascertained by Works Tests.

PRECAST CONCRETE

Precast concrete is to be made of concrete of the mixes described in suitable strong metal or timber moulds, true in form to shapes required, thoroughly tamped into the moulds and around reinforcement and vibrated.

Where precast concrete is described as 'Fair Faced' the moulds shall be of 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.

Moulds and formwork shall be constructed so that the dimensions of the finished concrete members be within the specified permissible tolerances given in Clause 407 of CP. 116: part 2:1969.

All precast work shall be carried out under cover and the period before removal from forms and period of shoring shall be determined and agreed by the Engineer and Contractor with due regard to type of unit, i.e. load bearing or non-load bearing, difficulties of casting, projections, holes and other points which require particular attention. The period before removal from forms shall, in any case, not be less than 3 days.

The Contractor is to prepare for each type of Precast unit a drawing indicating his proposed formwork construction, casting methods and de-moulding procedure for the Engineer's approval.

Method of lifting, position of lifting points and curing timber before lifting are to be agreed with the Engineer before casting of any unit.

All loading tests on pre-cast concrete units shall conform to section 9.6 BS 8110: part 2: 1985.

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

WALLING

CONCRETE BLOCKS

Concrete blocks walling 150 mm thick shall have minimum crushing strength of 10.5 Newtons per square millimetre.

All concrete blocks must be cured for a minimum period of four weeks before they are used and all testing of blocks is to be carried out by the Ministry of Works materials Testing laboratory.

WALL REINFORCEMENT

Where so specified, shall consist of Hoop Iron 25 mm wide, one strip per 75 mm of wall thickness, laid in alternate joints for the full length of walls, lapped and crampled at running joints and full width of wall at angles and intersections.

CHASING

In load bearing walling for electrical conduit, pipes, etc., is to be kept to a minimum. The size to be cut and position and runs of chases are to be approved by the Architect before any cutting is commenced. Horizontal runs will not be permitted. All walls less than 200 mm thick shall be reinforced.

CEMENT

The cement shall be as described under 'Concrete Works'.

SAND

The sand for mortars shall be as described in 'Concrete Work' except that it shall be fine

LIME

The lime shall be as described in 'plaster work'.

NATURAL STONE WALLING

Where masonry walls are specified, they shall be constructed of Natural Blue Stone and finished as described under the specification item description in the measured works

section of these Bills of Quantities.

MORTARS

Cement mortar shall consist of one part of Portland Cement, three parts of sand by volume,

The cement /lime mortar shall consist of one part of Portland Cement, one part of lime and six parts of sand by volume.

The ingredients of mortar shall be measured in proper gauge boxes on boarded platform the ingredients being thoroughly mixed dry, and again whilst adding water. In the case of cement/lime mortar the sand and lime shall be mixed first and then the cement added. All mortar is to be thoroughly mixed to a uniform consistence with only sufficient water to obtain a plastic condition suitable for trowelling. No mortar that has commenced to set is to be used or re-mixed.

SETTING OUT

The Contractor shall provide proper setting out rods and set out with the same all work showing openings, heights, cills and lintels and shall build the various walls, and piers to the thicknesses, widths and heights shown upon the drawings. No part of the walling shall be carried up more than three feet higher at one time than any other part and in such cases the jointing shall be made in long steps so as to prevent cracks arising and all walls shall be leveled round at floors and wall heads.

BONDING

All blocks shall be properly bonded together and in such a manner that no vertical joints in any one course shall be within 115 mm of a similar joint in the course immediately above and below. Alternate courses of walling at all angles and intersections shall be carried through the full thickness of the adjoining walls.

All perpends, reveals, quoins and other angles and joints of the walls, etc. shall be built strictly true and square.

LAYING AND JOINTING

All bricks and blocks are to be well wetted before laying and tops of walls where left off shall be well wetted before commencing building. All joints are to be 9 mm thick and flushed up and grouted in solid as the works proceeds.

All the other faces shall be cleaned down on completion with a wire brush or as necessary and mortar droppings, smear marks, etc., removed and rates must include for this.

PUTLOG HOLES

All putlog holes shall be carefully, properly and completely filed up on completion of walling and before plastering is commenced.

FAIR FACE

Walling described as fair faced shall be built with selected blocks and pointed with neat recessed joints.

DAMP PROOF COURSE

Damp proof course shall be bituminous felt complying with B.S. 743 weighing not less than 3.80 Kg per metre, free from tears, holes, lapped and 150 mm at running joints and full width of wall at angles, and intersections and bedded in hot bitumen on a levelling screed of cement and sand (1:4) 10 mm thick neatly pointed where exposed.

PRICES TO INCLUDE

The prices for walling shall include for all straight cutting, bonding, plumbing angles, forming reveals, pinning up to underside of concrete soffits and cutting up to sides of columns and cutting and pinning ends of lintels and cills.

CARPENTRY

TIMBER

All timber shall be in accordance with the latest approved Grading Rules issued by the Government of Kenya (legal notice No. 358). Timber for carpentry shall be second (or select) grade.

GENERALLY

All timber shall be inspected as it arrives on the site by the Contractor, and any timber brought on the site and not complying with the Specification or not approved must be removed forthwith from the site and only approved timber shall be used in the works.

The Contractor shall upon signing the Contract, purchase sufficient supplies of specified hardwood to avoid possible shortages of a later date.

SPECIES OF TIMBER

The following timber shall be used:-

Standard Common names

Cypress, Podo, Cedar, Camphor, African Mahogany (Munyama), Meru Oak

TOLERANCES IN THICKNESS

Shall conform with the following extracts from the Government of Kenya Grading Rules (or the Metric equivalent)

1) Hardwood Grading: (First and Second Grades)

The following tolerances in thickness will be admitted:-

- a) 1.5 mm oversize on pieces up to 25 mm in thickness
- b) 1/8 in. oversize on pieces over 25 mm and up to 50 mm in thickness
- c) 6 mm oversize on pieces over 50 mm in thickness

2) Softwood grading: Strength Grades (for carpentry)

First and Second Grades. Undersize not allowed

Oversize: all timber to be sawn oversize by 1.5 mm per 25 mm thickness and width. Not more than 3 mm in thickness and not more than 6 mm in width.

3) Softwood Grading: Appearance, grades (for Joinery) First and Second Grades

All as for Strength Grades above

All timber shall be free of live or dead borer beetle or other insect attack when brought upon the site. The Contractor shall be responsible up to the end of the maintenance period for executing at his own cost all work necessary to eradicate insect attack of timber which becomes evident including the replacement of timber attacked or suspected of being attacked, notwithstanding that the timber concerned may have already been inspected and passed as fit for use.

SEASONING OF TIMBER

All timber shall be seasoned to a moisture content of not more than 22% for carpentry.

PRESSURE IMPREGNATION TREATMENT

All carpentry timber, sawn joinery and timber grounds for fixing shall be treated with pressure impregnated 'Celcure' or 'Tanalith' solution with minimum net retention of 0.35 lbs. of dry salt per cubic foot. If so required 'charge sheets' issued after treatment with 'Celcure' or 'Tanalith' shall be submitted by the Contractor to the Architect for his retention. All cut ends and any other cut faces or timbers sawn after treatment shall be

treated before fixing with 'Celcure' or 'Wolmol' solution brushed on. The Contractors prices for such timber hereinafter must allow for the above treatment.

INSPECTION AND TESTING

The Architect shall be given facilities for inspection of all works in progress whether in workshop or on site. The Contractor is to allow for testing or prototypes 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, strength, etc., Such tests shall be carried out by the Forestry Department, The University of Nairobi, or Kenya Bureau of Standards.

CLEARING UP

The Contractor is to clear out and destroy all cut ends, shaving and other wood waste from all parts of the building and the site generally, as the work progresses and at the conclusion of the work.

This is to prevent accidental borer infestation and to discourage termites and decay.

WORKMANSHIP

All Carpenter's work shall be accurately set out in strict accordance with the drawings and shall be framed together and securely fixed in the best responsible manner with properly made joints: all bands, nails and screws etc. shall be provided as necessary, directed, and approved, and the Contractor's prices shall allow for all the foregoing.

All workmanship shall be of the best quality.

All Carpenter's work shall be left with sawn surfaces except where particularly specified to the wrought.

DIMENSIONS

Dimensions of timber for Carpentry left with sawn faces shall comply with the previous clause specifying tolerance in thickness. Dimensions for wrought members shall be as described in joinery.

JOINTING

All timber shall be as long as possible and practicable to eliminate joints. Where joints are unavoidable surfaces shall be in contact over the whole area of the joint before fastenings are applied.

No nails, screws or 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 pre-bored at diameters not exceeding $4/5^{\text{th}}$ of the diameter of the nails. Clenched nails must be bent at right angles to the grain. Bull dog connectors shall also be used for connections where

appropriate.

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 $D + 1.6$, where D is the diameter of the bolt. Nuts must be brought up tight but care is to be taken to avoid crushing of the timber under the washers.

ROOF COVERING GENERALLY

Roof covering shall be specified in the measured works section of these Bills of Quantities.

JOINERY

ALL TIMBER

All timber shall be FIRST (OR PRIME) Grade. Species of timber and tolerance shall be as defined under "Carpentry."

GENERALLY

All joiner's work shall be accurately set out on boards to full size for the information and guidance of the artisans before commencing the respective works, with all joints, iron work and other works connected therewith fully delineated, Such setting out must be submitted to the Architect and approved before such respective works are commenced.

All joiner's work shall be cut out and framed together soon after the commencement of the building as is practicable, but not be wedged up or glued until the building is ready for fixing of the same. Any portions that warp, wind or develop/shakes or other defects within six months after completion of the Works shall be removed and new portions fixed in their place together with all other work which may be affected thereby, all at the Contractor's own expense.

All work shall be properly mortised, tenoned, housed, shouldered, dovetailed notched, pinned, braided, mitred etc., as directed to the satisfaction of the Architect and all properly glued up with the best quality glue.

Joints in joinery must 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, sprigs, etc., are to be punched and puttied. Loose joints are to be made where provision must be made for shrinkage and glued joints where sealed joints are required.

All exposed surfaces of joinery work shall be wrought and all arises 'cased off' by

planning and sand papering to an approved finish suitable to the specified treatment.

INSECT DAMAGE

All timber shall be free from insect damage as defined under 'carpentry'

SEASONING OF TIMBER

All timber shall be seasoned to a moisture content of not more than 15%.

DIMENSIONS

3 mm Reductions of specified sizes will be allowed to each wrought face except where described as finished sizes in which joinery shall hold up to the full dimensions.

The Contractor is to note that all joinery timber sizes are nominal unless otherwise state as finished sizes. These nominal sizes have been calculated in accordance with Standard Method of Measurement of Building Works for East Africa, 2nd edition Metric and no regard has been taken of metric sizes of timber at present being sold.

FIXING JOINERY

All beads, fillets and small members shall be fixed with round or oval brads or nails well punched in and stopped. All larger members shall be fixed with screws. Brass screws shall be used for fixing of all hardwoods, the heads, let in and palleted over with wood to match the grain.

BEDDING FRAMES, ETC.

The Contractor's rates must include for bedding frames, sills, etc., in mortar or dressing surfaces of walls etc. in lieu.

PLUGGING CONCRETE AND WALLS

Round wood plugs shall not be used, all work described shall be fixed with screws to plugs formed by drilling concrete walls, etc., with a proper tool of suitable size at 750 mm spacing and filing the holes completely with 'philplug' rawl plastic or rawl plugs in accordance with the manufacturer's instructions. Alternatively and where so agreed by the Architect hardwood dovetailed fixing slips, dipped in 'wolmanol' or 'Celcure B' solution and cut and pinned or bedded in cement mortar (1:3) may be used.

FIBREBOARD

Shall be 12 mm 'Celotex' or equal and approved

PLYWOOD

Shall comply with B.S. 1455 (First Quality 'interior type' unless otherwise specified)

BLOCKBOARD

Shall be laminated board faced both sides with 4 mm plywood. Exposed edges shall be lipped with 19 mm hardwood and rates shall include for lipping.

PROTECTION OF JOINERY

All fixed joinery which in the opinion of the architect is liable to become bruised or damaged in any way, shall be completely cased and protected by the Contractor until the completion of the works.

FLUSH DOORS

All flush doors shall be manufactured to the thicknesses specified and consists of 100 mm wide framing all round with horizontal core battens at not more than 75 mm centres pressure impregnated as described and bored with 12 mm diameter ventilation holes at 300 mm centres. Doors shall have two lock blocks and be faced both sides with 6 mm plywood as specified and have 25 mm mahogany twice rebated lipping all round and otherwise be equal to an approved sample. External flush doors shall be as described above but faced both sides with marine quality plywood.

PRICES TO INCLUDE

Prices of items hereafter shall include for the foregoing labours, etc., and in addition all prices for linear items are to include all internal and external angles, either mitred or tongued, all fair, fitted, stopped, notched or returned ends, all similar incidental labours and all short lengths.

BOTTOM EDGES

Bottom edges of doors shall be painted with one coat of approved prime before fixing.

IRONMONGERY

All locks and ironmongery shall be fixed with screws etc., to match. Before the wood work is painted, handles shall be removed carefully stored and re-fixed after completion of painting and locks oiled and left in perfect working order. All keys shall be labelled with the door reference numbers marked on labels before handing over to the Architect on completion.

METAL WORKS

ALL MATERIALS

Shall be of the best quality, free from defects. The materials in all stages of transportation, handling and piling shall be kept clean and injury from, breaking, bending and distortion prevented

NAILS, SCREWS AND BOLTS

Shall be of the best quality mild steel of lengths and weights approved by the Architect. Nails shall be to B.S. 1202 and bolts to B.S 916.

WORKMANSHIP

All work shall be carried out in the most workmanlike manner and strictly as directed by the Architect.

Welding shall be neatly cleaned off and units shall be prefabricated in the workshop whenever possible, the minimum of site welding being employed.

All screwed work shall have full internal and external threads and holes shall have been cleared off. Counter-sinking must be concentric.

RAINWATER GOODS

Prices shall include for building in, casting in or cutting mortises to form fastenings, all making good, joints, short lengths and all extra joints in the case of fittings.

FIXING METAL WINDOWS AND DOORS

The Contractor's prices for fixing metal windows, doors, etc., shall include for assembling and fixing, cutting mortises for lugs in concrete or walling and running with cement mortar (1:4) bedding frames in similar mortar and pointing in mastic, bedding cills, transoms and mullions in mastic, making good plaster around frames both sides and fixing, oiling and adjusting all fittings

MILD STEEL

Steel for burglar bars and reinforcement shall comply with B.S. 15. No work shall be fabricated until site dimensions have been checked and no additional claim will be accepted should final dimensions differ from those on the drawings.

All welds shall be ground smooth and the Contractor shall ensure that the metal work is prepared for painting as described in painting and decorating.

The Contractor is to ensure that all work is erected plumb and true and be so maintained until properly secured by permanent fixing.

STRUCTURAL HOLLOW SECTIONS

All hollow sections are to be connected by electric arc welding

For butt welds the fusion surfaces of each member must be properly aligned and prepared.

ELECTRONIC WELDING

All welding is to be in accordance with the requirements of B.S. 1856 and 938 and the electrode shall comply with B.S. 639.

Fusion faces shall be free from irregularities which could interfere with the welding materials. Those faces shall also be free from any deleterious matter such as rust, grease and paint.

All welds shall be prepared by planning or machine frame cutting.

During welding all parts will be maintained in their correct position.

Welds shall be carried out with each run closely following the one prior with sufficient time between to allow for removal of slag.

Each run of weld is to be inspected and the sub-Contractor shall ensure that unsatisfactory welds are cut out or remade to the required standard.

The minimum size of fillet weld shall be 6 mm.

All completed welds shall have regular and smooth surfaces. The weld material shall be solid with complete fusion throughout the weld material and to the metal.

Any defects shall be cut or made good to approval.

External faces of butt welds are to be ground smooth.

PAINTING

All steel is to be wire brushed and sanded, and any loose scale, dirt or grease shall be removed before any painting is commenced. One coat of red oxide primer type A to BS 2523 shall be applied at the shop.

Any damage to the priming paint shall be made good to the Architect's satisfaction.

PLUMBING

GENERALLY

Plumbing works are to be carried out by a licensed plumber approved by the Architect

RAINWATER INSTALLATION

Galvanized steel tubing shall comply with B.S 1387, medium grade, with plain galvanised malleable cast Iron fittings complying with B.S 1259. Tubing shall be fixed to true lines and, where not built, shall be secured with galvanised malleable iron brackets complying with B.S. 1494. Table 6a or 7a. Joints shall be made in fine hemp and red lead putty or 'Boss white'.

WIRE BALLOONS

Wire balloons shall be galvanised steel and shall comply with B.S. 460 and 1205.

TESTING

Gutters and external rainwater pipers shall be tested with water to satisfy the Architect that gutters are to correct falls and pipes are unobstructed.

Any defects are to be made good by the Contractor and the whole system left sound and perfect.

BY-LAWS

All the works shall comply with the requirements of the local bye-laws, and shall be executed to the satisfaction of the Architect and the Local Authority.

SETTING OUT

The positions of all pipes run including joints and connections shall be agreed with the Architect before work is commenced

CAST IRON PIPES, FITTINGS AND ACCESSORIES

Cast iron pipes and fittings shall comply with B.S. 416 for medium grade coated piped and fittings. Sockets and spigots shall be type B on piped and type A on fittings.

Access doors shall be oval type with asbestos washers and manganese bronze bolts.

Pipes and fittings shall be jointed with a gasket and hemp and 'Philplug P.C.A.' and caulking compound. Joints between W.C. trap and cast iron branch shall be made with hemp gasket and 'Plumbers mate' pressed firmly into the joint and smoothed off.

Except where adequately restrained and supported by being built in, all piped and fittings shall be fixed with one holderbat to each socket. Piped less than 3" diameter shall be fixed 1" clear of wall and those 3" diameter and over 1/2" clear of walls. Holderbats for fixing to brickwork shall comply with B.S 416, Table 21, coated, those for fixing to concrete shall be similar but 'Screw to wall' pattern.

GALVANISED STEEL TUBES AND FITTINGS

Galvanised steel tubing shall comply with B.S. 1387, 'medium' grade with plain galvanised malleable cast iron fittings complying with B.S. 1256.

Ferrous straps for baths shall comply with B.S 1291 and for sinks shall be galvanised iron screwed for connections.

Tubes shall be fixed clear of walls of soffits, with galvanised malleable iron brackets complying with B.S. 1494, Table 6a or 7a spaced at not more than 30 metre centres.

COPPER TUBES AND FITTINGS

Copper tubes shall comply with B.S. 569 and shall be of the gauges shown in Table 2. Tubes shall be mechanically scoured at works to remove all foreign matter. Fittings shall have compression joints. Copper traps shall comply with B.S 1184 solid drawn traps for basins and sinks and cast for baths.

TUBES SHALL BE JOINTED WITH COMPRESSION FITTINGS.

Tubes shall be fixed clear of walls of soffits with cast brass brackets complying with B.S. 1194, Table 6a or 7a spaced at not more than 24 metres centres.

PIPEWORK GENERALLY

Pipes shall be in the maximum lengths possible to avoid unnecessary jointing. Pipes shall be fixed to sufficient fall to prevent air locks and to enable the system to be drained through the draw-off points and drainage taps provided.

JOINTS GENERALLY

All joints shall be perfectly smooth inside

BENDS AND TEES

All bends shall be sweep bends or easy right angle bends. All tees shall be picher tees

SLEEVES

Where sleeves are required for pipes passing through concrete, brickwork, blockwork, etc., they shall be of galvanised steel tube or cast iron pipe of sufficient diameter to give a space of 3 mm all-round the pipe.

WIRE BALLOONS

Wire balloons shall be of cooper and shall comply with B.S 460 and 1205.

BRASSWORK

Ball valves shall be 'Portsmouth' type with silence pipe complying with B.S. 1212 for high or low pressure as described. Floats not exceeding 150 mm diameter shall be plastic type complying with B.S 2456.

Bib taps shall comply with B.S. 1010 and shall be of brass and chromium plated.

Stop valves shall comply with B.S 1010 and shall be of brass with crutch handles or loose keys where as directed.

CISTERNS

Storage cisterns shall be galvanised steel cisterns complying with B.S. 417, Grade 'A'. Holes for connections shall be made before galvanizing.

TESTING

At completing of the works, the Contractor shall clean out storage cisterns, including removing all swarf, fill and test the whole of cold and hot water installation, rectify all defects, drain and leave in clean serviceable condition

SANITARY FITTINGS

SUPPLIES

Sanitary fittings shall be supplied by an approved firm from whom the Contractor shall obtain a guarantee that the fittings will be delivered to site at such dates as the Contractor considers necessary for the completing of the works within the contract period.

QUALITY

Sanitary fittings generally shall be of a quality not less than that of products produced by M/S Twyford's Limited, and where catalogue references have been inserted in the descriptions they refer to this Manufacturer's Catalogue and are inserted as a guide to the type and quality required only.

PROTECTION

All sanitary fittings are to be carefully protected against misuse by workmen employed on the buildings works and any defects, soiled or broken fittings to be replaced at the Contractor's expense at completion.

ELECTRICAL INSTALLATIONS

GENERALLY

The Contractor is to employ an approved licensed electrical Contractor for this section of the work.

Materials are to conform to the relevant British or Kenya Standards. The work is to be carried out in accordance with the requirements of the electrical Power act and the Regulations made thereunder and to the requirements of the supply Company

CABLES

The wiring is to be carried out in Rubber PVC or polythene insulated cables, tough Rubber or PVC sheathed and of appropriate size but not less than 17/0.29 for ring circuits and not less than 3/0.29 for lighting circuits.

CONDUITS

Where buried in plaster, cables are to run either in 'Egatube' (Agents: EDM. Schluter & Company (K) limited) or other similar approved rigid P.V.C oval section conduit with fixing clips of the material, in brazed or welded light gauge steel conduit complying with B.S. 31 bushed as necessary. The Contractor shall include conduit boxes and other conduit fittings as necessary, and provide draw wires where required.

Where a conduit is fixed externally it is to be on approved brackets and fixed not less than 10 mm clear of the finished wall surface.

SWITCH-GEAR

The Contractor shall provide and fix in each building in a position approved by the Architect, a hardwood board to accommodate main switches and fuses. This is to be large enough to accommodate the Supply Company's control equipment for 'off Peak' supply if so required.

The Contractor is to provide switch fuses or switch splitter, isolators, etc. as necessary and fix on main switchboard inside the building. To be of the insulated type. The Contractor shall also provide and fix on the outside of the building in a position

approved by the Architect; 1 No. hardwood board per house or per block, including meters and control equipment for 'Off Peak' supply if so required.

DISTRIBUTION AND CIRCULATING

In each building, socket outlets and switch socket outlets are to be on ring circuit, with spurs as necessary, and all other points on a 'tree' distribution system, the whole supplied through the same metre except where 'off peak' circuiting is used.

FUTURE EXTENSIONS

When only part of the complete buildings is being constructed the circuits are to be arranged and the cable sizes are to be such that the electrical installation can easily be extended as and when additional rooms are added in the future. Similarly the main switch and fuses are to be of a sufficient size and have a sufficient number of ways to take these future extensions.

WIRING METHODS AND FIXING

The cables are to be clipped to the roof members or to the ceiling joists above the ceilings or between the ceiling and the roof, securely fixed by means of non-corrodible saddles or buckle clips with non-corrodible fixings. Where there are ceilings and plastered walls, no cables are to be left exposed. They are to be run in conduit drops concealed in the walls, the conduit fixed before the plastering is carried out by means of fixing clips as previously specified, in the case of P.V.C. conduit, or crumpets or saddles in the case of steel conduit. Chasing it to kept to the minimum

Where walls are not plastered the cable is to be clipped to the surface of the walls as previously described.

In all cases the cables from the external metre box to or from the inside of the building are to pass straight through the walls from the backs of the box and are not to be visible externally.

ACCESSORIES GENERALLY

When the installation is specified to consist of wiring only, lighting fittings, switches, socket outlets switch gear or other accessories are to be provided and every wiring point for such accessories is to have a blanking plate or fixing blocks securely fixed in position with the ends of the cable coiled behind it.

Where surface wiring is installed the accessories are to be as specified hereafter but mounted on moulded plastic box.

Accessories are to be fixed either with screws of the same finish and colour as the accessory or with round headed rust-less screws.

LIGHTING POINTS

Ceiling points except in wet core areas are to consist of 3-plate brown plastic ceiling rose on pattress or hardwood block with length of flexible cord of approved colour and brown plastic B.S. type lamp-holder with cord grips and shade ring (similar to Crabtree List No. 5300).

Ceiling points in wet core areas are to consist of brown plastic B.S Batten lamp-holder with shield on pattress or block as before (similar to Crabtree list No. 5382).

Internal wall brackets and external wall brackets protected from the weather are to consist of brown plastic angled B.C. Batten lamp-holder with ring on pattress or block as before.

External wall brackets not protected from the weather are to consist of approved water tight enclosed fittings.

Wall switches for lighting points are to be flush one-way or two-way brown plaster depth box and fixed at a height of 1450 mm from floor level.

Ceiling pull switch for lighting is to be one-way or two-way brown plastic with cord to within 1450 mm of the floor (similar to Crabtree List No. 2040 or 2140) with pattress or block as before

Each lighting point is to be provided with a pearl lamp or the voltage shown.

SOCKET OUTLETS

Socket outlets are to be brown plastic 13-amps shuttered rectangular pin with plaster depth box (similar to Crabtree List No. 7255). To be single or twin as shown.

Switch socket outlets are to be all as described for socket outlets but with S.P. switch incorporated into the unit.

COOKER CONTROL UNITS

Cooker control units are to be 30 amps all insulated surface pattern with 13 amps rectangular pin shuttered socket (similar to Mk List No. 5040)

SPUT UNITS

Sput units are to be insulated flush brown double pole switched 13-amp with fuse links without pilot lamp with front cord outlet and with plaster depth boxes (similar to Crabtree List. No. 1816).

MAINS CONNECTIONS

The employer will arrange for the supply of Company's mains to be brought up to each meter board but the sub-Contractor will be expected to liaise with the employer and the Company to ensure that the supply is available at the proper time.

The Contractor shall provide suitable sized conduits as necessary for taking supply company's cables to the meter position.

EARTHING

All metal required by the Regulations to be earthed, including the earth-pin of socket outlets, is to be effectively connected to earth by stranded and tinned copper cable of not less than 7/029, either bare or insulated and laid in the cable runs. Metallic conduit may form part of the earthing system. Manhole and cover shall be allowed for earthing.

TESTING

On completion, all installations must pass the tests required by the relevant statutes. The Contractor will be required to produce completion certificate issued by the relevant authorities.

PLASTER WORK AND OTHER FINISHES

CEMENT

The cement shall be as previously described in 'Concrete Work'.

SAND

The sand shall be as described for fine aggregate but that for plastering shall be light in colour and well graded to a suitable fineness in accordance with the nature of the work in order to obtain the finish directed.

LIME

The lime for plastering shall comply with B.S. 890 Class 'A' for non-hydraulic lime and shall be as rich as obtainable and to approval. 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 sixty four meshes to the square inch. Lime putty shall consist of freshly slaked lime as above described, 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 the consistency of thick paste, in no case for a shorter period than one month before use, 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 dampness until required for use. It shall be soaked to a putty

at least 24 hours before use.

COMPOSITION OF PLASTERS, ETC.

A mix referred to as 1:4 shall mean 41 kg of cement and 0.45 m³ of sand. All other mixes shall be construed in a like manner.

HACKING ETC.

The prices for all paving and plastering, etc. shall include for hacking concrete surfaces and for raking out joints of walls 13 mm deep and for cross scoring undercoats to form a proper key.

Plastering on walls generally shall be taken to include flush faces of lintels, beams, etc. in same.

All surfaces to be paved or plastered must be brushed clean and well wetted before each coat is applied. All cement pavings and plaster shall be kept continually damp in the intervals between application of coat and for seven days after the application of the final coat.

DUBBING OUT

Where required shall be composed of one part of cement to six parts of sand.

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.

SAMPLES

The Contractor shall prepare sample square yards or 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 to the respective approved samples.

FINISH GENERALLY

All screeds and paving shall be finished plump, square, smooth, hard and even and junctions between surfaces shall be perfectly true, straight and square.

All work shall be approved and any not complying with the above shall be hacked away and replaced at the Contractor's expense.

ARISES AND ANGLES

All arises and angles shall be clean and sharp or slightly rounded or thumb coved as directed including neatly forming mitres.

MAKING GOOD

All making good shall be cut out to a rectangular shape, the edges undercut to form dovetail key and finished flush with the face of the surrounding paving or plaster. Cut out and make good all cracks, blister and other defects and leave the whole of the work perfect on completion.

PRICES TO INCLUDE

In addition to the foregoing, prices of superficial items are to include for work in narrow widths, all linear labours, angles and arises, all fair edges, for making good up to or stopping to a line at the required level at top of skirting or dado rails where directed and for making good up to windows doors frames and similar.

The prices for all linear items unless otherwise measured are to include for all short lengths, angles and arises, mitres and ends of every description.

FLOOR SCREEDS

Shall be composed of cement and sand and shall not be laid in an area exceeding one hundred and twenty square feet during any period of 24 hours. As bays are formed, batten strips must be used to retain the exposed edge of the screed.

Lime plastering shall consist of first coat in cement lime and sand (1:2:9) and finish coat of lime putty skin with 10% cement added. The two coats shall have a total finished coat of not less than 12 mm thick.

The first coat shall be trowelled to a perfectly true and even surface and finished with a wood float, the surface being sprinkled with water from a brush during the process and before it has set, thoroughly scratched to form key. The finishing coat shall not be less than 1 mm thick thoroughly worked with trowel and sprinkled with water as before and be brought to a uniform smooth hard surface.

Lightweight roof screeds shall consist of cement, sand and pumice (1:3:7) and finished with a 13 mm layer of cement and sand (1:4). Screeds shall not be laid in areas exceeding one hundred and twenty square feet during any period of 24 hours. As bays are formed batten strips must be used to retain the exposed edge of the screed. Screeds shall be finished to falls and crossfalls to receive other finishes as specified.

P.V.C. FLOOR TILING

P.V.C. floor tiling shall be asbestos based vinyl floor tiles complying with B.S. 3260.

WHITE GLAZED WALL TILES

Shall be imported quality and of approved size and thickness, with associated fittings all to B.S. 1281. Tiles shall be well soaked in water, laid with straight horizontal and vertical joints and bedded in cement screed (1;4) and pointed in white cement and cleaned down on completion all to Architect's approval.

Rates for linear items shall include for all special fittings and cutting at angles and intersections.

GRANOLITHIC PAVINGS

The granolithic shall consist of one part cement (by volume) to two and a half parts (by volume) of local granite chips graded from 6 mm down to 3 mm with not more than 15% to pass a No. 50 B.S. sieve.

Granolithic shall be spread and well compacted and given only sufficient trowelling to produce a perfectly level surface immediately after laying. When the granolithic has stiffened sufficiently so that a hard surface can be obtained, then the surface shall be polished with a steel float to a perfectly even and smooth surface. On no account will dusting with neat cement to the surface be permitted.

POLISHED TERRAZZO

Shall be laid by an approved Sub-Contractor and shall consist of a screed or backing coat and a finishing coat of 'Snowcrete' and the marble chips (1:2) mixed with "cementone No 1" colouring compound in accordance with Manufacturer's instructions. Overall thickness are to be as later specified.

The finishing coat shall be a minimum of 12 mm thick for pavings and 9 mm thick for wall finishes, trowelled to a smooth and even finish and well rubbed and polished with carborandum.

TYROLEAN RENDERING

Tyrolean rendering shall consist of a backing coat approximately 12 mm thick of one part cement with 10% of lime by volume added to the cement and four parts of sand and a finishing coat of an approved shade of cement and sand of a suitable mix applied with a cement spraying machine to the Architect's approval. All adjoining surfaces shall be masked whilst spraying.

GLAZING

GLASS

All glass shall be of British manufacture complying with B.S. 952, free from flaws, bubbles, specks and other imperfections. All glass shall be delivered in proper containers with maker's name, guarantee, type of glass and thickness or weight of glass

attached to the outside of the containers.

Glass panes shall be cut to sizes to fit the openings with not more than 1.5 mm play all round and where puttied shall be sprigged to wood or clipped to metal frames.

Clear sheet glass shall be ordinary glazing (O.Q.) quality. Polishes plate glass shall be G.G. quality.

Obscured glass shall be rough cast plain rolled glass 6 mm thick.

Wired glass shall be polished Georgian wired glass 6 mm thick.

BEADS AND WASHLEATHER

The glass to doors and screens and other places where vibration may occur shall be bedded in washleather with beads and fixed with brass cups and screws.

The timber rebates shall be cleaned, primed and painted with one coat of oil paint.

PUTTY

For glazing in wood frames shall be composed to pure linseed oil and powdered whitting free from grit in accordance with B.S. 544 type 1 putty.

Putty for glazing in metal frames shall be quick hard setting tropical putty specifically 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 ten days after glazing.

BEDDING STRIPS

Shall be of plastic or wash leather approved by the Architect and shall be cut to fit exactly the line of frame and beads

ON COMPLETION

Remove all broken scratched or cracked panes and replace with new to the satisfaction of the Architect; clean inside and out with an approved cleaner. On no account shall windows be cleaned by scraping with glass.

PAINTING AND DECORATING

APPROVED SPECIALIST

All work under this trade must be executed by an approved specialist, unless the Architect agrees otherwise.

GENERALLY

The Contractor shall arrange his programme for work such that all other trades within the area where painting is being done are completed before painting begins. Before painting the Contractor must prepare the surfaces to the satisfaction of the Architect and in accordance with the paint manufacturer's instructions.

All plaster, metal, wood or other surface which are to receive paint, stain, polish, distemper or paintwork of any description are to be carefully inspected by the painting Sub-Contractor and the main Contractor before paintwork commences. The Sub-Contractor should ensure that all such surfaces are finished (by the main Contractor) satisfactorily before commencing any paintwork as he (the Sub-Contractor) will be held responsible for any defective paintwork arising from the background being of unsatisfactory finish prior to the paint being applied on it.

PAINTING GENERALLY

All materials are to 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.

All materials to be applied externally shall be of exterior quality and/or recommended by the Manufacturers for external use.

All materials shall be delivered on site intact in the original sealed drums or tins and shall be mixed and applied strictly in accordance with 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,

If required by the Architect the Contractor is to 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.

The priming, undercoats and finishing coats shall each be of differing tints and the priming and undercoats shall be the correct brands and tints to suit the respective 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.

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 coat is applied. The paintwork shall be finished smooth and free from brush marks.

Colour cards of all paints, etc., shall be submitted to and samples prepared for approval

of the Architect before laying on and such samples, when approved, shall become the standard for work.

Oil 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.

No painting is to be done in wet weather or on surfaces which are not thoroughly dry.

Prices of paint, distemper, etc. shall include for preparation of surfaces, rubbing down between each coat, stopping, knotting, etc., and all other work in connection and as described and as necessary to obtain a first class and proper finish to approval.

Emulsion paint on ceiling and all undercoats of emulsion paint and completed oil painting on walls shall be completed before floorings are laid. Final coats of emulsion paints on walls shall be applied after such flooring has been laid complete.

SAMPLES

The Contractor shall furnish at the earliest possible opportunity before work commences and at his own cost, samples of painting for the Architect's approval and any further samples in the case of rejection until such samples are approved by the Architect and such samples when approved shall be the minimum standard for the work to which they apply.

The Architect may reject any materials or workmanship not in his opinion up to the approved samples and these must be removed from the site without delay.

PREPARATION AND PRIMING OF PLASTER, ETC., SURFACES

Plaster surfaces shall be perfectly smooth, free from defects and ready for decoration. All such surfaces shall be allowed to dry for a minimum period of six weeks, stopped with approved plaster stopping compound and rubbed down flush, as necessary, and then be thoroughly brushed down and left free from all efflorescence, dirt and dust immediately prior to decorating.

Plaster surfaces which are to be finished with emulsion, oil or enamel paint, shall be primed with Leyland primoplas P.20 or other equal and approved and applied in accordance with the Manufacturer's instructions.

PREPARATION AND PRIMING OF FIBREBOARD

Fibreboard 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 stopping compound rubbed down flush and left with a texture to match surrounding materials and shall receive one coat primer at last.

PREPARATION AND PRIMING OF METAL WORK

All surfaces shall be thoroughly brushed down with wire brushes, sanded and scraped where necessary to remove all scale rust, etc., immediately prior to decoration and given one coat of red oxide primer, 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.

Galvanised surfaces shall be treated before painting with a solution of calcium plumbate, applied in strict accordance with the Manufacturer's printed instructions (agent, M/S Dodwell & Co., Nairobi) or with an approved calcium plumbate primer.

PREPARATION AND PRIMING WOODWORK

All woodwork shall be rubbed down, all knots covered with a thick coat of good shellac or aluminium knotting; primed with one coat of approved ready mixed proprietary wood primer and all cracks, nails holes, defects and uneven surfaces, etc., stopped and faced up with hard stopping rubbed down flush. Plywood shall be brushed filled over the entire surface

Woodwork to receive finishes other than paint shall have all stains removed and shall be well rubbed down and have all defects leveled with hard stopping of a colour to match the adjoining surface.

WOOD PRESERVATIVE

All woodwork in contact with walling or plaster shall be treated after cutting and preparation but before assembly or fixing with one coat of approved wood preservative.

WAX POLISH

Wax polish shall be furniture polish of an approved brand, and wood surfaces shall be clean, smooth, and free from oil or grease or any other blemishes. A minimum of two coats shall be applied to approval.

EMULSION PAINT

Emulsion paint shall be of approved brand. After preparation as specified above a minimum of three coats shall be applied using a thinning medium of water only if and as recommended by the Manufacturer.

An approved plaster primer tinted to match may be used for the first coat.

ENAMEL PAINT ON METAL WORK AND WOODWORK

Enamel paint shall be of approved brand. Apply one undercoat and two finishing

coats, after preparation and priming as specified above.

IRONMONGERY

Where instructed, all ironmongery on existing components to be painted shall be removed from joinery, steel windows and louvres before painting is commenced, and shall be cleaned and oiled and adjusted if necessary and re-fixed after completion of painting.

PAINTING ITEMS

Painting items as billed hereafter shall include for preparing and priming surfaces as described above.

COVER UP

Cover up all floors, fittings, etc., with dust sheets when executing all painting and decorating works.

CLEANING AND TOUCH UP

Paint splashes, spots and stains shall be removed from floors, woodwork, etc., and any damaged surfaces touched up and the whole of the work left clean and excellent upon completion.

EXTERNAL DRAINAGE

GENERAL

B.S. CODE OF PRACTICE

Except where inconsistent with this specification all stormwater and foul drainage shall use materials which comply with the relevant current British Standard and all workmanship, methods, testing and procedures shall be in accordance with the British Standard Code of Practice C.P. 301.

STORMWATER DRAINAGE

OPEN LINE DRAINS

Open line drains shall be in the precast concrete invert blocks and slabs jointed in 1:4 cement sand mortar and flush pointed as shown on the drawings. They shall be laid on line and level as shown to an even gradient between culverts or junctions. Unlined shoulder shall be neatly sloped off at a gradient steeper than 1 or 1 1/2. The distance measured up the slope of the shoulder shall not exceed 2' without being broken by a horizontal ledge 450 mm wide.

BEDDING AND BACKING OF DRAIN LINING

Bedding and backing shall normally be on 50 mm thickness of sieved granular soil approved by the Architect. Should the Architect consider it to be desirable in case of the soil being highly expansive clay, or because of the proximity of a tree or for other valid reasons, he will order the bedding and/or backing to be replaced by 100 mm thick bed of concrete 1:4:8 for such length of drain as he deems fit. The Contractor shall bring cases of suspected weak drain foundations to the notice of the Architect because if, during the maintenance, a drain should fail, the damage shall be made good and concrete bedding and/or backing replaced, all at the Contractor's expense unless warning was given at the time of construction of a likelihood of failure.

CULVERT PIPES.

Culvert pipes shall be of un-reinforced precast concrete and ogee jointed in accordance with BS. 556 - 'Cement Concrete Cylindrical Pipes and Tubes'

PRECAST CHANNELS, INVERT BLOCKS, SLABS AND COVERS

All precast items for incorporation in open or covered drains shall be as detailed on the drawings and shall be of concrete grade 'C'

CULVERTS

All culvert pipes shall be laid to falls given on the drawings unless otherwise detailed. Culvert headwalls shall be founded on 150 mm Deep grade 'D' concrete and constructed in 225 mm solid concrete blocks in accordance with the drawings. All mortar joints in headwalls shall be in cement sand (1:4) mortar and flush pointed.

Mortar caps to all walls shall be of similar mortar. All haunching, coving and benching in junctions between culverts and invert blocks drains shall be in concrete Grade 'C' as specified wood floated to a fair face. All excess excavations to trench for culvert pipes between walls shall be backfilled in concrete Grade 'E' and the Contractor shall include for this contingency in the bills of quantities as no claims for extra on this account will

be accepted by the Engineer.

DRAINAGE

EXCAVATION OF TRENCHES

Excavating trenches is measured in terms of length only regardless of the width of the trench. The Rates in the Bills of Quantities shall include for all strutting and timbering and it shall be the responsibility of the Contractor to ensure that the safety of his employees is assured by the adequate strutting and timbering of all excavations. Excavations shall be made to such depths and at least 12" wider than the pipe and as may be required by the Engineer to obtain proper falls and firm foundations. No permanent construction shall be commenced on any trench until the excavation has been examined and approved by the Engineer. Prices for excavations must include for trimming bottoms to the necessary falls and for any extra excavation required for planking and strutting and working space.

KEEP EXCAVATIONS DRY

The Contractor shall keep the whole of the trenches or other excavations free from water, and he shall execute such works and install such pumps as may be required to keep the excavation dry at all times. No subsoil water shall be discharged into the sewers without the written permission of the Engineer.

REFILLING OF PIPE TRENCHES

All surplus excavated materials shall be disposed of. After the pipes are laid and tested they shall be surrounded with selected materials, carefully packed into place. The remainder of the trench shall be filled with suitable material thoroughly rammed in 150 mm layers to the satisfaction of the Engineer. Where excavated materials are not sufficient, material shall be brought from other sections of excavations or from approved borrow pits.

BEDDING, HAUNCHING AND SURROUNDING DRAIN PIPES

1. Normally all pipework including precast concrete pipework shall be bedded on prepared earth bed in accordance with the details on the drawings.
2. All pipework shall be surrounded with a minimum thickness of 150 mm concrete throughout where shown on the drawings. Where pipes are specified to be haunched, the concrete shall be carried up from the outside edge of the bed to meet the pipe barrel tangentially.

The Contractor is to allow in his rates for beds and surrounds, for forming recesses and filling with concrete, for mortar layers, etc., and for any necessary formwork.

PRECAST CONCRETE PIPES

Shall be to B.S 2760 and of approved manufacture. Joints shall be made with straight couplings as indicated in the B.S. and the laying, cutting and jointing shall be carried strictly in accordance with the Manufacturer's printed instructions.

TESTING DRAINS

Each section of pipe between manholes or inspection chambers shall be tested under a minimum residual static head of the head of the section of 1.50 metres of water to the satisfaction of the Engineer.

MANHOLES

The construction of regular manholes shall be in accordance with the drawing, in 225 mm dressed coursed stonework or solid concrete blockwork set in cement and sand (1:4) rendering internal faces only. Step irons shall be set in as well as being constructed to avoid breaking holes in completed walls. Channels and benching shall be of Grade 'C' concrete floated to fair face, trench pipes shall not enter the manhole lower than at the same crown level as the outlet pipe.

GULLEY TRAPS

Gulley traps shall be generally as shown on the drawings and shall be of the best manufacturer and approved by the Engineer.

STEP IRONS

Step irons shall be from galvanised mild steel, 18 mm diameter bars, and shall be as per the dimensions shown on the drawings.

INSPECTION COVERS AND FRAMES

Except where otherwise indicated, covers and frames for inspection chambers and manholes shall be to B.S. 497 of 1967, table 6.

BUILDERS WORK

Item	Description	Unit	Amount (KShs)
	<u>PRELIMINARIES</u>		
	<u>General Matters</u>		
A	Water for the works	item	
B	Lighting and Power for the works	item	
C	Insurance against injury to persons, property and works	item	
D	Performance Bond	item	
E	Security and transport	item	
	<u>Temporary Works</u>		
F	Temporary Buildings for the Contractor's use	item	
G	Temporary telephone facilities	item	
H	Temporary fencing, hoarding, screening etc.	item	
J	Samples for the Architect/engineer's approval	item	
K	General Scaffolding & plant	item	
	<u>Protection and Cleaning</u>		
L	Protection of the works	item	
M	Removal of rubbish and cleaning	item	
N	Health, safety and enviromental compliance	item	
	<u>Works by Public Bodies</u>		
P	Provisional Sum for any approvals or works to be carried out by public undertakings	sum	
Q	Allow for special attendance	item	
	<u>Others</u>		
R	The bidder to insert a sum (if he deems necessary) to cover any other cost to be incurred by him that is not covered by the items in the Bills of Quantities. The bidder shall attach a breakdown of the sum inserted. Sums not accompanied by a breakdown shall not be included in the preliminaries	item	
	PRELIMINARIES; CARRIED TO GRAND SUMMARY		

GROUND FLOOR

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>GROUND FLOOR</u>				
	<u>ELEMENT NO. 1: DEMOLITIONS & REPAIRS</u>				
	<u>Pricing Notes</u>				
	<u>Tenderers are strongly advised to read and understand the following notes before pricing this section. Any query on the notes should be referred to the Quantity Surveyor or Project Architect</u>				
1	The unit of billing in this section is "item"				
2	Amounts for demolitions shall include the following in addition to what is described in the particular item: a) Making good i.e. re-instatement of any finishes and structures affected by the demolition work to the original state. b) Clearing debris with speed on a daily basis as they arise, cleaning of affected surfaces, and removal of the debris from site to local authority approved dumping sites. Accumulation of debris within the site premises shall not be allowed.				
3	Demolition work shall be carefully executed with the particular aim of minimizing damage to adjacent finishes, structure, or components.				
4	The amounts quoted shall be deemed to be inclusive of all handling of the removed items and their removal from site.				
5	Amounts given should include for adequate temporary support and protection for the remaining elements of the buildings being demolished and to adjacent buildings and services.				
6	All materials, components and fittings arising from the demolitions work shall become the property of the Contractor. The tenderer is therefore expected to give realistic credit in the appropriate column for items which have salvage value.				
7	Amount indicated will be adjusted against the approximate quantities to reflect the actual quantity of demolition work executed on site as shown in the layouts or directed by the architect.				
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Walling</u>				
A	Carefully demolish walls including cutting using a diamond cutter to create new openings where directed; (approximately 50m ²); make good all affected areas	Item			
B	Carefully remove existing timber partitions complete with frame fixed to plastered and painted masonry wall and store or cart away as directed. (approx. 81m ²) make good all affected areas	Item			
	<u>Canopy covering</u>				
C	Carefully remove existing broken laminated glass covering and store well for reuse or cart away as directed. (approx. 20m ²)	Item			
	<u>Wall Finishes</u>				
	<u>Internally</u>				
D	Carefully hack out existing plaster to affected walls and sides of column and make good surface to receive new finish (approx. 50m ²)	Item			
E	Carefully hack existing wall to remove ceramic tiles wall finishes: prepare surfaces for new finishes; (approx. 190m ²)	Item			
	<u>Externally</u>				
F	Carefully hack existing columns to remove glazed tiles finishes: prepare surfaces for new finishes; (approx. 128m ²)	Item			
	<u>Floor Finishes</u>				
G	Carefully hack existing floor & staircase to remove floor tiles: prepare surfaces for new finishes; approx. 100m ²)	Item			
H	Carefully hack out existing screed average 25mm thick and make good surface to receive new finish (approx. 100m ²)	Item			
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Expansion Joint</u>				
A	Carefully hack through existing expansion joint average 50 mm wide and cart away arising debris; prepare surfaces for new finishes; approx. 45m)	Item			
	<u>Ceiling Finish</u>				
B	Carefully remove existing acoustic ceiling tiles including existing exposed grid suspension system and and store or cart away as directed. (approx. 350m ²)	Item			
C	Carefully remove existing ceiling boards including existing suspension system and store or cart away as directed. (approx. 55m ²)	Item			
	<u>Doors</u>				
D	Carefully remove existing timber doors complete with frame including iron mongery fixed to plastered and painted masonry wall and store or cart away as directed. (19No)	Item			
E	Carefully remove existing aluminium doors complete with frame including iron mongery fixed to plastered and painted masonry wall and store or cart away as directed. (2No)	Item			
F	Carefully remove existing duct doors complete with frame including iron mongery fixed to plastered and painted masonry wall and store or cart away as directed. (3No)	Item			
	<u>Timber partitions</u>				
G	Allow for removal of existing timber partitions as directed, store well for reuse; prepare for new partitions	Item			
	<i>Carried to Collection</i>				

[illegible]

Item	Description	Unit	Qty	Rate	Amount (Ksh)
A	<u>ELEMENT No. 3: PARTITIONING</u>				
	<u>Acoustic partitions</u> Supply, deliver and fix 50mm thick sliding folding acoustic partitions; Each leaf consisting of individually operated top hung panels of laminated MDF facing with 25mm thick polyethylene infill and cypress lipping; Track system shall be extruded aluminium, maintenance free with heavy-duty ball bearing steel rollers; With retractable top and bottom seals able to deal with floor level differences up to 20 mm; Complete with hinges, bolt locks, aluminium flush handles and cylinder lock with escutcheon; all to Architect's detail and approval	sm	146		
	PARTITIONING CARRIED TO FLOOR SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
A	<u>ELEMENT NO. 4: ROOFING</u> <u>Glass canopy covering</u> 12mm thick laminated glass; laid in accordance with manufacturers printed instructions by an approved specialist subcontractor.	sm	20		
	ROOFING CARRIED TO SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>ELEMENT No. 5: DOORS</u>				
	<u>Timber Doors</u>				
	<u>Panel Doors</u>				
A	50mm thick; 900mm x 2400mm overall height, single leaf polished hardwood paneled doors, including timber frame and accessories (m.s) with corresponding sizes, timber beading to Architect's detail and specification	No	3		
B	Ditto but overall size 1000mm x 2400mm high	No	2		
C	50mm thick; 800mm x 2100mm overall height, single leaf polished hardwood paneled doors, including timber frame and accessories (m.s) with corresponding sizes, timber beading to Architect's detail and specification	No	14		
	<u>Rebated polished mahogany: prime grade</u>				
D	225mm x 50mm door frames with two labours	m	99		
E	50mm x 25mm Architrave: splayed	m	198		
	<u>Prepare and apply one coat of aluminium wood primer on timber surfaces in contact with concrete or masonry</u>				
F	Over 100 but not exceeding 200 mm girth	m	198		
G	Not exceeding 100 mm girth	m	99		
	<u>Prepare surfaces: apply three coats polyurethane clear lacquer or other equal approved: on timber surfaces: to</u>				
H	Over 100mm but not exceeding 200mm girth	m	198		
J	Not exceeding 100 mm girth	m	99		
K	General surfaces of timber doors	sm	70		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Supply and fix: 'UNION' or other equal approved ironmongery: matching screws: locks to include a set of 3 keys: available from their authorised local dealers; brass finish to architects approval</u>				
A	100mm brass butt hinges	Prs	38		
B	Union euro profile cylinder lockset complete with matching handles	No	5		
C	Indicator vacant/enganged bolt	No	14		
D	38mm diameter oval brass door stop; floor or wall mounted	No	19		
E	Buffer brass coat hook	No	14		
	<u>Existing Timber Doors</u>				
	<u>Prepare surfaces: apply two coats polyurethane varnish on wood: to surfaces; Rates to include for sanding and polishing of timber surfaces.</u>				
F	General surfaces of timber doors	sm	116		
	<u>Metal Doors</u>				
	<u>Supply and fix the following steel door; complete with all necessary ironmongery, steel sections, frame, mullion and stiles (refer to Architect's details)</u>				
G	Purpose made mild steel casement door overall size 1800mm x 2400mm high single leaf size; 6 mm clear glass and glazing; 300mm high x 5mm thick mild steel kickplate at the lower part; complete with frame; one coat red oxide primer; all ironmongery and fixing accessories; as detailed in the Architect's schedule	No	3		
	<u>Duct doors</u>				
H	Purpose made mild steel lourved door overall size 1200mm x 2400mm high single leaf; complete with frame; one coat red oxide primer; all ironmongery and fixing accessories; as detailed in the Architect's schedule	No	3		
	<u>Prepare surfaces and apply three coats of approved gloss paint to mild steel metal surfaces; spray painted to approval</u>				
J	Doors; both sides measured	sm	94		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>ELEMENT No. 6: WINDOWS</u> <u>Curtain Walling</u> <u>Curtain wall system ConWall TM CW 60 as supplied by an approved manufacturer and bolted to Reinforced Concrete beams with the following specifications: 200mm x 75mm x 2mm thick powder coated mullions and transomes with moment of inertia adequate for the structural requirement to the facade taking cognisance of wind load, span and building height. Deflection to be limited to 1/175 of span; Dry glazing with EDPM gaskets for fixed glass; structurally glazed vents with visible frame to outside with friction stay opening devices or manufacturers recommended equivalent stay system. Powder coated aluminium fixing brackets; Provision for expansion/contraction; System should be weather tight; each glass pane should be ventilated via the 4No. corners; system should have integral pressure equalization with condensation and drainage provision; fire barrier provision in between each floor; Glass 8mm thick laminated solar receptive glass unless otherwise specified; pressed aluminum powder coated cills under all windows</u>				
A	Curtain walling <u>Glazing</u> <u>4mm thick clear glass glazing to casements with linseed putty</u>	sm	420		
B	Windows; pane size to Architect's details <u>Prepare surfaces, three coats gloss oil paint; spray painted to metal surfaces;</u>	sm	50		
C	Windows, both sides measured	sm	420		
	WINDOWS CARRIED TO SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>ELEMENT No. 7: FINISHES</u>				
	<u>Floor finishes</u>				
	<u>Screed: cement and sand (1:4) on concrete: wood floated finished</u>				
A	32mm thick screed to receive porcelain tiles	sm	100		
	<u>Porcelain Tiles</u>				
	<u>Supply and fix approved porcelain tiles; non-slip floor tiles (Prime Cost Sum Kshs. 2500.00 per square metre); to regular pattern; bedding and jointing in cement mortar (1:4); grouting joints with matching cement.</u>				
B	600mm x 600mm x 10mm thick floor tiles	sm	100		
C	Ditto; 100mm high tile skirting	m	25		
	<u>Terrazo finish</u>				
	<u>Supply and fix insitu terrazo floor finish including including all surface preparation, dividing strips and polished smooth laid on screed (m/s).</u>				
D	20mm thick; general floor surfaces	sm	50		
	<u>Existing Terrazo finish</u>				
	<u>Careful cleaning and mechanical polishing of existing terrazzo floor surface to restore finish, including removal of dirt, stains, and surface imperfections using approved materials and methods. Work to include grinding, honing, and polishing in multiple stages to achieve a smooth, high-gloss finish. Final cleaning and sealing to be carried out using manufacturer-recommended sealants; all as per Architect's instruction</u>				
E	General floor surfaces	sm	1232		
	<u>Expansion Joint</u>				
F	25mm x 25mm thick polysulphide or other equal and approved expansion joint sealant	m	45		
G	25mm thick "Thioflex" or other equal and approved expansion joint filler	sm	27		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Wall and column finishes</u>				
	<u>Internal Wall Finishes</u>				
	<u>Plaster: 12mm cement/lime putty/sand: steel trowelled: on masonry or concrete: to</u>				
A	Wall and columns finished smooth	sm	50		
	<u>Backing: 15mm cement/sand (1:4): on masonry or concrete: wood float finished: to</u>				
B	Walls and concrete surfaces	sm	190		
	<u>Supply and fix approved ceramic tiles; wall tiles; (Prime Cost Sum Kshs. 2000.00 per square metre) to regular pattern; bedding and jointing in cement mortar (1:4); grouting joints with matching cement. Rates to include for aluminium corner strip.</u>				
C	600mm x 300mm x 8mm thick wall tiles	sm	190		
	<u>Prepare wall and apply first quality silk vinyl as per Architects requirement and approval; two coats of supamatt emulsion or other approved as undercoat; one coat of skimming as walltex filler or other approved between the undercoats; and two final coats of first quality silk vinyl all as per Architect's instruction</u>				
D	Walls and concrete surfaces internally	sm	50		
	<u>Prepare wall and apply first quality silk vinyl as per Architects requirement and approval; two final coats of first quality silk vinyl all as per Architect's instruction</u>				
E	Re-painting existing surfaces	sm	1,607		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>External finishes</u>				
	<u>Wall finishes</u>				
	<u>Prepare surfaces: apply three coats weather proof paint or other equal approved: on steel trowelled plaster: to</u>				
A	External walls	sm	408		
	<u>Ceiling and beam finishes</u>				
	<u>Plaster: 12mm cement/lime putty/sand: steel trowelled: on masonry or concrete: to</u>				
B	Soffits of horizontal slab finished smooth	sm	50		
	<u>Prepare wall and apply first quality vinyl matt as per Architects requirement and approval; two coats of supamatt emulsion or other approved as undercoat; one coat of skimming as walltex filler or other approved between the undercoats; and two final coats of first quality matt vinyl all as per Architect's instruction</u>				
C	Walls and concrete surfaces internally	sm	50		
	<u>Prepare wall and apply first quality vinyl matt as per Architects requirement and approval; two final coats of first quality matt all as per Architect's instruction</u>				
D	Repainting of horizontal ceiling surfaces	sm	1,225		
E	Ditto sloping surfaces	sm	110		
	<u>Acoustic ceiling</u>				
	<u>600mm x 600mm Approved Armstrong fine fissured or other equal and approved lay in grid acoustic tile suspended ceiling on and including exposed grid suspension system with 24mm wide sections complete with hangers at approved positions from soffits (m.s) strictly in accordance with the manufacturer's printed specifications to the following areas.</u>				
F	To general surfaces	sm	505		
<i>Carried to Collection</i>					

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>PROPOSED RENOVATION WORKS TO TUITION COMPLEX, AT KCA UNIVERSITY MAIN CAMPUS, RUARAKA, NAIROBI COUNTY</u> <u>GROUND FLOOR</u> <u>SUMMARY</u> <u>ELEMENT No.</u>				
1	DEMOLITION & REPAIRS		GF / 4		
2	WALLING		GF / 5		
3	PARTITIONING		GF / 6		
4	ROOFING		GF / 7		
5	DOORS		GF / 10		
6	WINDOWS		GF / 11		
7	FINISHES		GF / 15		
8	FIXTURES & FITTINGS		GF / 16		
	TOTAL GROUND FLOOR CARRIED TO BUILDERS WORKS SUMMARY				

FIRST FLOOR

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>FIRST FLOOR</u>				
	<u>ELEMENT NO. 1: DEMOLITIONS & REPAIRS</u>				
	<u>Pricing Notes</u>				
	<u>Tenderers are strongly advised to read and understand the following notes before pricing this section. Any query on the notes should be referred to the Quantity Surveyor or Project Architect</u>				
1	The unit of billing in this section is "item"				
2	Amounts for demolitions shall include the following in addition to what is described in the particular item: a) Making good i.e. re-instatement of any finishes and structures affected by the demolition work to the original state. b) Clearing debris with speed on a daily basis as they arise, cleaning of affected surfaces, and removal of the debris from site to local authority approved dumping sites. Accumulation of debris within the site premises shall not be allowed.				
3	Demolition work shall be carefully executed with the particular aim of minimizing damage to adjacent finishes, structure, or components.				
4	The amounts quoted shall be deemed to be inclusive of all handling of the removed items and their removal from site.				
5	Amounts given should include for adequate temporary support and protection for the remaining elements of the buildings being demolished and to adjacent buildings and services.				
6	All materials, components and fittings arising from the demolitions work shall become the property of the Contractor. The tenderer is therefore expected to give realistic credit in the appropriate column for items which have salvage value.				
7	Amount indicated will be adjusted against the approximate quantities to reflect the actual quantity of demolition work executed on site as shown in the layouts or directed by the architect.				
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Walling</u>				
A	Carefully demolish walls including cutting using a diamond cutter to create new openings where directed; (approximately 50m ²); make good all affected areas	Item			
	<u>Timber partitions</u>				
B	Carefully remove existing timber partitions complete with frame fixed to plastered and painted masonry wall and store or cart away as directed. (approx. 100m ²) make good all affected areas	Item			
	<u>Steps</u>				
C	Carefully demolish existing reinforced concrete steps including cutting using a diamond cutter to create new openings where directed; (approximately 1m ³); make good all affected areas	Item			
	<u>Wall Finishes</u>				
	<u>Internally</u>				
D	Carefully hack out existing plaster to affected walls and sides of column and make good surface to receive new finish (approx. 50m ²)	Item			
E	Carefully hack existing wall to remove ceramic tiles wall finishes; prepare surfaces for new finishes; (approx. 190m ²)	Item			
	<u>Floor Finishes</u>				
F	Carefully hack existing floor to remove floor tiles: prepare surfaces for new finishes; approx. 55m ²)	Item			
G	Carefully hack out existing screed average 25mm thick and make good surface to receive new finish (approx. 55m ²)	Item			
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Expansion Joint</u>				
A	Carefully hack through existing expansion joint average 50 mm wide and cart away arising debris; prepare surfaces for new finishes; approx. 45m)	Item			
	<u>Ceiling Finish</u>				
B	Carefully remove existing acoustic ceiling tiles including existing exposed grid suspension system and store or cart away as directed. (approx. 350m ²)	Item			
C	Carefully remove existing ceiling boards including existing suspension system and store or cart away as directed. (approx. 55m ²)	Item			
	<u>Doors</u>				
D	Carefully remove existing timber doors complete with frame including iron mongery fixed to plastered and painted masonry wall and store or cart away as directed. (19No)	Item			
E	Carefully remove existing duct doors complete with frame including iron mongery fixed to plastered and painted masonry wall and store or cart away as directed. (3No)	Item			
	<i>Carried to Collection</i>				
	<u>COLLECTION</u>				
	From Page FF / 1				
	From Page FF / 2				
	From Page FF / 3 (Above)				
	DEMOLITIONS & REPAIRS CARRIED TO SUMMARY				

[illegible]

Item	Description	Unit	Qty	Rate	Amount (Ksh)
A	<u>ELEMENT No. 3: PARTITIONING</u>				
	<u>Acoustic partitions</u> Supply, deliver and fix 50mm thick sliding folding acoustic partitions; Each leaf consisting of individually operated top hung panels of laminated MDF facing with 25mm thick polyethylene infill and cypress lipping; Track system shall be extruded aluminium, maintenance free with heavy-duty ball bearing steel rollers; With retractable top and bottom seals able to deal with floor level differences up to 20 mm; Complete with hinges, bolt locks, aluminium flush handles and cylinder lock with escutcheon; all to Architect's detail and approval	sm	165		
	PARTITIONING CARRIED TO FLOOR SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>ELEMENT No. 5: DOORS</u>				
	<u>Timber Doors</u>				
	<u>Panel Doors</u>				
A	50mm thick; 900mm x 2400mm overall height, single leaf polished hardwood paneled doors, including timber frame and accessories (m.s) with corresponding sizes, timber beading to Architect's detail and specification	No	3		
B	Ditto but overall size 1000mm x 2400mm high	No	2		
C	50mm thick; 800mm x 2100mm overall height, single leaf polished hardwood paneled doors, including timber frame and accessories (m.s) with corresponding sizes, timber beading to Architect's detail and specification	No	14		
	<u>Rebated polished mahogany: prime grade</u>				
D	225mm x 50mm door frames with two labours	m	99		
E	50mm x 25mm Architrave: splayed	m	198		
	<u>Prepare and apply one coat of aluminium wood primer on timber surfaces in contact with concrete or masonry</u>				
F	Over 100 but not exceeding 200 mm girth	m	198		
G	Not exceeding 100 mm girth	m	99		
	<u>Prepare surfaces: apply three coats polyurethane clear lacquer or other equal approved: on timber surfaces: to</u>				
H	Over 100mm but not exceeding 200mm girth	m	198		
J	Not exceeding 100 mm girth	m	99		
K	General surfaces of timber doors	sm	70		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Supply and fix: 'UNION' or other equal approved ironmongery: matching screws: locks to include a set of 3 keys: available from their authorised local dealers; brass finish to architects approval</u>				
A	100mm brass butt hinges	Prs	38		
B	Union euro profile cylinder lockset complete with matching handles	No	5		
C	Indicator vacant/enganged bolt	No	14		
D	38mm diameter oval brass door stop; floor or wall mounted	No	19		
E	Buffer brass coat hook	No	14		
	<u>Existing Timber Doors</u>				
	<u>Prepare surfaces: apply two coats polyurethane varnish on wood: to surfaces; Rates to include for sanding and polishing of timber surfaces.</u>				
F	General surfaces of timber doors	sm	110		
	<u>Duct doors</u>				
	<u>Supply and fix the following steel door; complete with all necessary ironmongery, steel sections, frame, mullion and stiles (refer to Architect's details)</u>				
G	Purpose made mild steel lourved door overall size 1200mm x 2400mm high single leaf; complete with frame; one coat red oxide primer; all ironmongery and fixing accessories; as detailed in the Architect's schedule	No	3		
	<u>Prepare surfaces and apply three coats of approved gloss paint to mild steel metal surfaces; spray painted to approval</u>				
H	Doors; both sides measured	sm	18		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>ELEMENT No. 6: WINDOWS</u> <u>Curtain Walling</u> <u>Curtain wall system ConWall TM CW 60 as supplied by an approved manufacturer and bolted to Reinforced Concrete beams with the following specifications: 200mm x 75mm x 2mm thick powder coated mullions and transomes with moment of inertia adequate for the structural requirement to the facade taking cognisance of wind load, span and building height. Deflection to be limited to 1/175 of span; Dry glazing with EDPM gaskets for fixed glass; structurally glazed vents with visible frame to outside with friction stay opening devices or manufacturers recommended equivalent stay system. Powder coated aluminium fixing brackets; Provision for expansion/contraction; System should be weather tight; each glass pane should be ventilated via the 4No. corners; system should have integral pressure equalization with condensation and drainage provision; fire barrier provision in between each floor; Glass 8mm thick laminated solar receptive glass unless otherwise specified; pressed aluminum powder coated cills under all windows</u>				
A	Curtain walling <u>Glazing</u> <u>4mm thick clear glass glazing to casements with linseed putty</u>	sm	430		
B	Windows; pane size to Architect's details <u>Prepare surfaces, three coats gloss oil paint; spray painted to metal surfaces;</u>	sm	50		
C	Windows, both sides measured	sm	420		
	WINDOWS CARRIED TO SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>ELEMENT No. 7: FINISHES</u>				
	<u>Floor finishes</u>				
	<u>Screed: cement and sand (1:4) on concrete: wood floated finished</u>				
A	32mm thick screed to receive porcelain tiles	sm	55		
	<u>Porcelain Tiles</u>				
	<u>Supply and fix approved porcelain tiles; non-slip floor tiles (Prime Cost Sum Kshs. 2500.00 per square metre); to regular pattern; bedding and jointing in cement mortar (1:4); grouting joints with matching cement. Rates to include for aluminium corner strip.</u>				
B	600mm x 600mm x 10 mm thick floor tiles	sm	55		
C	Ditto; 100mm high tile skirting	m	10		
	<u>Terrazo finish</u>				
	<u>Supply and fix insitu terrazo floor finish including including all surface preparation, dividing strips and polished smooth laid on screed (m/s).</u>				
D	20mm thick; general floor surfaces	sm	50		
	<u>Existing Terrazo finish</u>				
	<u>Careful cleaning and mechanical polishing of existing terrazzo floor surface to restore finish, including removal of dirt, stains, and surface imperfections using approved materials and methods. Work to include grinding, honing, and polishing in multiple stages to achieve a smooth, high-gloss finish. Final cleaning and sealing to be carried out using manufacturer-recommended sealants; all as per Architect's instruction</u>				
E	General floor surfaces	sm	1232		
	<u>Expansion Joint</u>				
F	25mm x 25mm thick polysulphide or other equal and approved expansion joint sealant	m	45		
G	25mm thick "Thioflex" or other equal and approved expansion expansion joint filler	sm	27		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Wall and column finishes</u>				
	<u>Internal Wall Finishes</u>				
	<u>Plaster: 12mm cement/lime putty/sand: steel trowelled: on masonry or concrete: to</u>				
A	Wall and columns finished smooth	sm	50		
	<u>Backing: 15mm cement/sand (1:4): on masonry or concrete: wood float finished: to</u>				
B	Walls and concrete surfaces	sm	190		
	<u>Supply and fix approved ceramic tiles; wall tiles; (Prime Cost Sum Kshs. 2000.00 per square metre) to regular pattern; bedding and jointing in cement mortar (1:4); grouting joints with matching cement. Rates to include for aluminium corner strip.</u>				
C	600mm x 300mm x 8mm thick wall tiles	sm	190		
	<u>Prepare wall and apply first quality silk vinyl as per Architects requirement and approval; two coats of supamatt emulsion or other approved as undercoat; one coat of skimming as walltex filler or other approved between the undercoats; and two final coats of first quality silk vinyl all as per Architect's instruction</u>				
D	Walls and concrete surfaces internally	sm	50		
	<u>Prepare wall and apply first quality silk vinyl as per Architects requirement and approval; two final coats of first quality silk vinyl all as per Architect's instruction</u>				
E	Re-painting existing surfaces	sm	1,700		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>External finishes</u>				
	<u>Wall finishes</u>				
	<u>Prepare surfaces: apply three coats weather proof paint or other equal approved: on steel trowelled plaster: to</u>				
A	External walls	sm	408		
	<u>Ceiling and beam finishes</u>				
	<u>Plaster: 12mm cement/lime putty/sand: steel trowelled: on masonry or concrete: to</u>				
B	Soffits of horizontal slab finished smooth	sm	50		
	<u>Prepare wall and apply first quality vinyl matt as per Architects requirement and approval; two coats of supamatt emulsion or other approved as undercoat; one coat of skimming as walltex filler or other approved between the undercoats; and two final coats of first quality matt vinyl all as per Architect's instruction</u>				
C	Walls and concrete surfaces internally	sm	50		
	<u>Prepare wall and apply first quality vinyl matt as per Architects requirement and approval; two final coats of first quality matt all as per Architect's instruction</u>				
D	Repainting of horizontal ceiling surfaces	sm	1,225		
E	Ditto sloping surfaces	sm	110		
	<u>Acoustic ceiling</u>				
	<u>600mm x 600mm Approved Armstrong fine fissured or other equal and approved lay in grid acoustic tile suspended ceiling on and including exposed grid suspension system with 24mm wide sections complete with hangers at approved positions from soffits (m.s) strictly in accordance with the manufacturer's printed specifications to the following areas.</u>				
F	To general surfaces	sm	505		
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>BALUSTRADING</u>				
	<u>Railing</u>				
	<u>Prepare surfaces and apply two coats of approved paint to mild steel metal surfaces; spray painted to approval</u>				
A	Railing; both sides measured	sm	90		
	<i>Carried to Collection</i>				
	<u>COLLECTION</u>				
	From Page FF / 13				
	From Page FF / 14				
	From Page FF / 15				
	From Page FF / 16 (above)				
	FINISHES CARRIED TO FLOOR SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>PROPOSED RENOVATION WORKS TO TUITION COMPLEX, AT KCA UNIVERSITY MAIN CAMPUS, RUARAKA, NAIROBI COUNTY</u> <u>FIRST FLOOR</u> <u>SUMMARY</u> <u>ELEMENT No.</u>				
1	DEMOLITION & REPAIRS		FF / 3		
2	WALLING		FF / 4		
3	REINFORCED CONCRETE SUPERSTRUCTURE		FF / 5		
4	PARTITIONING		FF / 6		
5	DOORS		FF / 9		
6	WINDOWS		FF / 10		
7	FINISHES		FF / 14		
8	FIXTURES & FITTINGS		FF / 15		
	TOTAL FIRST FLOOR CARRIED TO BUILDERS WORKS SUMMARY				

BUILDERS WORKS SUMMARY

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>PROPOSED RENOVATION WORKS TO TUITION COMPLEX, AT KCA UNIVERSITY MAIN CAMPUS, RUARAKA, NAIROBI COUNTY</u> <u>BUILDERS WORKS</u> <u>MAIN SUMMARY</u> <u>ELEMENT NO.</u>				
I	GROUND FLOOR		GF SUM		
II	FIRST FLOOR		FF SUM		
	TOTAL FOR BUILDERS WORKS CARRIED TO GRAND SUMMARY				

ELECTRICAL INSTALLATIONS

PROPOSED RENOVATIONS FOR KCA TUTION BLOCK
ELECTRICAL INSTALLATIONS PHASE 1
RATES TO INCLUDE VAT

Item	Description	Unit	Qty	Rate (KES)	Amount
1.0	<u>PRELIMINARIES</u>				
1.01	Performance Bond	Item	1		
1.02	Insurance of the works	Item	1		
1.03	Third party Insurance cover	Item	1		
1.04	Workmen's Compensation	Item	1		
1.05	Allow for preparation of working drawings, record drawings, instruction charts, maintenance manuals etc for the complete electrical installation, all as specified.	Item	1		
Total carried to summary page					

Item	Description	Unit	Qty	Rate (KES)	Amount
2.00	BASEMENT Supply, Deliver, Install, Set to Work and Commission the Following				
2.01	Provide for removal of existing light fittings and handing over to the client for safe keeping.	Lot	1		
	Light fittings All light fittings to have pf of >0.9, 4500K color temperature, 50,000 hours lifetime complete with driver and all accessories				
2.02	300mm x1200mm ceiling recessed day light of 36W LED fitting with 0.9pf, 105Lm/W, 5000K with a lifetime of 50,000hrs complete with driver and all accessories as ledvance,pnasonic or equal and approved equivalent.	No.	32		
	Total carried to summary collection page				

Item	Description	Unit	Qty	Rate (KES)	Amount
3.00	GROUND FLOOR LIGHTING Supply, Deliver, Install, Set to Work and Commission the Following				
3.01	Provide for removal of existing light fittings and handing over to the client for safe keeping.	Lot	1		
3.02	Lighting points completely wired in 3 x 1.5mm ² single core PVC insulated copper cables drawn in 20mm diameter heavy gauge PVC conduits including all conduit accessories for two way switch, but excluding the luminaire and switch. (To remain as existing)	No.	-		
	Light fittings All light fittings to have pf of >0.9, 4500K color temperature, 50,000 hours lifetime complete with driver and all accessories				
3.03	600x600 ceiling recessed day light of 36W LED fitting with 0.9pf, 105Lm/W, 5000K with a lifetime of 50,000hrs complete with driver and all accessories as ledvance,panasonic or equal and approved equivalent.	No.	27		
3.04	300x1200 ceiling recessed day light of 36W LED fitting with 0.9pf, 105Lm/W, 5000K with a lifetime of 50,000hrs complete with driver and all accessories as ledvance,panasonic or equal and approved equivalent.	No.	55		
3.05	18W Toilets fitting, Type D, as panasonic,ledvance,philips or approved equivalent..	No.	53		
	POWER INSTALLATION Supply, Deliver, Install, Set to Work and Commission the Following:				
3.06	13A SP socket point completely wired in 3 x 2.5mm ² single core PVC insulated copper cables drawn in 20mm diameter heavy gauge PVC conduits including all accessories but excluding the 13A SP switched socket outlet. Power points to remain as existing	No.	-		
3.07	Supply and install routing for the wifi access points complete with the cabling and ubiguiti long range access -U6-LR.	No.	7		
	FIRE DETECTION AND ALARM SYSTEM Supply, Deliver, Install, Set to Work and Commission the Following				
3.08	Wiring of fire alarm points with 2x1.5mm ² Fire retardant cable in 25mm HG PVC conduits	No.	14		
3.09	Addressable Smoke Detector as Menvier MAP 820 or approved equivalent.	No.	14		
3.10	Allow for the integration of fire alarm system to the main building fire alarm panel	No.	1		
Total carried to summary page					

Item	Description	Unit	Qty	Rate (KES)	Amount
4.00	FIRST FLOOR				
	Supply, Deliver, Install, Set to Work and Commission the Following				
4.01	Provide for removal of existing light fittings and handing over to the client for safe keeping.	Lot	1		
4.02	Lighting points completely wired in 3 x 1.5mm ² single core PVC insulated copper cables drawn in 20mm diameter heavy gauge PVC conduits including all conduit accessories for two way switch, but excluding the luminaire and switch. (To remain as existing)	No.	-		
	Light fittings All light fittings to have pf of >0.9, 4500K color temperature, 50,000 hours lifetime complete with driver and all accessories				
4.03	600x600 ceiling recessed day light of 36W LED fitting with 0.9pf, 105Lm/W, 5000K with a lifetime of 50,000hrs complete with driver and all accessories as ledvance,panasonic or equal and approved equivalent.	No.	25		
4.04	300x1200 ceiling recessed day light of 36W LED fitting with 0.9pf, 105Lm/W, 5000K with a lifetime of 50,000hrs complete with driver and all accessories as ledvance,panasonic or equal and approved equivalent.	No.	52		
4.05	18W Toilets fitting, Type D, as panasonic,ledvance,philips or approved equivalent..	No.	48		
	POWER INSTALLATION				
	Supply, Deliver, Install, Set to Work and Commission the Following:				
4.06	13A SP socket point completely wired in 3 x 2.5mm ² single core PVC insulated copper cables drawn in 20mm diameter heavy gauge PVC conduits including all accessories but excluding the 13A SP switched socket outlet. Power pnts to remain as existing	No.	-		
4.07	Supply and install routing for the wifi access points complete with the cabling and ubiguiti long range access -U6-LR.	No.	1		
4.08	200x 50mm 2-compartment , screwtype, off-white oven baked powder coated metal trunking complete with cover, bends and tees sockets and data knockout points.	LM.	60		
4.09	Supply and install data outlet point in heavy gauge conduits and trunking complete with the faceplate as MK 3521	No	10		
4.10	13A SP socket point completely wired in 3 x 2.5mm ² single core PVC insulated copper cables drawn in 20mm diameter heavy gauge PVC conduits including all accessories but excluding the 13A SP switched socket outlet.	No.	10		
	Other Accerssories				
4.11	13A SP twin switched socket outlet, WHITE color as MK for raw power.	No.	10		
	FIRE DETECTION AND ALARM SYSTEM				
	Supply, Deliver, Install, Set to Work and Commission the Following				
4.12	Wiring of fire alarm points with 2x1.5mm ² Fire retardant cable in 25mm HG PVC conduits	No.	15		
4.13	Addressable Smoke Detector as Menvier MAP 820 or approved equivalent.	No.	15		
4.14	Allow for the integration of fire alarm system to the main building fire alarm panel	No.	1		
Total carried to summary page					
Item	Description	Unit	Qty	Rate (KES)	Amount

[illegible]

STRUCTURED CABLING

PROPOSED KCA TUTION BLOCK RENOVATIONS - STRUCTURED CABLING BILL OF QUANTITY					
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1.00	<u>BILL No. 1 - PRELIMINARIES</u>				
1.01	Performance Bond	Item	1		
1.02	Insurance of the works	Item	1		
1.03	Third party Insurance cover	Item	1		
1.04	Workmen's Compensation	Item	1		
1.05	Temporary Facilities	Item	1		
1.06	Allow for preparation of working drawings, record drawings, instruction charts, maintenance manuals etc for the complete electrical installation, all as specified.	Item	1		
Total carried to summary page					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL No. 2 FIRST FLOOR				
	Supply, Deliver to site, Install, Connect and Set to Work the Following: the				
2.01	Data and telephone outlet points wired in CAT 6A UTP cable, complete with in 25mm PVC Conduits recessed flush in wall fabric, Surface Clipped or in trunking provided but without accessories.(face plates)	No.	21		
2.02	Siemon RJ45 single gang outlet point complete with faceplate and all accessories mounted on the trunking.	No.	1		
2.03	Siemon RJ45 dual gang outlet point complete with faceplate and all accessories mounted on the trunking.	No.	10		
2.04	Cable connectors complete with all accessories	No.	2		
2.05	Factory terminated 3m Cat 6A RJ45-RJ45 patch cords	No.	21		
2.06	Factory terminated 1m Cat 6A UTP RJ45-RJ45 patch cords	No.	21		
	Install, Connect and Set to Work the Following:				
2.07	14U wall hung communications cabinet complete with all cable management accessories, glass door with lock and key, adjustable shelving The cabinet shall be fitted with an extractor fans and 13Amp switched socket outlet extensions	No.	1		
2.08	Termination to the main switch on first floor	No.	1		
Total carried to summary page					

[illegible]

PLUMBING & DRAINAGE

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE Kshs	AMOUNT Kshs
	ELEMENT NO 1: COMMON SERVICES WATER RETICULATION & PLUMBING Take and install Client Supplied plastic PPR PN 20 pipes to specification with all 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 road works.				
A	25 mm ditto Nominal diameter PPR pipes	Mtrs	36		
B	32mm ditto	Mtrs	48		
C	50mm ditto	Mtrs	120		
	Extra Over PPR Tubing for the following:-				
D	25mm diameter elbow/bend, 90°/45°	Nos.	12		
E	32 mm ditto	Nos.	12		
F	50 mm ditto	Nos.	24		
G	25mm diameter equal tee	Nos.	4		
H	32 mm ditto	Nos.	4		
I	50 mm ditto	Nos.	12		
J	25x20 mm reducer	Nos.	4		
K	32x25 mm ditto	Nos.	4		
L	50x32 mm ditto	Nos.	12		
M	25mm x ¾" diameter male/female transition piece round/hexagonal.	Nos.	6		
N	32mm x 1¼" ditto	Nos.	6		
O	50mm x 2" ditto	Nos.	8		
	Gate Valves				
P	25 mm diameter brass high pressure screw-down fullway non-rising stem, solid wedge disc gate valve as "Pegler" and to be complete with matching diameter GMS union.	Nos.	6		
Q	32mm diameter ditto	Nos.	4		
R	50 mm ditto	Nos.	4		
	Water booster Transfer pumps				
S	Supply and install multistage pressure pump set (Duty standby) as Pedrolo CPM 170 power rating single phase 1.5KW or equal and approved cold water booster pump set of maximum head 40m with a flow rate of 5m3.hr complete with control pannel, 60litres pressure vessel, pump to work in rotation and other necessary accessories required for installation	Set	1		
	Total Amount Caried Forward To Next Page				
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT

ELEMENT NO 2: STORM ROOF WATER DRAINAGE Tenderers must allow in their pipework prices for all the couplings, connectors, joints etc as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holderbats plugged and screwed . The installation must comply with BS EN 12056 - 2:2000 MuPVC Waste System Heavy Gauge Pipework Class 41.					
A	110 mm diameter Light Grey Soil Pipe	Mtrs	64		
Extra Over uPVC Soil Pipework for the following: -					
B	110 mm ditto diameter Light Grey Short Radius bend	Nos.	13		
Fulbora outlet					
C	100mm diameter coned fulbora outlet of cast iron or other approved material and to take 110mm uPVC other approved material and to take 110mm uPVC piping including adaptor	Nos.	13		
Total For Element No 3: Carried To Collection Page					
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE Kshs	AMOUNT Kshs

ELEMENT NO 3: SEEPAGE WATER PIT DRAINAGE Supply and fix uPVC rain water system with solvent welded, seal ring or dry joints to manufacturer's instruction. Tenderers must allow in their pipework prices for all the brackets, adaptors, couplings, connectors, joints etc as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holderbats plugged and screwed and for any associated builder's work such as plastering, cutting, chasing, drilling, making good etc. uPVC Rain water System Heavy Gauge Pipework							
A	50mm diameter in complete with all necessary pipe fittings and accessories.	Mtrs	80				
Car Parking Floor Drain							
B	Trapless chamber size 450 x 450 x 600mm, in 150mm blockwork with cement mortar joints, on 150mm thick mass concrete slab and plastered inside. 40mm thick, 300 x 300mm grated heavy duty cast iron cover to gully trap chamber.	Nos.	9				
LIFT& SUMPS,TANK PUMPS							
C	Padus MINI3-M04.14/M08-523/A-5M, Hydraulic data (Duty point) Requested flow: 15,00 m³/h Requested head: 10,00 m Motor data, Mains connection: 1~230V/50 Hz, Voltage tolerance: +-10 % Power factor: 0,94, Rated power: 0,75 kW, Power consumption: 1,03 kW Rated current: 4,7 A, Starting current: 14,2 A, Activation type: Direct On Line (DOL) complete with the following:- Automatic electric control panel for operation of the pump. The panel is to be complete with 'run' & 'trip' indicators, phase failure relays, overload relays. Pump to be mounted/submersed in the sump complete with a base frame and suitable mountings. 80DIA HDPE pipework complete with, tees, reducers, etc and any other accessories to complete pump set installation to specification. Electrical & Control wiring	Item	1				
Total For Element No 4: Carried To Collection Page							
ITEM NO.	DESCRIPTION					AMOUNT Kshs	
1.0	WATER RETICULATION & PLUMBING INSTALLATION						

	Total Brought Forward	
2.0	STORM ROOF WATER DRAINAGE	
	Total Brought Forward	
3.0	SEEPAGE WATER PIT DRAINAGE	
	Total Brought Forward	
	TOTAL FOR COMMON SERVICES C/F TO GRAND SUMMARY PAGE	

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE Kshs	AMOUNT Kshs
ELEMENT NO 1: SANITARY FITTINGS SUPPLY the following appliances including their support brackets, screws, mastic, silicon etc. and all other necessary accessories to make the appliances operational. All final connections to water supply, waste/soil drainage and electrical power supply (whether measured or not) are to be the responsibility of the contractor and must be priced for:- NOTE: TRADE NAMES Where Trade Names are mentioned below, the contractor shall supply as specified. Alternatives will only be accepted on approval.					
A	Water Closet Pan DURAVIT D-CODE Toilet floor standing water closet Suite in white vitreous china comprising:- bowl with S-Trap Outlet; heavy duty plastic seat and cover ,WC outlet connector, P or S strap as model No. # 211509 or equal and approved.	Nos.	18		
B	Water Closet Flush Valve WC Exposed flush valve, 1 1/4" low pressure . Operating at 1.0 bar. Quiet exposed, diaphragm type, chrome plated WC Flush Valve, high chloramine resistant permex synthetic rubber diaphragm, ADA Compliant metal oscillating non hold open handle with tripple seal handle packing, 25mm I.P.S. wheel handle Bak-Chek angle stop, adjustable tailpiece, vacuum breaker, elbow flush connection and spud coupling for 40mm concealed back spud. Exposed parts chrome plated.	Nos.	18		
C	WC Magic Connector: 4 inch	Nos.	18		
D	chrome finish health faucet (Hand spray)	Nos.	18		
E	Coat hook in Satin aluminium finish (Ref No. SAF 4166) as manufactured by Insta-office safco.	Nos.	18		
F	Wash Basin & Accessories "ASL" Undermount stainless steel hand wash basin, without a taphole complete with fixing screws and brackets.	Nos.	16		
G	Wash Hand Basins & Accessories Supply and install Tapis Pearl: Push Action Basin Tap , Brass Body With a bright Chrome Plated Finish	Nos.	16		
H	PVC 1 1/4" bottle trap as Pex with 75 mm deep seal and 200 mm long tail pipe, cap-nut and wall flange.	Nos.	16		
I	600 x 750mm, 6 mm, thick plate rectangular shaped glass mirror with frosted bevelled edge decorative boundary and concealed screws for installation.	Nos.	16		
Total Amount Caried Forward To Next Page					
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT

NO.				Kshs	Kshs
	Total Amount Brought Forward From Prevoius Page				
	Wahroom Accessories				
	Angle Regulating Valves				
A	½" Chrome plated angle regulating valve with compression nut, backnut and 350 mm long Flexible service connection.	Nos.	16		
	Urinal				
B	Duravit D-Code urinal bowl in white vitreous china comprising: urinal bowl, pair of bowl supprt, flush pipes and spreaders, chrome plated bottle P- trap,40mm diameter domed outlet grating and division hangers or equal and approved complete with	Nos.	12		
C	Manual Urinal Flush Valve as Brass Body With a bright Chrome Plated Finish	Nos.	12		
D	PVC 1½" bottle trap as Pex with 75 mm deep seal and 200 mm long tail pipe, cap-nut and wall flange.	Nos.	12		
	Urinal Dividers				
E	Ceramic urinal bowl divisions separating the above described urinal bowls fixed firmly on the wall. The fittings shall be as DURAVIT or equal and approved.	Nos.	12		
	Cleaner Sink				
F	supply and install wall mounted ceramic Duravit cleaners sink with heavy duty hinged gratings, Overall size 440 x 400 x 220mm	Nos.	2		
	Cleaners Sinks Accessories				
G	Wall mounted Long neck Tap as Tapis or equal and approved	Nos.	2		
H	Chrome plated heavy cast 1½" sink grid waste, 70 mm diameter flange, 45 mm long shank, unslotted with plug, chain and backnut.	Nos.	2		
I	PVC 1½" bottle trap as Pex with 75 mm deep seal and 200 mm long tail pipe, cap-nut and wall flange.	Nos.	2		
J	Supply and install stainless steel rail 600mm long wth hanging hooks	Nos.	2		
K	DURAVIT D-CODE disabled washroom set comprising of the following:- rimless horizontal outlet pan and fixings; rimless cistern, fittings and spatula lever 6 litres flush; rimless seat ring, stainless steel hing with stability buffers; hand rinse medical basin with one tap hole; sola 1/2" lever action tap, one hinged support rail, and four fixed support railsNo. WF 1241WH WC outlet connector or equal and approved.	Nos.	4		
	Total For Element No 1: Carried To Collection Page				
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE Kshs	AMOUNT Kshs

ELEMENT NO 2: INTERNAL PLUMBING Supply, deliver and install PN 10 PPR pipes tubing and fittings as described and shown on the drawings. The pipes shall be produced as per SDR 11 and shall meet or exceed the requirements as of ASTM D 2846, current European standards and to the Engineers approval. All joints shall be assembled employing solvent cements that meet or exceed the requirements of ASTM F442 and ASTM F441. Rates must allow for all Metal/plastic threaded adaptors where required for the connection of sanitary fixtures, valves, sockets, sliding and fixed joints, support raceways, isolating sheaths, elastic materials, expansion arms and bends, crossovers, couplings,clippings, connectors, joints etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system. The pipes will be pressure tested before the plastering of wall commences and as per the manufacturers recommended testing pressures. Pipe work-PPR PIPES A 25mm diameter pipework Lm 58 B 32mm diameter pipework Lm 18 C 40mm diameter pipework Lm 24 D 50mm diameter pipework Lm 60 Bends E 25mm diameter bend Nos. 32 F 32mm diameter bend Nos. 4 G 40mm diameter bend Nos. 4 H 50mm diameter bend Nos. 6 Tees I 25mm equal tee Nos. 18 J 32mm equal tee Nos. 12 K 40mm equal tee Nos. 8 L 50mm equal tee Nos. 20 Reducers M 32 x 25mm diameter reducer Nos. 16 N 40 x 32mm diameter reducer Nos. 8 O 50 x 40mm diameter reducer Nos. 12 Male/Female Adapters (Brass threaded) P 25mm x 1/2" brass threaded adapter Nos. 16 Q 32mm x 25mm brass threaded adapter Nos. 12 R 40mm x 32mm brass threaded adapter Nos. 6 Male/Female Bend (Brass threaded) S 25mm brass threaded bend Nos. 32					
Total Amount Caried Forward To Next Page					
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE Kshs	AMOUNT Kshs
Total Amount Brought Forward From Prevoius Page					

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE Kshs	AMOUNT Kshs
	ELEMENT NO 3: FOUL WATER INTERNAL DRAINAGE Supply ,deliver and install the following UPVC, MUPVC, soil and waste systems respectively to B.S 5255 with fittings fixed to Manufactures Printed instructions and manufactured by reputable manufacturers. Tenderers must allow in their pipework prices for all the couplings, clippings, connectors, joints etc. as required in the running lengths of pipework and also where necessary, for pipe fixing clips, holder bats plugged and screwed for the proper and satisfactory functioning of the system. MuPVC and uPVC Waste and Soil pipework A 100mm diameter heavy gauge grey mUPVC pipe Lm 60 B 50mm diameter waste pipe Lm 16 C 40mm diameter waste pipe Lm 18 Bends D 100mm diameter short radius bend Nos. 6 E 50mm diameter sweep bend Nos. 12 F 40mm diameter sweep bend Nos. 16 Tees G 100mm diameter sweep tee Nos. 4 H 50mm diameter sweep tee Nos. 8 I 40mm diameter sweep tee Nos. 8 Access Caps J 100mm diameter access cap Nos. 12 K 40mm diameter access cap Nos. 8 Boss Connectors L 100 x 50mm diameter boss connector Nos. 8 M 100 x 40mm diameter boss connector Nos. 4 Single Branches N 100mm diameter single branch Nos. 12 Double Branches O 100mm diameter double branch Nos. 6 Traps P 100 x 50mm diameter PVC Floor trap and grating Nos. 14 Inspection Chamber/Manhole Q Allow a provisional sum for reinstating inspection chambers, repairing manhole benches Nos. 6				
	Total For Element No 3: Carried To Collection Page				
ITEM NO.	DESCRIPTION				AMOUNT Kshs

1.0 SANITARY FITTINGS Total Brought Forward 2.0 INTERNAL PLUMBING Total Brought Forward 3.0 FOUL WATER INTERNAL DRAINAGE Total Brought Forward		
	TOTAL FOR GROUND & FIRST FLOOR C/F TO GRAND SUMMARY PAGE	

ITEM NO.	DESCRIPTION	AMOUNT Kshs
	GRAND SUMMARY PAGE	
1.0	GENERAL ITEMS	
2.0	COMMON SERVICES	
3.0	DECOMMISSIONING	
4.0	PLUMBING AND DRAINAGE INSTALLATIONS	
5.0	TOTAL (EXCLUSIVE OF V.A.T).	
6.0	V.A.T (16%).	INCLUSIVE
7.0	CONTINGENCY	
8.0	GRAND TOTAL (INCLUSIVE OF V.A.T).	

Amount in words:.....
.....

Tenderer's Name and Stamp:.....

Signature:.....

PIN NO:.....VAT CERTIFICATE NO:.....

Witness:.....Address:.....

Signature:.....

Date:.....

EXTERNAL WORKS

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>EXTERNAL WORKS</u>				
	<u>ELEMENT NO. 1: DEMOLITIONS & REPAIRS</u>				
	<u>Pricing Notes</u>				
	<u>Tenderers are strongly advised to read and understand the following notes before pricing this section. Any query on the notes should be referred to the Quantity Surveyor or Project Architect</u>				
1	The unit of billing in this section is "item"				
2	Amounts for demolitions shall include the following in addition to what is described in the particular item: a) Making good i.e. re-instatement of any finishes and structures affected by the demolition work to the original state. b) Clearing debris with speed on a daily basis as they arise, cleaning of affected surfaces, and removal of the debris from site to local authority approved dumping sites. Accumulation of debris within the site premises shall not be allowed.				
3	Demolition work shall be carefully executed with the particular aim of minimizing damage to adjacent finishes, structure, or components.				
4	The amounts quoted shall be deemed to be inclusive of all handling of the removed items and their removal from site.				
5	Amounts given should include for adequate temporary support and protection for the remaining elements of the buildings being demolished and to adjacent buildings and services.				
6	All materials, components and fittings arising from the demolitions work shall become the property of the Contractor. The tenderer is therefore expected to give realistic credit in the appropriate column for items which have salvage value.				
7	Amount indicated will be adjusted against the approximate quantities to reflect the actual quantity of demolition work executed on site as shown in the layouts or directed by the architect.				
	<i>Carried to Collection</i>				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
A	<u>Existing Paving Blocks</u> Carefully remove existing worn out paving slabs and store or cart away as directed ; make good all affected areas. (approx. 300m ²)	Item			
B	<u>Existing shallow drains</u> Carefully remove existing worn out paving slabs and store or cart away as directed ; make good all affected areas. (approx. 300m ²)	Item			
	<i>Carried to Collection</i>				
	<u>COLLECTION</u> From Page EW / 1 From Page EW / 2				
	DEMOLITIONS & REPAIRS CARRIED TO SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>Precast concrete units: Mix 1:2:4 (12 mm aggregate): vibrated</u>				
A	600mm x 600mm x 50mm thick paving slabs: smooth finished: pointed and jointed in cement and sand (1:4) mortice bedded on and including 50mm thick compacted sand bed	sm	650		
B	125mm x 250mm kerb: half battered: bedded jointed and pointed in cement and sand (1:3) mortar: 100mm x 100mm channel laid on and including 300mm x 100mm concrete (1:3:6) foundation: 100mm x 200mm haunching excavation formwork	m	100		
C	Quadrant with radius not exceeding 2.0 metres bedding: haunching: earthwork: formwork	No	25		
D	125 x 125 mm flush channel: bedded jointed and pointed in cement and sand (1:3) mortar: laid on and including 300 x 100 mm concrete 1:3:6 foundation: excavation: 100 x 200 mm haunching	m	100		
	<i>Carried to Collection</i>				
	<u>COLLECTION</u>				
	From Page EW / 3				
	From Page EW / 4 (above)				
	PAVED AREAS CARRIED TO SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>ELEMENT NO. 3; STORM WATER DRAINAGE</u>				
	<u>Trench excavations</u>				
	<u>Chainage 0 - 150</u>				
A	Excavate trench not exceeding 1.5metres deep for closed channel drain, part refill, part load, cart and deposit on site as directed by Architect	cm	120		
	<u>Load and cart away</u>				
B	Load and cart away excavated material and deposit to Local Authority's approved dump sites	cm	36		
	<u>Filling</u>				
C	Backfilling excavated materials around drains	cm	84		
D	150mm thick approved murram backfill compacted in layers not exceeding 300mm thick	cm	27		
	<u>Invert Block Drains</u>				
E	Lay precast concrete invert block drains size 300mm x 450mm to a suitable fall with grooved edge and tounge joints filled with cement/sand mortar (1:3) and laid on 50mm thick plain concrete bed	lm	250		
	STORM WATER DRAINAGE CARRIED TO SUMMARY				

Item	Description	Unit	Qty	Rate	Amount (Ksh)
	<u>PROPOSED RENOVATION WORKS TO TUITION COMPLEX, AT KCA UNIVERSITY MAIN CAMPUS, RUARAKA, NAIROBI COUNTY</u> <u>EXTERNAL WORKS</u> <u>SUMMARY</u> 1. DEMOLITION & REPAIRS 2. PAVEMENTS 3. STORM WATER DRAINAGE 4. SUMP		Page No. EW / 2 EW / 4 EW / 5 EW / 6		
	EXTERNAL WORKS CARRIED TO GRAND SUMMARY				

PROVISIONAL SUMS

GRAND SUMMARY

**PROPOSED RENOVATION WORKS TO TUITION COMPLEX, AT KCA
UNIVERSITY MAIN CAMPUS, RUARAKA, NAIROBI COUNTY**

GRAND SUMMARY

BILL	DESCRIPTION	AMOUNT (Kshs)
1	PRELIMINARIES	
2	BUILDERS WORKS	
3	PRIME COST & PROVISIONAL SUMS	
4	ELECTRICAL INSTALLATIONS	
5	STRUCTURED CABLING	
6	PLUMBING AND DRAINAGE	
7	EXTERNAL WORKS	
	TOTAL	
	Add Contingency	3,000,000.00
	TOTAL CARRIED TO FORM OF TENDER	

Bidder _____

Signed _____

Date _____

Employer _____

Signed _____

Date _____

Grand Summary