LOT 2: VOL. 4
TENDER FOR GENERAL ELECTRICAL INSTALLATION WORKS AT PROPOSED LECTURE THEATRE AND EXTERNAL WORKS AT MAMA NGINA UNIVERSITY COLLEGE, GATUNDU

CLOSING DATE: FRIDAY 15TH FEBRUARY, 2019 at 10:00am
KENYATTA UNIVERSITY

PROPOSED ADMINISTRATION BLOCK AND LECTURE THEATRE AT MAMA NGINA UNIVERSITY COLLEGE, GATUNDU

LOT 2–LECTURE THEATRE AND EXTERNAL WORKS

(VOL. 4–GENERAL ELECTRICAL INSTALLATION WORKS)

BILLS OF QUANTITIES

EMPLOYER
KENYATTA UNIVERSITY
P.O. BOX 43844-00100
NAIROBI.

ARCHITECT
UNIVERSITY ARCHITECTS
P.O. Box 43844-00100
NAIROBI.

PROJECT MANAGER
KENYATTA UNIVERSITY
P.O. Box 43844-00100
NAIROBI.

QUANTITY SURVEYOR
UNIVERSITY QUANTITY SURVEYORS
P.O. Box 43844-00100
NAIROBI.

STRUCTURAL & CIVIL ENGINEER
UNIVERSITY STRUCTURAL ENGINEER
P.O. Box 43844-00100
NAIROBI.

ELECTRICAL ENGINEER
UNIVERSITY ELECTRICAL ENGINEER
P.O. Box 43844-00100,
NAIROBI.

MECHANICAL ENGINEER
UNIVERSITY MECHANICAL ENGINEER
P.O. Box 43844-00100
NAIROBI.

JANUARY 2019
SPECIFICATIONS AND BILLS OF QUANTITIES
FOR THE
PROPOSED ADMINISTRATION BLOCK AND LECTURE THEATRE AT MAMA NGINA
UNIVERSITY COLLEGE, GATUNDU

Supplied as part of the Contract for Proposed Administration Block and Lecture Theatre at Mama Ngina University College, Gatundu

ISSUED BY: -
Messrs. Kenyatta University
P.O. Box 43844-00100,
NAIROBI.

PREPARED BY:-
Messrs. Kenyatta University
P. O. Box 43844-00100
NAIROBI.

The Contract for the above mentioned works entered into on the.............................. day of ............................................. 2019 by the undersigned parties refers to these Specifications and Bills of Quantities and the Ministry of Public Works General Specifications dated March, 1976 (together with any amendments issued thereto) shall be read and construed as part of the said Contract.

EMPLOYER
MESSRS. KENYATTA UNIVERSITY
SIGNATURE..........................................
DATE...........................................

CONTRACTOR
MESSRS. KENYATTA UNIVERSITY
SIGNATURE..........................................
DATE...........................................

The contractor is required to check the numbers of the pages of these Bills of Quantities and should he find any missing or in duplicate, or figures indistinct he must inform the Project Manager, Kenyatta University.

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

No liability will be admitted nor claim allowed in respect of errors in the Contractors’ Tender due to mistakes in the Specifications which should have been rectified in the manner described above.
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SECTION I

INVITATION FOR TENDERS

TENDER REF. NO: KU/TNDR/W/050/GENI-MNUC/2018-2019

TENDER NAME: TENDER FOR GENERAL ELECTRICAL INSTALLATION WORKS AT PROPOSED LECTURE THEATRE AND EXTERNAL WORKS FOR MAMA NGINA UNIVERSITY COLLEGE, GATUNDU

1.1 Kenyatta University invites sealed tenders from eligible tenderers for the General Electrical Installation Works at Proposed Lecture Theatre and External Works for Mama Ngina University College, Gatundu qualified and licensed by National Construction Authority in category NCA 6 and above in electrical engineering services.

1.2 A complete set of tender documents may be obtained by interested candidates upon payment of a non-refundable fee of Ksh.1,000/= (One thousand shillings only) which should be deposited in:-
Bank Name: National Bank of Kenya
Branch: Ruiru
Account Name: Kenyatta University
Account Number: 0100359150800
Please bring your banking slip to Kenyatta University (Finance – Cash Office) for an official receipt thereafter you can collect the tender documents from Procurement Department).

1.3 Alternatively, Tender documents can be downloaded free of charge from our website www.ku.ac.ke OR click on the link http://www.ku.ac.ke/index.php/about-ku/procurement OR http://www.tenders.go.ke link to GOK tenders websites free of charge.
However candidates who choose to download the documents must notify the Procurement Office immediately for record purposes by email: procurement@ku.ac.ke

1.4 Prices quoted should be net, inclusive of all taxes, and must be in Kenya Shillings and shall remain valid for 90 days from the closing date of the tender.

1.5 Completed tender documents are to be enclosed in plain sealed envelopes, marked with the tender number and name and be deposited in the Tender Box at (Kenyatta University – Procurement Department Reception) or be addressed to (Kenyatta University P.O. Box 43844 – 00100 G.P.O Nairobi) so as to be received on or before Friday 15th February, 2019 at 10:00am.

1.6 Tenders will be opened immediately thereafter in the presence of the candidates representatives who choose to attend at (Kenyatta University - Boardroom).

1.7 Site visit will be on 05th and 11th February 2019 at 10.00 AM. Attendance register will be signed by all representatives. The Site is located adjacent to Mutomo Primary School near Gatundu Town, Gatundu South Constituency, Kiambu County, Kenya.
SECTION II

INSTRUCTIONS TO TENDERERS

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INSTRUCTIONS TO TENDERERS

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

1.1 This Invitation to tender is open to all tenderers with NCA 6 certificate and above in electrical engineering.

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

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

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

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

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

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

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

(d) major items of construction equipment proposed to carry out the Contract and an undertaking that they will be available for the Contract.
(e) qualifications and experience of key site management and technical personnel proposed for the Contract and an undertaking that they shall be available for the Contract.

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

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

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

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

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

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

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

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

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

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

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

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

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

(b) experience as main contractor in the construction of at least

(c) two works of a nature and complexity equivalent to the Works
over the last 10 years (to comply with this requirement, works cited should be at least 70 percent complete);

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

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

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

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

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

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

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

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

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

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

2. **Tender Documents**
2.1 The complete set of tender documents comprises the documents listed here below and any addenda issued in accordance with clause 2.4 here below:

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

2.2 The Tenderer shall examine all instructions, forms 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 Prospective Tenderer making inquiries of the tendering documents may notify Kenyatta University in writing or by cable, telex or facsimile at the address indicated in the letter of invitation to tender. Kenyatta University will respond to any request for clarification received earlier than seven [7] days prior to the deadline for submission of tenders. Copies of the 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, Kenyatta University 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 Kenyatta University.

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

3. Preparation of Tenders

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

3.2 The tender submitted by the Tenderer shall comprise the following:-

(a) The Tender;

(b) Tender Security, shall be either in form of;
   i. a bank guarantee;
   ii. a guarantee by a licensed insurance company in Kenya as provided by the Authority;
   iii. a letter of credit;
Priced Bill of Quantities/Schedule of Rates for lump-sum Contracts

Any other materials required to be completed and submitted by Tenderers.

3.3 The Tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities/Schedule of Rates. 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/Schedule of Rates. All duties, taxes and other levies 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.

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

3.6 Tenders shall remain valid for a period of ninety (90) days from the date of submission. However in exceptional circumstances, the Employer may request that the tenderers extend the period of validity for a specified additional period. The request and the tenderers’ responses shall be made in writing. A tenderer may refuse the request without forfeiting the Tender Security. A tenderer agreeing to the request will not be required or permitted to otherwise modify the tender, but will be required to extend the validity of Tender Security for the period of the extension, and in compliance with Clause 3.7 - 3.11 in all respects.

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

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

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

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

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

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

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

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

   (i) sign the Agreement, or

   (ii) furnish the required Performance Security.

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

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

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

3.16 Clarification of tenders shall be requested by the tenderer to be received by the procuring entity not later than 7 days prior to the deadline for submission of tenders.
3.17 The procuring entity shall reply to any clarifications sought by the tenderer within 3 days of receiving the request to enable the tenderer to make timely submission of its tender.

3.18 The tender security shall be in the amount of 1% of the tender price.

4. Submission of Tenders

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

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

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

(c) Provide a warning not to open before Friday 15th February, 2019 at 10:00am

4.2 Tenders shall be delivered to Kenyatta University at the address specified above not later than Friday 15th February, 2019 at 10 am. However, the Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Sub-Clause 2.5 in which case all rights and obligations of the Employer and the tenderers previously subject to the original deadline will then be subject to the new deadline.

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

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

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

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

5. Tender Opening and Evaluation
5.1 The tenders will be opened by the Employer, including modifications made pursuant to Clause 4.4, in the presence of the tenderers’ representatives who choose to attend at the time and in the place specified in the invitation to tender. Envelopes marked “WITHDRAWAL” shall be opened and read out first. Tenderers’ and Employer’s representatives who are present during the opening shall sign a register evidencing their attendance.

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

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

5.4 To assist in the examination, evaluation, and comparison of tenders, the Employer at his discretion, may ask any tenderer for clarification of the tender, including breakdowns of unit rates.

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

5.5 Prior to the detailed evaluation of tenders, the Employer will determine whether each tender (a) meets the eligibility criteria defined in Clause 1.7; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the tendering documents. A substantially responsive tender is one which conforms to all the terms, conditions and specifications of the tendering documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the works; (b) which limits in any substantial way, inconsistent with the tendering documents, the Employer’s rights or the tenderer’s obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other tenderers presenting substantially responsive tenders.

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

5.7 Tenders determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows:
(a) where there is a discrepancy between the amount in figures and the amount in words, the amount in words will prevail; and  

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

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

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

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

(f) the amount stated in the tender will be adjusted in accordance with the above procedure for the correction of errors and, with concurrence of the tenderer, shall be considered as binding upon the tenderer. If the tenderer does not accept the corrected amount, the tender may be rejected and the Tender Security may be forfeited in accordance with clause 3.11.  

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

5.9 In evaluating the tenders, the Employer will determine for each tender the evaluated tender price by adjusting the tender price as follows:  

(a) making any correction for errors pursuant to clause 5.7;  

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

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

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

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

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

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

6. Award of Contract

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

7. **Corrupt and fraudulent practices**

7.1 Kenyatta University requires that the tenderer observes the highest standard of ethics during the procurement process and execution of the contract. A tenderer shall sign a declaration that he has not and will not be involved in corrupt and fraudulent practices.
7.2 Kenyatta University will reject a tender if it determines that the tenderer recommended for award has engaged in corrupt and fraudulent practices in competing for the contract in question.

7.3 Further a tenderer who is found to have indulged in corrupt and fraudulent practices risks being debarred from participating in public procurement in Kenya.
Appendix to Instructions to Tenderers

The following information regarding the particulars of the tender shall complement supplement or amend the provisions of the instructions to tenderers. Wherever there is a conflict between the provision of the instructions to tenderers and the provisions of the appendix, the provisions of the appendix herein shall prevail over those of the instructions to tenderers.

<table>
<thead>
<tr>
<th>INSTRUCTIONS TO TENDERERS REFERENCE</th>
<th>PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible Tenderers</td>
<td>Open to tenderers with NCA 6 certificate and above in Electrical Engineering Services.</td>
</tr>
<tr>
<td>Tender Security</td>
<td>1% of total tender price</td>
</tr>
<tr>
<td>Format and Signing of Tender</td>
<td>All Required documents must be arranged chronologically as listed in the evaluation criteria and clearly marked</td>
</tr>
<tr>
<td>Closing Date</td>
<td>Friday 15\textsuperscript{th} February 2019 at 10:00am</td>
</tr>
<tr>
<td>Site Visit</td>
<td>Tuesday 05\textsuperscript{th} February, 2019 10:00 a.m, and Monday 11\textsuperscript{th} February, 2019 at 10.00 am-to assemble at the site given on page 5</td>
</tr>
<tr>
<td>Tender validity</td>
<td>90 days</td>
</tr>
<tr>
<td>Tender Name</td>
<td>Tender for General Electrical Installation works at Proposed Lecture Theatre And External Works for Mama Ngina University College-Gatundu.</td>
</tr>
</tbody>
</table>
EVALUATION CRITERIA FOR GENERAL ELECTRICAL INSTALLATION WORKS AT PROPOSED LECTURE THEATRE AND EXTERNAL WORKS AT MAMA NGINA UNIVERSITY COLLEGE, GATUNDU-LOT 2: VOL 4.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>SCORE</th>
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<tbody>
<tr>
<td>A</td>
<td><strong>MANDATORY REQUIREMENTS</strong></td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>Provide copy of Company Registration Certificate/ certificate of incorporation.</td>
<td>√</td>
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<tr>
<td>ii.</td>
<td>Bid Bond of 1% of tender sum from a commercial bank or insurance company approved by PPOA and valid for 120 days from date of tender opening.</td>
<td>√</td>
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<tr>
<td>iii.</td>
<td>Provide copy of Valid Tax Compliance certificate</td>
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<tr>
<td>iv.</td>
<td>Provide certificate of registration with National Construction Authority in category NCA 6 and above in Electrical engineering services.</td>
<td>√</td>
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<tr>
<td>v.</td>
<td>Provide copy of valid trade/business license</td>
<td>√</td>
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<tr>
<td>vi.</td>
<td>Bid document to be submitted in two copies clearly marked “Original” and “Copy”</td>
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<tr>
<td>vii.</td>
<td>Submission of valid CR12 form showing the list of directors and shareholding.</td>
<td>√</td>
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<tr>
<td>viii.</td>
<td>Certified Audited financial report for the last three (3) years-2014-2015, 2015-2016 and 2016-2017</td>
<td>√</td>
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<tr>
<td>ix.</td>
<td>Dully filled and signed tender questionnaire</td>
<td>√</td>
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<tr>
<td>x.</td>
<td>Dully filled and signed Confidential business questionnaire</td>
<td>√</td>
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<tr>
<td>xi.</td>
<td>Current and valid annual contractors practicing license from NCA.</td>
<td>√</td>
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<tr>
<td>xii.</td>
<td>Copy of current certificate for electrical contractor class B for the company</td>
<td>√</td>
</tr>
<tr>
<td>B</td>
<td><strong>GENERAL FINANCIAL AND TECHNICAL REQUIREMENTS</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td><strong>FINANCIAL REQUIREMENTS</strong></td>
<td>15</td>
</tr>
<tr>
<td>a)</td>
<td>Accumulated volume of business. Provide proof of performing/undertaking similar works (Electrical installation works) for the last four years Attach contracts and the relevant certificate of completion/invoices and any other relevant document for the last 4 years. These information to be presented in the manner shown on page 22</td>
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</table>

- Above Ksh 30 million.................................................15 marks
- Below Ksh. 30m and above ksh. 20 million.........................10 marks
- Below Ksh.20 million and above Ksh.5 million.............5 marks
- Below Ksh 5 million.....................................................0 mark
b) Financial Capability (As supported by Audited Accounts for the last three (3) years 2014-2015, 2015-2016 and 2016-2017.
   - Current ratio above 2.0…………………………………..(15)
   - Current ratio below 2.0 and above 1.5………………….. (10)
   - Current ratio below 1.5 and above 1…………………. (5)
   - Current ratio below 1…………………………………..(0)

2 GENERAL REQUIREMENTS

a) Attach four letters of recommendation from referees two of whom must be current customers within 2016-2018.
   - Four letters – (1Mark for each letter)

3 TECHNICAL REQUIREMENTS

a) Provide detailed proposal of key technical members for the proposed project, copies and CV of the proposed team, Enclose certificates. At least Five (5) years’ experience in the position
   - Project Manager (Minimum qualification is degree in electrical engineering field) – 9 points.
   - Site Agent (Minimum qualification is diploma in related engineering field) – 7 points.
   - Supervisor (Minimum qualification is diploma in related engineering field) – 6 points.
   - Foreman (Minimum qualification is certificate in related engineering field) – 3 points.

4 Pagination of the whole document

5 Document Presentation
   - Tape bound only
   - Table of content
   - Separators

TOTAL 70

NB:
- Bidders must meet all the mandatory requirements to qualify for general and technical evaluation
- To qualify for price evaluation, the bidder must score a minimum of 70 %
- The bidder quoting the lowest price having attained 70% technical score shall be recommended for contract award.
  - Award will be to the lowest evaluated bidder, but no bidder will be awarded more than one volume in both lot one and lot two.
• Any bidder winning more than one volume in lot one and lot two, only the volume with the highest amount will be awarded. Other volumes will be awarded to the second evaluated
• Any information provided by the bidder may be verified by the University. If information is found to be false, the company will be disqualified.
• Site visit dates will be on Tuesday 05th February, 2019 at 10.00 am and Monday 11th February 2019 at 10.00 am.
• List the equipment to be used in this project in the table provided below:-
• The Site is located adjacent to Mutomo Primary School near Gatundu Town, Gatundu South Constituency, Kiambu County, Kenya

### Accumulated volume of business.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the client</th>
<th>Contract Name</th>
<th>Certificate of Completion</th>
<th>Other Relevant Documents</th>
<th>Tender sum</th>
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</table>

### On-going projects

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the client</th>
<th>Contract Name/Letter of award</th>
<th>Stage of Completion</th>
<th>Tender sum</th>
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### LIST OF EQUIPMENT

<table>
<thead>
<tr>
<th>NO.</th>
<th>LIST OF EQUIPMENT OWNED</th>
<th>LIST OF EQUIPMENT HIRED</th>
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</table>

### SECTION III
1. ELECTRICAL SPECIFICATIONS

1.1 GENERAL ELECTRICAL SPECIFICATIONS

1.1.1 General
The electrical contractor shall be responsible for the supply, delivery, installation, connection, testing and setting to work of the entire electricity system in accordance with the Contract Documents.
The electrical Contractor shall prove all the necessary tools, skilled and unskilled labour to comply and complete in accordance with the main contractor’s works program.

1.1.2 Standard and Regulations
The Electrical portion of the works shall comply with the current regulations of the Kenya Power and Lighting Colt. The latest Kenya Bureau of Standards, codes of practice of the British Standards Institution, the Regulations for electrical Equipment in buildings issued by the Institution of Electrical engineers (I.E.E) in Great Britain and this specification.

1.1.3 Power supply on site.
The supply voltage at the point of use will be 240 volts single phase or 415 volts 3 phase 50 Hz TN-C-s system, viz separate neutral and protective conductor throughout the system.

1.2 INSTALLATION OF CABLES

1.2.1 General
Bending of cables shall be in accordance with clause 522.83 of the IEE Regulations and no cable shall be bent to radius less than that specified by the cable manufactures.
Cables shall be rated for the maximum connected load with due consideration to the following factors:-
(i) Voltage drops not in excess of 4% of the nominal voltage
(ii) Ambient temperature
(iii) Degree of excess current protection
(iv) Grouping
(v) Cables run under defined conditions.

1.2.2 Cables in conduits and trunking
All cables shall be polyvinyl chloride (PVC) insulated to BS 6604, PVC insulated cables (Non-armored) for electric power lighting, 450/750 volts grade, or cross linked polyethylene(XPLE) unless an alternative is specified elsewhere in the contract documents.
The quality and size of cable contained in anyone conduits shall comply with IEE Regulations. No cables with a cross-section area of less than 1.5mm shall be used. All cables installed in a conduit or trunking system shall be PVC/XLPE insulated conductors and shall be colour coded in accordance with the IEE Regulations 524.3 and 514.43.
Final sub-circuits shall be run in conduits separate from main or sub-main cables. All cables in conduit shall be drawn in simultaneously. All cables shall be drawn in without the use of excessive force. Without the use of lubricants and the wiring shall be easily with drawable.

1.3 CABLE TRUNKING-SHEET

Trunking shall only be installed in the situations which will readily accessible throughout the life of the buildings. No cable trunking shall be installed behind a pestered ceiling or in other inaccessible situations.

All cable trunking shall comply with BS 4678, part 1”steel surface trunking ‘’ and part 2 for ‘’ steel under floor [duct] trunking.

Sheet steel cable trunking may be used on installations employing steel conduits, for connecting two or more switchboards together or where several conduits would otherwise have to run alongside each other. Proper allowances should be made for the derating of cables installed together in a container system. The cable must be capable of carrying the current imposed by the equipment connected. Attention is drawn to Chapter 52 of the IEE Regulation, particularly section 522,523 and appendix 4; the current carrying capabilities of cables indicated shall not be exceeded. The Engineer must be able to precise details concerning trunking routes and application.

All length of trunking shall be heavy gauge zinc coated steel connected together by internally fitted rectangular coupling of sufficient width to provide a minimum bearing face 25mm, which the lengths shall be bolted on welded at the factory.

Adequate provision shall be made to allow for expansion
All Tee pieces and bends shall be formed with similar means of connection and the inner radii area shall be such that cables will not bent through a radius less than that prescribed in the IEE Regulation. Only bends and tees of approved pattern will be accepted.

All fixing screws within the trunking shall be of round head type. The trunking shall have an overlapping well-fitted to the lid securely fixed to the trunking by approved means that will avoid damage to the cables. Self-tapping screws shall not be used.

All necessary accessories including long sleeve couplings, end pieces, sets, tees, reducers, branches, fillet, pin racks, cable retainer etc., shall be purpose-made units rather than being fabricated on site.

Where a change in direction of trunking run occurs, the deviation should be effected by a purpose-made unit manufactured on similar lines to the bends and tee pieces described above. Where this is not practical, changes in direction shall be fabricated in a neat workmanlike manner. All joints shall fit closely and gaps will not be permitted. All burrs and sharp edges shall remove and no screw shall protrude into or the trunking.

Trunking shall be firmly attached to its associated equipment either by bolted flanges or by male bushes and couplings.

Where trunking is connected to equipment by means of flange connectors, the entry into the equipment shall be of the same cross-section as the trunking.

Where trunking does not terminate in equipment, the otherwise open end shall be capped with a cover suitably bolted in position.

Where communications, extra low voltage circuit (category 1) etc, are contained in a trunking, the required number of separate compartment shall be provided to segregate the
wiring. Where conduits are taken off such trunking they shall not pass through other compartments unless prior permission is obtained from the Engineer.
The entire trunking is required to be recessed in the in the structure of the building; the finished edge of the trunking is to be installed flush with the plaster work.
Trunking runs shall be so arranged that the lid or cover plate is always on the top or side and not underneath unless this cannot be avoided, in which case the Engineer permission shall be obtained.
Wherever trunking passes through walls, vertical partitions etc, a fixed piece of trunking lid shall be fitted to the trunking extended 25mm either side of the wall or other barrier, this is to allow removal of the adjacent lid without disturbing the building fabric. Care shall be taken to ensure that no opening is left between the trunking and the building structure through which fire might spread.
In addition a suitable barrier of incombustible material shall be provided and fitted inside the trunking, in accordance with the IEE Regulations 528. On vertical runs of trunking internal incombustible barriers shall be fitted at the distance between floors or 5m, whichever is the less in accordance with IEE Regulations 527.1
All necessary trunking support work, hangers, brackets and fixing requirements shall be provided by the electrical Contractor.
Earth links of the appropriate size and type shall be installed at every jointing coupling manufactured bend, etc, throughout the entire trunking system. Where trunking is used to provide a protective conductor it shall comply with the requirements of Chapter 54 of the IEE Regulations, particularly section 543; alternatively, a separate protective conductor shall be installed in the trunking to comply with section 543 of the IEE Regulations.
In cases where sheet steel trunking is installed and there is danger of movement, a flexible earth conductor shall be installed bonding all joints in the trunking. This shall be fitted in addition to the standard earth links. Cable retaining strips shall be fitted at 1 m intervals. Insulated cable support pins shall be fitted at intervals of 4m in vertical runs of trunking and at the top of the vertical trunking.

1.4 Termination of cables
Cables shall be terminated in accordance with Chapter 52 of the IEE Regulations, particularly section 527. Cables shall be terminated by one of the following methods:
(i) The cable conductors shall be sweated into lugs of the appropriate size for the cable and equipment terminal
(ii) The cable conductors shall be secured by compression type lugs of the correct size for the cable and equipment terminal.
(iii) The cable conductors shall be secured in pinch screw terminals
(iv) The cable shall be secured by means of clamps.
Where cables are required to terminate at connectors, as at lighting points, such connectors shall secure all the strands of stranded cables. Care shall be taken to ensure that cables are not damaged during preparation for termination.
Cable terminating at pinch screw terminals shall be twisted together and single cables shall have the conductor doubles back to ensure adequate surface for pinching screws.
Cables connected to lamp holders or other components at which heat is produced shall be insulated with heat resisting materials capable of withstanding, without detriment, the temperature encountered.
All terminations on PVC/SWA/PVC insulated cables shall be by compression type glands of an approved design and manufacture with facilities for clamping the armouring the outer sheath of the cable. Glands mounted outdoors shall incorporate a seal to prevent ingress of moisture into the gland, and all glands shall be fitted with a thermoplastic shroud. Where circular terminations are to be made, these shall be completed using Ross Counterney terminals. Where cables are terminated in “Klippon” type terminals with parallel faced jaws, the individual cores shall be terminated using the appropriate flat or hook blade crimped lugs. Where the terminal faces are concaved, the cores shall be terminated in wires pin crimped lugs. The electrical contractor shall avoid multiple connections under one screw or one pin. Where more than two wires are required, a common termination jumper bar shall be used. Terminals shall be mounted on rails or supports. All internal wiring is to be clearly marked by markers.

1.5 Segregation of Services

Cables of differing voltages shall be segregated so that there is no possibility of a fault in a power cable damaging any adjacent cables or imposing a different voltage upon them in accordance with IEE regulation 528.

1.6 Identification of cables

All cables shall be fitted with non-corrosive cable identification bands at each end, and at all changes of direction where they leave a group of cables. All cables cores connected to equipment having marked terminals shall be fitted with non-corrosive identification bands bearing markings corresponding to those of the terminals at both ends.

1.7 Earthing

The whole of the metallic portion of the installation, other than current carrying parts, shall be electrically and mechanically bonded to the consumer’s main earth terminal/distribution boards and also if applicable, to the lighting protection system or other points specified. The installation shall be earthed in accordance with the seventeenth Edition of the Regulations for electrical Installation issued by the IEE, BS CP1013, “Earthing and BS 6651” “The protection of structures against lighting. The electrical contractor’s attention is drawn to Chapter 54 of the IEE Regulations and to the Earthing and Lighting Protection Consultants handbook Publication CHB/4/95 by W.J. Furse & Co. Ltd. A main earth terminal shall be supplied and installed adjacent to the electricity supply cable termination. The terminal shall be of ample size and capacity to suit the installation. All items of equipment, switchgear, etc shall be bonded to this earth terminal using PVC/XLPE insulated PVC/XLPE sheathed cables, colored green and yellow as per table 51 and sized in accordance with section 543 of the IEE Regulations. An warning plate label reading” SAFETY ELECTRICAL CONNECTION –DO NOT REMOVE” in engraved upper case characters not less than 4.75mm high, shall be permanently fixed immediately adjacent to or on the earth terminal. A heavy duty copper clamp complying with BS. 951 shall be used to bond the main protective conductor to the electricity supply cable armouring or metallic sheath (where applicable the armouring and sheath shall be bonded together).
All protective conductors shall, where possible, be enclosed within metal trunking or conduit serving switchgear, distribution board etc. so as to provide mechanical protection. Where protective conductors are run on building surfaces they shall be properly fixed and supported by means of PVC coated metal saddles along selected routes.

Earth continuity between separate items of switchgear, distribution boards etc. Mounted adjacent to one another shall be affected by means of high conductivity continuous copper tape, or PVC/XLPE sheathed cable, coloured green and yellow as per table 51 and sized in accordance with the section 543 of the IEE Regulations, connecting all items to the earth terminal.

All items of switchgear, accessories, luminaires, conduits and the outer sheaths of MICC cables, The armouring of all PVC/SWA/PVC cables together with all other items of electrical plant and equipment shall be effectively earthed by means of a protective conductor.

At every terminal point on the fixed wiring an integral; earth terminal shall be provided e.g BESA boxes, accessory boxes etc. A protective conductor shall be provided and installed between this terminal and the earth terminal on the associated switch, socket outlet, luminaire etc. Each circuit protective conductor shall be connected to a multiway earth terminal provided and fixed within each distribution board. The earth terminal shall be provided with an adequate number of ways such that not more than one conductor per terminal shall be installed and the earthing conductors shall be connected in the same sequence as the current carrying conductors.

All metal pipes services eg Heating, water and Gas Services, wastes and pipes services at sinks, baths and showers etc, shall be bonded to the earth terminal accordance with the IEE Regulations 411.3.1.2

A 50mm section of each gas and water pipe, at position close to their entry into the relevant building, shall be cleaned and made smooth. A copper-earthing clamp designed to permit the connection of protective conductors shall be provided and sized in accordance with section 543 of the IEE Regulations.

The clamp shall be a proprietary type or shall be fabricated from high conductivity copper strip, minimum size 40mmx 4mm which shall encircle the cleaned sections of the pipe. A permanent label indelibly marked with the works “SAFETY ELECTRICAL CONNECTION – DO NOT REMOVE” in legible type not less than 4.75mm high shall be permanently fixed at the points of connections.

The final connection of bonding conductors from gas, water pipes and other services to the earthing terminal shall not be completed until earth electrode and earth impedance tests have been satisfactorily completed. Bonding connections to pipework shall be as unobstructive as possible and where practicable shall be made in service ducts or accessible voids and shall be indicated on the Records Drawings.

All materials and sundry item shall be provided whether or not specifically mentioned necessary to completely and effectively earth the installation. The installation shall be fully protected against dampness and corrosion and the effect of electrolytic action between dissimilar materials. A completely permanent installation shall be provided which shall be fully accessible for regular testing and inspection.

The value of earth resistance from any point of an installation to the general mass of earth shall be low enough to ensure operation of circuit protective devices and shall in any case not exceed four (4) ohms for electricity equipment, seven (7) ohms for lighting protection. Each earthing cable shall terminate in an approved design of cable lug.
Where earth conductors are run upon structures or walls they shall be fastened by means of heavy gauge non-ferrous fasteners not more than 0.75m apart on horizontal runs and not more than 1.2m apart on vertical runs and to give a minimum clearance of 4mm from the fixing face.

In the event of the electrical contractor not being able to establish a suitable earth connection to the electricity supply cable, earth electrodes shall be installed which shall be galvanized or copper clad steel extendable rods not less than 16mm diameter and not less than 1.2mm in length. Connections to electrodes shall be made by means of solderless mechanical clamps.

To avoid corrosion, all earth system connections shall be cleaned bright and immediately covered with silicon MS4 compound or approved equal.

Earth pits, where required, shall be in accordance with the contractor’s relevant drawings, with the facility to disconnect the earth ring while measuring the electrode earth resistance.

1.8 **Fused-switch units, switch fuses and isolators**

The above units comply with BS 5419 and shall be 500 volt type and installed where specified and indicated on the relevant drawings.

All switchgear shall be provided with suitable locks for padlocking the switches in the ‘OFF’ position. The cover shall be interlocked with the operating mechanism to prevent it from being opened in the ‘ON’ position. This interlocking shall also prevent the switch from being closed with the cover open unless for maintenance purposes. The cover shall be casketed to prevent ingress of dust.

The cover shall be provided with an efficient gasket or alternatively designed with generous overlapping edges to prevent the ingress of dust. Components shall not be manufactured from zinc alloy in conjunction with sheet steel where they are relied upon for earth continuity.

Where the cover is required to be lockable, cylinder type locks shall be provided, having two keys per lock. All locked distribution boards shall be handed to the Engineering supervisor on completion of the works. The case shall be provided with detachable cable/conduit terminating plates, which shall be reversible and interchangeable from top to bottom.

All screws and nuts used in the construction of the case shall be fitted with shake proof washers and care taken to ensure efficient earth continuity. An external earthing terminal with cable socket shall be fitted.

All MCB banks shall be fitted to frames, with robust locking plates provided to ensure the frames rigidly in the fixed position.

The banks shall be so spaced to obviate the necessity for insulating barriers, but protection shall be provided by means of insulating shields to prevent accidental contact with main bus-bars and incoming mains cable.

Bus-bars shall be of high conductivity, hard drawn copper conductors connected to the MCB contacts by means of spring washered screws or bolts, unless plug-in type MCB’s are specified.

Neutral bars shall be similar to the main bus-bars and shall have two screw terminals per way for rating of 30 amps or over. Single screw connections will be allowed for capacities up to 30 amps. The neutral bars shall have one terminal for each MCB within the board, and connection for conductors to the neutral bar shall be in the same order as the MCB ways.

Where installation are carried out with cables with a protective conductor, all distribution boards shall also contain internal earthing bars similar to the neutral bars detailed above, with one terminal for each MCB within the board. Earthing conductors shall be connected in the manner described for neutral conductors to neutral bars.
Where a main integral isolating switch is provided in an MCB case it shall be arranged to isolate incoming live and neutral main cable from the bus-bars. The isolator switch shall be rated at 500 volts and of the quick make and break pattern with positive action. Incoming and outgoing terminals shall be fitted with two clamping screws and outgoing conductors to the bus-bars shall be high conductivity hard drawn copper rods. Isolating switches shall comply with IEE Regulations, part 537, and shall be capable of carrying their full rated load continuously and shall ‘make’ or ‘break’ their full rated load without undue burning of the contacts.

1.10.3 Miniature Circuits Breaker MCB

All MCB:s shall have movements which are positive in both directions (Make and break) so as to enable units to be closed decisively by the operation of the handle, and to be able to assume the ‘OFF’ position unless the contacts are definitely separated, to safeguard against false indications. The hand shall be trip free to make it impossible for the operator to hold the breaker in the closed position under faulty conditions. The operating mechanism and chamber of the circuit breaker shall be separated from the terminals and fixing screws. Terminal identification shall be readily discernable as viewed from the front of the board with automatic and clear signal identification for both ‘ON’ and ‘OFF’ position. All terminals shall be readily accessible from the front and each wiring chamber shall be closed by a screw fixed cover which protects the terminals and prevents dust from staying on the insulation. Where the full capacity of a distribution board is not required the electrical contractor shall fix blanking plates in the vacant MCB housings. All MCB’s shall be rated at 500 volts minimum and comply with BS 3871 “miniature and moulded case circuits breakers”\ and 4752 part 1’circuit breakers.

1.11 LABELLING AND ENGRAVING

1.11.1 Labeling

All fused–switch units switch fuses, switches, bus-bar chambers, distribution boards etc., and all items of equipment on the main panel shall be identified in accordance with section 514 of the IEE Regulation and shall have securely fitted externally white ‘Trifoliate’, ‘Formica’ or other approved plastic laminate label engraved with 6mm high black letters detailing the function of the equipment and any reference number. Red, yellow, blue, plastic laminate phase disc shall be fixed inside all switchgear and distribution boards to indicate to which face of the supply the various circuits are connected. The colourings shall comply with Part 524 of the IEE Regulations. Each TP or tp and N item of switchgear have fitted on the cover a white plastic laminate label having ‘CAUTION’ -415 VOLTS’ engraved in 10 mm high red lettering.

1.11.2 Engraving

The electrical Contract shall allow for engraving of all switched fuses spurs, double pole switch accessories and any other which are customarily required. The accessory plate shall be engraved in either black or red, capital letters 5 mm high, detailing and appliances or equipment being supplied by the accessories e.g., WATER PUMP etc.

1.11.3. Mounting heights
The approximate position of main switchgear, control equipment distribution boards, fitting s and accessories shall be as indicated on the drawings. Actual positions shall be adhere to:

- Lighting switches -1400 mm to center
- Socket outlet and spur -300 mm to center [or 150 mm above work top level to center]
- Distribution Boards – 1800mm to lower edges

All groups of accessories shall be in line either vertically or horizontally or as specified.

1.11.4 Luminaries
All Luminaires shall be of the manufacture, size and type specified and shall comply in all respects to BS 4533 “Electric Luminaires”
The electrical Contractor shall supply and install all luminaires including lamps, lamp holders, control gear, capacitors, glassware, diffusers or other attachments, heat resistant internal cables, fuses and terminals and all necessary suspension gear. In case where luminaires are supplied by the client the contractor shall deliver to site’s tore, install, commission and set to work.
Unless otherwise stated, indoor luminaires shall be suitable for class 1 normal indoor environments, giving a degree of protection against ingress of moisture or dust.
All Luminaires shall be assembled and installed in accordance with the respective manufacturer’s instructors/recommendations, in the position and mounting heights specified.
Luminaires shall not be installed under dirty and hazardous site conditions, and any damage or deterioration to luminaires installed under these conditions shall be made good by the electrical contractor.
The luminaries shall be cleaned free of dust and dirt after completion of the installation. Where dirt, dust corrosion or other conditions cause imperfections in the luminaries, they shall be replaced.
Luminaires, diffusers, attachments or glassware ECT. Shall be properly stored to final erection, in such a manner as to avoid damage of any kind.
Luminaires fixings shall generally be suitable for direct connection to conduit boxes or as otherwise specified. Luminaires not provided with suitable BESA box shall be modified as necessary.
Where a flexible cord supports, or partly supports, a luminaires the maximum mass supported by the cord shall not exceed the value set out in IEE REGULATIONS 522.8
The minimum cross-section area flexible cord to the employed shall be 0.75mm2

**Specify attention shall be given to chapter 52 of the regulations, particularly regulations 521-5 and 521-6, appendices 1 to 15.**

Pendant tungsten luminaires shall be fitted with heat resistant flexible cord complying with BS 6500, capable of continuous operation with a conductor temperature of 150 degrees C. The cable shall be of the circular multi-core type, finished white, if not otherwise specified.
Ceiling mounted tungsten luminaire; spotlights and other luminaires of category ‘hot’ luminaires shall be wired internally with cables suitable for continuous operation at 185 degree C. where cable tails are provided they shall be of the heat resistant type capable of operation at 185 degree C.
Exterior luminaire, fixed to the walls of building etc shall be wired such that final circuit wiring terminates within the luminaire. All final circuit cables so installed shall be provided with heat resistant slaves from the connection point within the luminaire for a distance of 300 mm.
All fluorescent and other discharge luminaires shall be provided with an integral fused connector block. The rating of the fuse shall be in accordance with the manufacturer, s instructions to protect...
the internal wiring of the luminaire and to provide discrimination between final circuit protection and luminaire protection.

All recessed and semi-recessed luminaries in ceiling shall be connected by three core 0.75mm² high temperature flexible cord from the terminals of the luminaries to a plug-in ceiling rose fixed and connected to an accessible outlet box in the wiring system, within the suspended ceiling immediately above the luminaries. The ceiling rose shall be accessible V is the opening provided in the ceiling.

The electrical contractor shall ensure that the methods of suspension for luminaries are electrically and mechanically sound.

Luminaries suspended by means of tubes shall be fitted to ball joint allowing a swing of at least 20 degrees all rounds. Reliable earthing between the fixed and moving parts shall be provided by means of a flexible braided copper tape.

Fluorescent luminaries shall be provided with a minimum of two fixing, except in the case of recessed modular luminaries or surface-mounted luminaries exceeding 300mm in which, where four number fixings (one from each counter) shall be provided by means of conduit drops or threaded rods.

Normally visible luminaries support shall be conduit. All fluorescent luminaries shall be solidly mounted with all assembly nuts, bolts and accessories made tight to prevent vibrations and noises. Ant-vibrations packing shall be fitted where necessary. Luminaries mounted direct to trucking shall be fixed by means of the manufacturer’s recommended fixing assemblies.

**Unless stated otherwise, all luminaries supports shall be fixed to the building primary structure. Luminaires shall not be supported from suspended ceiling unless otherwise specified. The electrical contractor shall be responsible for mounting an fixing arrangement.**

Break joint rings of approved colour shall be provided for all suspended luminaries and fluorescent batten luminaires where the batten is of insufficient width to cover completely the continuity box and its associated clearance hole in the ceiling.

The metalwork of all luminaries shall be effectively bonded to the earthing system in accordance with Chapter 54 of the IEE Regulation.

Care shall be taken to ensure that the ensure that the internal wiring of luminaries and the cable of any fixed wiring shall not be in contact with high temperature areas in luminaries. Lighting truck shall be of the type, size, finish, number of circuits and manufactured specified and shall comply with requirements of the relevant section of BS.4533. The position of luminaries as shown on the drawings are approximate only and exact position shall be determined after reference to the Engineering supervision.

### 1.12 LIGHTING SWITCHES

Lighting switches shall be of the type, size and manufacture as specified.

Wall and ceiling switches shall comply with BS3676. Wall and ceiling switches controlling A.C lighting circuits shall be rated 6 or 10 amps and be of the slow-break quick-make, type unless stated otherwise.

Where several switches on one phase are shown in one position, a ganged box shall be used.

Where switches at any location are connected to different phases, purposes-make barrier switches shall be installed. The phases shall be separated by means of rigidly fixed barriers and the cable for each phase shall be confined to the area enclosed by the barrier for that phase.
Switches connected to a particular phase shall have separate cover or covers fitted over each phase. The covers shall be engraved, ‘CAUTION 415 VOLTS’.

The switches plate of the specified finish shall be fitted over phase cover to render the switch unit indistinguishable from the switches that are not phase barrier switches.

Alternatively, each gang shall have its own piping and boxes for each phase, physically separated from other phases with similar arrangements.

For flush position on a plastered or equivalent finish wall, the switches shall have overlapping plates. In any places where the finish is fair-faced brickwork, the wiring shall be installed on the back of the wall and make a back entry into the accessories. Each switch in these areas shall be neatly recessed and shall incorporate an overlapping plate.

For surface-mounted positions and such plant rooms, electrical switch room etc. employing a surface mounted system or wiring, switches shall be surface-mounted having metal boxes.

1.13 socket outlets

All sockets outlets and plugs shall be supplied and installed in accordance with the manufacture, type, size and finish specified.

All round pin 2A, 5A, 15A, and 30A socket outlets shall comply with the requirements of BS 546. All sockets outlets shall be switched and complete with safety shutters, unless otherwise specified. All switched sockets outlets shall be complete with steel boxes of the same manufacture, complete with earth terminal.

Assemblies shall comply fully with the requirements of the IEE Regulations concerning the bonding of protective conductor terminals and each such terminal shall be connected by a conductor, having a minimum cross-sectional area of 2.5mm, to a permanent earthing terminal incorporated in the associated box providing an effective, solid connection to the earth continuity conductor of the installation.

Where the assembly does not provide a reliable electrical contact between the cover plate and box with effective connection of metal operating bars and toggles, then an insulated earthing lead shall be provided, solidly connected to the metal plate and operating bar or toggle and terminating at the fixed earthing terminal incorporated in the associated box. 13 amps sockets will generally be installed using ring circuits in accordance with 15 of the IEE regulations.

All plugs shall be of moulded rubber of other resilient material complying with BS 1363 or BS 546. The plug shall have internal cord grip. 13 amp plugs shall be fitted with cartridge fuse links to BS 1362. The fuse rating shall be selected to give protection to the flexible cord or cable connected.

All fuses installed within 13 amp plug top, fused spurs, clock connections etc, shall be cartridge fuse links rated at 240 volts, ASTA certified for compliance with BS 1362’ General purpose fuse links for domestic and similar purposes’ or BS 464’ Cartridge fuse links (rated up to 5 amperes) for AC and DC service’ or BS 2950 ‘Cartridge fuse link for telecommunications and light electrical apparatus’.

All equipment which is locally fused shall have fitted fuses with characteristics which are recommended by the manufacturer of the equipment.

If any appliance or equipment suffers due to incorrect fusing of the appliances, such appliances or equipment shall be repaired or replaced at the electrical Contractor’s cost, to the satisfaction of the Engineer.
1.14 INSPECTION AND TESTING
A visual inspection shall be made in accordance with IEE Regulations Chapter 61. References shall be made to Appendix 6 of the IEE Regulations, which is a checklist for initial inspection of installations. The electrical installations shall be inspected and tested by the electrical Contractor in accordance with chapter 61 of IEE Regulations.
Where any part of installation is to be concealed within a building, fabric tests shall be made to ensure that the installation is satisfactory prior to concealment.
Upon completion of the works the whole installation shall be subjected to the tests detailed hereafter and every defect shall be noted, corrected and brought to the notice of the Engineer.
All tests shall be witnessed by the Engineer to his full satisfaction and he shall be given at least one week’s notice in writing of the proposed tests.
All labor and test instruments shall be provided by the electrical contractor and the instruments shall be correctly calibrated and certified for the limits of accuracy required and shall be operated by a competent person. If, in the engineer’s opinion, a particular instrument is not suitable, then an acceptable alternative shall be provided. The Engineer shall be at liberty to demand the use of any testing instrument or apparatus that he may reasonably consider to be necessary in the execution of the testing.
In the event of the installation failing, shall be tested in the sequence indicated. Standard methods of testing in respect of some of the following regulations of this section, are given in Appendix 6 of the IEE Regulations.
(i) Continuity of ring final circuit conductors
(ii) Continuity of protective conductors, including main supplementary equipotential bonding
(iii) Earth electrode resistance
(iv) Insulation resistance
(v) Insulation of site-built assemblies
(vi) Protection of barriers or enclosures provided during erection
(vii) Insulation of non-conducting floors and walls
(viii) Polarity
(ix) Earth fault loop impedance
(x) Operation of residual current devices and fault voltage operated protected devices.

Upon completion of all tests and commissioning, two copies of detailed certificates shall be provided by the electrical contractor to show that the equipment, materials, installation etc, have been tested and commissioned. One copy of each, duly completed and signed shall be submitted to the engineer within 15 days of the results obtained. The second copy of the certificates shall be retained to be included with operator and maintenance manuals. The results of the test and details of completion for the electrical test shall be detailed on the Test and Completion Certificates respectively; issued by the National inspection council for electrical installation contracting or other approved authority.

1.15 As built Drawings, and Documentation
Within one month of the date of completion the electrical contractor shall provide 3 prints of all electrical drawings showing the electrical installations” As built” .A soft copy of the same shall be availed in ARCHICAD/AUTOCAD format. In case the electrical contractor fails to provide” As Built” drawings as required, these will be prepared by others at the expense of the electrical contractor.

1.16 Appendix
Supplementary specification for PVC/XLPE insulated cables and nonmetallic conduits wiring system.

1.16.1 PVC/XLPE INSULATED CABLE
The wiring shall be carried out in 250 Volt grade or 440 volt grade for 3 phase PVC/XLPE insulated cables as specified elsewhere run drawn in non-metallic conduits. The cables shall be of the sizes specified on the drawing.

1.16.2 INSTALLATION OF WIRING
Cables shall be drawn into accessories, distribution boards and switchgear after the erection of the conduit system. Under no circumstances shall it be permitted to draw cables into an incomplete section of the conduit installation.

1.16.3 JOINTS IN CABLES
The wiring shall be carried out on the looping- in principle. All joints shall be made at the terminals of a switches, distribution boards, ceiling roses, switches and socket outlets, etc and fixed apparatus only. No joints shall be made in conduits and other cable raceways unless specifically approved.

1.16.4 CAPACITY OF CONDUITS
The cables shall run in the conduits so as not to exceed the capacities as set out in the IEE Regulations. The conduits shall be best quality new super high impact grade heavy gauge “a” riding PVC unplasticised conduits as manufacturers by Metsec suitable for plain connections. Conduits of sizes less than 20mm shall not be used without the written authority of the Engineer.

1.16.5 Bending
The conduits shall be bent and formed strictly in accordance with the manufactures instructions:
   i) Small sizes, i.e. 20 and 25 mm shall be bent cold by inserting the correct size bending spring. It is essential for right angle bends that the conduit is bent past 90 degree to allow for spring back
   ii) Large size of conduit shall be pre-heated before inserting rubber cord to prevent kinking. Conduits badly formed or bent or damaged in any way shall not be used.

1.16.6 JOINTING
Joints shall be made water-tight by the use of ‘Egaweld’ cement applied with a brush or rug. ‘Egaweld’ shall be applied to the complete circumference of conduit. Conduit shall be thoroughly cleaned at the ends of ensure a good adhesion of the fittings. Egaweld shall not be permitted to enter into the conduit.
1.16.7 CONDUIT FITTINGS
All conduits fittings and accessories, including couplers, ordinary clips, saddles, pipe hooks, reducers, stopping plugs, lockouts and male and female bushes shall be manufactured dimensionally, similar to BSS 31/1940 solid tees shall not be used. Solid inspection elbows or bends or inspection tees shall be used only in exceptional circumstances and then only with the engineers approval.
Where it eases the installation of cast in situ back entry boxes on the loop n system, purpose made bends manufactured by egatube and comprising a tight bend with a push socket at one end and a threaded socket at the other end may be used with the Engineer’s approval.

1.16.8 Fixing of Conduits
Conduits shall be installed on the loop-in system and shall either be cast-in-situ in the main concrete structure, concealed in chases cast in concrete walls, or chases cut in solid partition walls, run in ceiling spaces or in hollow partitions of floors, or concealed below the floor screed, whichever shall prove to be the most suitable method of installation for use in the building under construction. Unless it is clearly specified or shown on the drawing, the method of installing conduits shall be subjected to the approval of the engineer.
Sunken conduits run in chases in walls shall be fixed by means of mild steel pipe hooks or non-metallic saddles spaced not more than 1m apart. Where a conduit is concealed behind plaster it shall be sunk to a depth of either 10mm below finished plaster level, or installed flush with the structural wall level before application of plaster, whichever is the lesser depth.
Conduit fixed on the surface of walls or ceiling shall be fixed by spacer bar saddles fixed not more than 1m apart.
Surface conduit shall also be fixed 230mm on both sides of all boxes, the box itself securely fixed. Where such an arrangement of boxes and saddles would prove to be both unsightly and unnecessary, short lengths of conduit not exceeding 1m in length between boxes need not be secured further than by connection to the adjacent boxes. In such cases the engineer reserves the right to insist upon additional fixing being provided, should he for any reason whatsoever such additional fixing necessary.
Where two or more lines of conduit run parallel to each other, on the surface of walls, etc, the distance between them shall not be less than 15mm and conduits shall not cross.
Conduits shall be installed in such a manner as to prevent interference with other services and shall be kept at least 180mm clear of gas or water pipes and heat in excess of 68 degrees C.
A means of expansion shall be provided in conduit runs in excess of 6m without any bend or set, by use of ‘Egested’ expansion couplings, which shall also be used at building expansion joints.
Conduits cast in situ shall be frequently secured to the steel reinforcement work, with heavy binding wire to prevent movement of the conduit and conduit boxes during the pouring and vibrating of the concrete.
Outlet boxes shall be securely fixed to the shuttering with nails, or by means, which shall be visible as a maker on removal of the shuttering only where marks can be concealed.
Conduits shall be installed after the first of steel reinforcement work is securely fixed and all open ends of conduits shall be protected by couplings plugged with a suitable non-metallic stopping plug. The number of right and bends in conduit cast in situ shall into exceed two between boxes. Immediately prior to installation of the wiring all conduit and fittings shall be dried and cleaned out by drawing through a cloth swab. Raw plugs shall be used for fixing to brickwork, self-tapping screws for fixing to aluminum section, raw nuts, raw-anchors spring toggles, gravity toggles or raw bolts, shall be used for fixing to other materials as approved by the engineer. Corners shall be turned by easy bends or sets made in accordance with the manufacturer’s instructions without altering the section or splitting conduit.

1.16.9 Circular inspection
Boxes will not be permitted in the floors unless approved. Boxes cast-in situ must face downwards from the ceiling/floor section. Small standard circular non-metallic conduit boxes, confirming dimensionally with B.S. 31/1940 with standard circular non-metallic (4mm) lids and nylon fixing screws, shall be provided and fixed at all junctions. The above circular boxes or equivalent looping boxes shall be provided and securely fixed for all ceiling points. When the conduit is run on the surface, all circular boxes for ceiling points shall be fixed with screws. Where ceiling roses occur and the ceiling box is recessed below the finished level of the ceiling, suitable extensive rings to accommodate the ceiling rose must be provided. Where ceiling boxes, including extension rings, are flush with the ceiling surface, break joints rings shall be provided to hide the joints. Where non-metallic outlet box of thermoplastic materials is used for the suspension of lighting fitting, care shall be taken to ensure that the temperature of the box does not exceed 60°C. The weight suspended from the box shall not exceed 3 kg. Where wiring system incorporates galvanized conduit and trunking, the trunking shall be deemed to be galvanized unless specified otherwise.

The number of cables to be installed in trunking shall be such as to permit easy drawing in without damage to the cables, and shall in no circumstance be such that a space factor of 45% is exceeded. Conduits and trunking shall be mechanically and electrically continuous. Conduits shall be tightly screwed between the various lengths so that they butt at the sockets joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects. Oil and other insulating substances shall be removed from the screw threads. Where conduits terminate in fuse gear, distribution board, adaptable boxes, non-spouted switchboxes, compression washers and sockets. All exposed threads and abrasions shall be painted (using an oil paint for black enameled tubing and galvanized tubing immediately after the conduits are erected. All bends and sets shall be made cold without altering the section of the conduit. The inner radius of the bend shall not be less than four 4) times the outside diameter of the conduits. Not more than two right angle bends will be permitted without the inter-posting of a draw in box. Where straight runs of conduit are installed, draw-in boxes shall be provided at distances not exceeding 15m. No tees, elbows, sleeves, either of inspection or solid type, will be permitted.
Conduits throughout shall be of sufficient section and so arranged with draw-in boxes to allow easy drawing in and out of anyone or all of the cables in the conduit.

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

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

Conduits installed and buried in walls shall allow a minimum of 15mm cover. These conduits and those cast-in situ concrete slabs shall be given one coat of rust prevention paint before concrete is placed. Sunk circular conduit boxes shall be provided with break joint rings of white mounded materials or metal. Surface conduit shall be run in square symmetrical lines and shall be marked on site for approval before installation. Conduits shall be fixed by means of distance saddles spaced at not more than 1.2m for 20mm and 50mm conduit and 1.5m for larger sizes.

Conduits shall be fixed at each side of conduit boxes at a distance not exceeding 250mm, and the saddles shall be equally spaced.

Where conduits installed within this area shall be solid drawn galvanized, as shall be conduit fittings and accessories and Buxton certified as suitable for Group 11 Hazards. Equipment shall comply with B.S 229, B.S.S. 889 and CP 1003. In no case shall conduits from different distribution boards be connected at one box, likewise cables from different distribution boards shall not be housed in the same conduit specified.

All conduit boxes except loop in pattern concrete floor shall be fixed direct to the structure apart from the support provided by the conduits. Box lids where required, shall be heavy gauge metal, secured by means of zinc plated or cadmium steel screws. All adaptable boxes and lids of the same size shall be interchangeable.

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

Draw-in boxes in the floor are generally to be avoided but where they are essential they must be grouped in positions approved by the Engineer and covered by suitable floor straps, either with non-ferrous tray or covers.

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

The Contractor must take full responsibility for the filings of all covers, but the fillings in materials will be supplied and carried out by the main Building contractor.

Where it is intended to fix enclosed lighting fittings directly to a box to suspend a fitting of weight in excess of 3kg, Egetude steel insert clips shall be used.

1.16.10 Switch and socket outlet boxes.

All boxes intended for switches, socket outlet or other outlets shall be fitted with brass ferrules to accommodate fixing screws.

1.16.11 stopping plugs

All spares ways in junction boxes, etc, left for possible future extensions shall be fitted with the stopping plugs.
1.16.12 Earthing
Where fittings and accessories require earthing, an earth continuity conductor shall be run through the conduit. The earth continuity conductor shall be a green colored PVC/XLPE insulated copper wire of minimum size 2.5sq mm and shall be continuous between terminals. Where the earth terminal is formed by a brass screw and washer, “Ross Courtney” type termination shall be used. All switched, socket outlets, ceiling boxes etc, shall be supplied with an earth terminal.

1.16.13 Earth Continuity0.
Each final sub-circuit that is required to be earthed shall be provided with its own individual earth continuity conductor which shall be run from a terminal on the earth bar in the distribution board or consumer’s control unit protecting that particular final sub-circuit.

2. PARTICULAR SPECIFICATION
2.1 SECTION 1
2.1.1 The electrical contractor shall supply labor and supply, deliver, install, fix. Connect, test, label and commission the electrical works, clean complete and working to every details as described in the specification and by related specification and on the drawings listed in the scheduled or drawings to the satisfaction of the consulting engineer.

2.1.2 Exclusion [this cause 1.02 DOES NOT apply for this contract]
Excluded from this sub-contracts is;
- Control panel for the motor-starters and interval wiring between control panel, motor, thermostats etc
- Supply and installation including wiring of the alarm security and equipment. The excludes conduits draw-wire, boxes, holes in the trunking system and blank-off plates, which forms part for this sub-contract.
- All telephone system and equipment. This excludes conduits draw-wires boxes holes in trunking system and blank-off plates which forms part of the contract.

2.2 SECTION 2 SUPPLY AND DISTRIBUTION
2.2.1 Supply and distribution system
   Metering
      The K.P &L Co meter is to be located in the meter board HT metering to apply
      All switch fuses MCB, MCCB including meters shall be of reputable manufacture meeting current British standard as stipulated in the general specification any other quality that does not strictly meet these standards shall not be acceptable.
   Supply
The premises is to be fed from the HV/LV switchboard this feeds power panels rising mains distribution boards and consumer units located at various load centers. These boards feed various sub-mains boards which in turn feed the final sub-circuits.

2.3 SECTION 3 LIGHTING AND SMALL POWER INSTALLATIONS

2.3.1 Installation system
With the exception of where otherwise noted on the drawings, the installation shall thought be carried out in PVC or XLPE cables of not less than 15mm copper drawn in high grade PVC conduit.

2.3.2 Lighting control system

**Indoor lighting**
The switching arrangements for the indoor lighting shall be as indicated on the drawings.

2.3.3 Types of accessory and fixed apparatus to be used shall be manufacture MK Clipsal, Phillips or Crabtree. Subject to the approval of the engineer equivalent makes may be used.

2.3.4 Connection to fixed appliances
The contractor shall supply and interconnect flexible cords between spur unit/outlet boxes and the appliances where flex connection are needed. All connections shall be made by white heat-resting PVC /XPLE flexible cords having fuse rating in accordance with the respective circuits subjected to a minimum of 1.5 mm.

2.3.5 Mounting heights and location
All mountings height stated shall mean the heights from finished floor level to under sides of the accessory.

**Lighting control switches**
1400mm above floor level and 100mm from architrave. If mounted in a column they shall be located in the center.

**Socket outlet**
300mm above finished floor except for areas otherwise stated on the drawings.

**Connection unit and outlets.**
Connection units having cord outlets shall be located as to limit the length of the length of the flex cord to approx. 600mm and be located slightly higher than the inlet on the appliances. The same applies to the outlet boxes.

**Conduit boxes [General]**
Where one fitting is shown in a room the boxes shall be in the center [unless otherwise stated], where two or more fittings are to be installed they shall be located in the center. Where installed between beams they shall be in between to beams. All boxes shall be with covers.

2.3.6 Wall and ceiling finishing
The contractor is to obtain information regarding ceiling claddings before the installations is the commenced as he will held responsible if the conduit boxes as well as for switches and sockets outlets, telephone etc are not installed at the right depth.
2.3.7 Lighting fitting
The contractor shall supply deliver to site install and commission all the fittings
The tenderer may submit an alternative scheduled of equal makes of fittings with the tender where applicable where appliances fittings shall be supplied complete with bulbs or tube the tubes shall be as Thom manufacture. The bus shall also be Phillips, Osram or GE makes equivalent makes may be substituted subject to due approval for engineer. The tender must always be submitted before in an alternative scheduled of an equal make of fittings with the tender where applicable.

2.3.8 Fixing and location
Details of fixing and location of various fittings are shown on relevant. Fluorescent and incandescent fittings hall, in addition to being fixed to the conduits boxes, also be fixed by means of PVC covered raw plugs [no woods plugs] at the fixing centers.

2.3.9 A rubber gasket shall be fitted on the conduits boxes for the outdoor fittings in order provide a waterproof seal.
All switch panels shall be as Crabtree or Clipsal manufacture or equivalent subject to the engineer approval. Each panel shall be fed from a particular phase as NOT more than one shall be allowed in one side panel. Separate conduits shall be installed to each panel.

2.3.10 Power installation
The contractor shall include for all installations shown on the drawings
The contractor shall satisfy himself that there is a continuous conduit trunking and/or duct system to facilitate installation of the entire power installation and shall be held responsible where continuity does not exist.

2.3.11 Installation system
The installation system for the indoor installation shall be carried out in concealed PVC conduits, PVc ducts and surface mounting trunking. The size of the cables shall not be less than 2.5mm for ring main circuits.

24. SECTION IV – FIRE ALARM SYSTEMS
2.4.1 Installation
The installation for the above shall be carried out using fire tuff 1.5mm copper cables drawn in high impact grade PVC conduits.
The contractor shall ensure a continuo’s link up between individual break glass call units, automated devices, bells and the panels. Also the link between individual occupancies and the main panel that shall be located in the block shall be ensured. The fire alarm system must be intelligent type and fully addressable.

25. SECTION V- INSTALLATION FOR STRUCTURED CABLING, SECURITY, CCTV. BMS AND ACCESS CONTROL SYSTEMS.
2.5.1 Installation system
In the tender for electrical installation, supports for all cables in the structured cabling, security, CCTV, BMS & Access control systems shall be included. The electrical tender shall include for trunking, conduits
etc to ensure a continuous supply system from the telephone switch room and the computer server to any individual outlet. The ICT and security contractors shall do all cabling and the backbone superhighway along the vertical building riser. The same shall have appropriate plug on points for the occupants on each floor.

Holes in structures shall be provided by the main contractor. The conduits shall at each point terminate in deep switch boxes as specified for lighting control switches.

2.5.2 Mounting heights and locations
Mounting heights shall be as for socket outlets.

2.5.3 Blank off plates
As MK /Crabtree. Volex/MEM white or equal and approved.

2.6 SCHEDULE OF WORKS AND SCHEDULE OF RATES
PREAMBLE
2.6.1 The following meanings/interpretations shall be attached:-

Lighting point: “Install a lighting complete with concealed diameter 20mm H.G. PVC conduit, conduit couplers, conduit, bends, box, wiring in 3x1.5mm PVC/XLPE S/C CU cables and all accessories, but excluding the light switch”.

Socket Outlet: “Install 13 A power outlet comprising trunking/Concealed diameter 20mm H.G PVC conduit, conduit couplers, conduit bends, box, and ring mains wiring in 6 x 2.5mm PVC/XLPE S/C CU cables and all accessories including 13 A switched socket plate. All socket outlets must have safely shutters on both live and neutral.

Telephone Point: “Install telephone cord outlet point complete with Trunking/concealed diameter 25mm H.G PVC conduit box, and draw wire” All Telephone outlets must have continuous links interlinking all the points.

20A DP Outlet: “Install outlet for 20A DP switch comprising Trunking/ of concealed diameter 25mm H.G PVC conduit box, and draw wire. Neon light and all accessories.

Security alarm call point: “Install outlet for security alarm call point comprising. Trunking/concealed diameter 20mm HG PVC conduit, draw wire and box including blanking plate. All call points must be interconnected.

Consumer Unit: “supply and install SP/N power consumers unit complete with SP/N Integral isolator”
Distribution Board: “Supply and install TP/N power distribution board, complete with SP/N Integral isolator”

Earthing: protective multiple earthing to Kenya Power and Lighting co. (K.P. & L .C) Standards comprising 1200mm deep – driven pure electrolytic copper earth electrode, electrode clamps, yellow/green earth lead, earth pit complete with cover and all accessories.
Labeling: Comprehensive, concise and instructive permanent labeling of all the sub–circuit, complete with identification of the sizes of all the sub-circuit cables, permanent traffolyte identification of the board such as” DB A” and identification of the sizes of the sub-mains and their origin e.g “Board A: supply, 4x 16m SOURCE, DBI”
Blanking plates:“supply and install blanking plates in all the spare ways.
Switched spur outlet: “Install 13 A, switched spur outlets with neon light and 5A integral fuse complete with concealed diameter 20mm H.G Peck conduit, box, wiring in 3 x 2.5mm wiring for power supply and all accessories.
Trunking: “supply and install 250 x 50mm white stove-enamedled 3-compartment metal trunking (to details shown) complete with bends, and plates cover, screws etc and all accessories.
Cooker outlet: “Install 45A DP control unit, complete with concealed box, concealed diameter 25mm H.G PVC conduit, box, wiring in 3 x 6.0mm PVC/XLPE S/C CU cables and all accessories including 45 A DP cooker control unit, with an integral socket fitted with neon lights, and cooker connector unit. With an integral socket fitted with neon lights, 1222 And cooker connector unit. 32A TP outlet ‘install outlet for 32A TP switch comprising of conceal diameter 23\(^{\circ}\)HG PVC conduit wiring in 4\times 6.0+6.0mm2 e.c.cPVC/XLPE S/S CU acbles,box,32A TP switch plate with neon light and all accessories
2.6.2. Unless specifically stated otherwise all light fittings will be as Thorn manufacture
All power accessories sockets telephone outlets TV outlets switches spur outlets etc must either be Crabtree Clipsal or MK. Alternative makes will not be accepted unless specifically stated otherwise or of equal and approved quality and performance Distribution boards/consumers units must either be Crabtree or Merlin Gerlin
2.6.3 The electrical–contract is for supplying delivering fixing/installing testing commissioning and setting to work to the full satisfaction of the engineer and the contractor price must include all costs for the entire process.
2.6.4 All conduits/ducts must be heavy gauge. Where steel pipes are specified, they must be minimum of the of class B in strength
2.6.5 the installations shall be carried out strictly in accordance with the previous of the 17\(^{th}\)-edition of wiring `regulation as published by the institution electrical engineers great Britain the most current relevant standards issued by the Kenya bureau of standards and with strict adherence to the safety requirements and by laws of the Kenya power and lighting co ltd.
2.6.6 The contractor shall ensure that the highest standards of workmanship and highest quality materials are used at all times. Inferior workmanship and low quality materials shall be rejected and replaced at the contractor own cost.
2.6.7 Other than ceiling accessories light fittings etc all the other mounting heights will be re-confirmed with the engineer on the site
2.6.8 All light fittings must be completed with appropriate lamp bulb tube starter control gear etc as applicable.
## 3. POST IMPLEMENTATION SCHEDULE
### 3.1 DEALERSHIP, TRAINING & SUPPORT

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<tr>
<th>ITEM</th>
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<tr>
<td>Support/supplier/dealership</td>
<td>1. Manufacture details&lt;br&gt;2. Authorization letter from dealership current to past 1 year</td>
<td>Provide hard copies&lt;br&gt;1 letter from system acknowledging support and dealership details. YES/NO&lt;br&gt;2 letter from manufacture giving contractor dealership rights for the system. YES/NO</td>
</tr>
<tr>
<td>Training</td>
<td>Attach certified training plans</td>
<td>Provide a full proposal for certified training on system for our client staff. YES/NO</td>
</tr>
<tr>
<td>Softwares &amp; Upgrades</td>
<td>All software to be licensed and open source and should require no licenses (state availability and sources of software updates)</td>
<td>Provide hard copies of ;&lt;br&gt;1 original CD.YES/NO&lt;br&gt;2 licenses&lt;br&gt;3 proof of no future licenses&lt;br&gt;4 sources of updates</td>
</tr>
<tr>
<td>Spare parts and maintenance proposal</td>
<td>1. comprehensive priced list for&lt;br&gt;2. 2 years maintenance cost&lt;br&gt;3. hourly call out charges</td>
<td>Provide&lt;br&gt;1 A comprehensive and fully priced list of system spare parts and lead times to our client YES/NO&lt;br&gt;2 comprehensive and priced 2 year maintenance contract yes/no&lt;br&gt;3 hourly charges on a 24/7 basis yes/no</td>
</tr>
</tbody>
</table>
3.2 SCHEDULED & WARRANTIES
3.2.1 LIST OF TOOLS BE SUPPLIED WITH EACH INSTALLATIONS
The following tools shall be handed over to the client or engineer before completion of the contract:

<table>
<thead>
<tr>
<th>Item</th>
<th>description</th>
<th>Prices[KSHs]</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
### 3.3 LIST OF CONSUMABLE & SPARE PARTS TO BE SUPPLIED WITH EACH INSTALLATION

The following items shall be handed to the client or engineer before completion of the contract. These items shall not be used by the contact to carry out his normal maintenance.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Prices</th>
<th>KSHs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
SECTION IV

STANDARD FORMS

List of Standard Forms

(i) Form of Invitation for Tenders
(ii) Form of Tender
(iii) Letter of Acceptance
(iv) Form of Agreement
(v) Form of Tender Security
(vi) Performance Bank Guarantee
(vii) Performance Bond
(viii) Qualification Information
(ix) Tender Questionnaire
(x) Confidential Business Questionnaire
(xi) Request for Review Form
I. FORM OF INVITATION FOR TENDERS

To: ____________________________________ [name of Contractor]

_____________________________________[address]

Dear Sirs:

Reference: ____________________________________[Contract Name]

You have been prequalified to tender for the above project.

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

A complete set of tender documents may be purchased by you from ____

________________________________________ [mailing address, cable/telex/facsimile numbers].

Upon payment of a non-refundable fee of Kshs __________________________

All tenders must be accompanied by ___________number of copies of the same and a tender security in the form and amount specified in the tendering documents, and must be delivered to

________________________________________ [address and location]

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

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

Yours faithfully,

________________________________________ Authorised Signature

________________________________________ Name and Title
II. FORM OF TENDER

TO: __________________________ [Name of Employer] ____________ [Date]
   __________________________________________ [Name of Contract]

Dear Sir,

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

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

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

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

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

   Dated this __________________ day of _______20________________

   Signature __________________ in the capacity of___________________
duly authorized to sign tenders for and on behalf of
   __________________________________________ [Name of Contractor]
of__________________________________________ [Address of Contractor]

Witness; Name_____________________________________
   Address_____________________________________
   Signature____________________________________
   Date_____________________________________


III. LETTER OF NOTIFICATION OF AWARD

Address of Procuring Entity

To: __________________________

__________________________

__________________________

RE: Tender No. ________________

Tender Name ________________

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

________________________________________________________________________

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

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

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

(FULL PARTICULARS) ________________________________

________________________________________________________________________

SIGNED FOR ACCOUNTING OFFICER
IV. FORM OF AGREEMENT

THIS AGREEMENT, made the ____________ day of ________ 20 ______

between___________________________________________of [or whose registered office is situated at]___________________________________(hereinafter called “the Employer”) of the one part

AND

________________________________________________________of [or whose registered office is situated at]_________________________________________(hereinafter called “the Contractor”) of the other part.

WHEREAS THE Employer is desirous that the Contractor executes

________________________________________________________________________

(name and identification number of Contract ) (hereinafter called “the Works”) located at______________________________[Place/location of the Works]and the Employer has accepted the tender submitted by the Contractor for the execution and completion of such Works and the remedying of any defects therein for the Contract Price of Kshs___________________________[Amount in figures], Kenya Shillings_____________________________________________

[Amount in words].

NOW THIS AGREEMENT WITNESSETH as follows:

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

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

   (i) Letter of Acceptance

   (ii) Form of Tender

   (iii) Conditions of Contract Part I

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

   (v) Specifications

   (vi) Drawings

   (vii) Priced Bills of Quantities/Priced Schedule of Rates[whichever is applicable]

50
3. In consideration of the payments to be made by Kenyatta University to the Contractor as hereinafter mentioned, the Contractor hereby covenants with Kenyatta University to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

4. Kenyatta University 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 Kenyatta University____________________________

Binding Signature of Contractor ___________________________________

In the presence of (i) Name________________________________________

Address_______________________________________________________

Signature________________________________________________________

[ii] Name _______________________________________________________

Address_______________________________________________________

Signature_______________________________________________________
V. FORM OF TENDER SECURITY

WHEREAS ………………………………..(hereinafter called “the Tenderer”) has submitted his tender dated ……………………….. for the works of ……………………… (name of Contract)

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

THE CONDITIONS of this obligation are:

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

   Or

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

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

   (b) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Tenderers;

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

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

   [date] [signature of the Bank]

   [witness] [seal]
VI. PERFORMANCE BANK GUARANTEE

To: __________________________ (Name of Employer) __________ (Date) __________ (Address of Employer)

Dear Sir,
WHEREAS ______________________ (hereinafter called “the Contractor”) has undertaken, in pursuance of Contract No. _____________ dated __________ to execute _______________ (hereinafter called “the Works”);

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

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

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

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

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

This guarantee shall be valid until the date of issue of the Certificate of Completion.

SIGNATURE AND SEAL OF THE GUARANTOR ____________________

Name of Bank __________________________

Address __________________________

Date __________________________
VII. PERFORMANCE BOND

By this Bond, We_______________________________
of (or whose registered office is situated at)__________________________as Principal
(hereinafter called “the Contractor”) and
_______________________________of (or whose registered office is situated
at)__________________________ as Surety (hereinafter called “the Surety”), are
held and firmly bound unto_____________________________of (or whose registered office is
situated at)__________________________ as Obligee (hereinafter called “the Employer”) in the amount of
Kshs.______________________________ [amount of Bond in figures] Kenya
Shillings___________________________ [amount of Bond in words], for the payment of which sum well and truly, the Contractor and the Surety
bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly
by these presents.

WHEREAS the Contractor has entered into a Contract with the Employer dated the ________________
day of ______________ 20 ________________ for the execution
of_____________________________________________________________________
(name of Contract) in accordance with the Contract documents, Specifications and amendments thereto,
which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as
the Contract.

NOW THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and
faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null
and void; otherwise it shall remain in full force and effect. Whenever the Contractor shall be, and declared
by the Employer to be, in default under the Contract, the Employer having performed the Employer’s
obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) complete the Contract in accordance with its terms and conditions; or

(2) obtain a tender or tenders from qualified tenderers for submission to the Employer for completing
the Contract in accordance with its terms and conditions, and upon determination by the Employer
and the Surety of the lowest responsive tenderer, arrange for a Contract between such tenderer and
Employer and make available as work progresses (even though there should be a default or a
succession of defaults under the Contract or Contracts of completion arranged under this paragraph)
sufficient funds to pay the cost of completion less the balance of the Contract Price; but not
exceeding, including other costs and damages for which the Surety may be liable hereunder, the
amount set forth in the first paragraph hereof.
The term “Balance of the Contract Price”, as used in this paragraph, shall mean the total amount payable by the Employer to the Contractor under the Contract, less the amount properly paid by the Employer to the Contractor; or

(3) Pay the Employer the amount required by the Employer to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of one year from the date of issuance of the Certificate of Completion.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators, successors and assigns of the Employer.

In testimony whereof, the Contractor has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this __________________________ day of __________________________ 20__________

SIGNED ON __________________________ SIGNED ON __________________________

On behalf of __________________________ On behalf of __________________________

[Name of Contractor] [Name of Surety]

By ____________________________ By ____________________________

In the capacity of __________________________ In the capacity of __________________________

In the presence of; Name __________ In the presence of; Name __________

Address __________ Address __________

Signature __________ Signature __________

Date __________ Date __________
VIII. QUALIFICATION INFORMATION

1. Individual Tenderers or Individual Members of Joint Ventures

1.1 Constitution or legal status of tenderer (attach copy or Incorporation Certificate):
   - Place of registration: _______________________________
   - Principal place of business _______________________________
   - Power of attorney of signatory of tender ____________________

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Currency</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Project name</th>
<th>Name of client and contact person</th>
<th>Type of work performed and year of completion</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

56
1.4 Major items of Contractor’s Equipment proposed for carrying out the Works. List all information requested below.

<table>
<thead>
<tr>
<th>Item of Equipment</th>
<th>Description, Make and age (years)</th>
<th>Condition (new, good, poor) and number available</th>
<th>Owned, leased (from whom?), or to be purchased (from whom?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>__________________</td>
<td>__________________________________</td>
<td>__________________</td>
<td>___________________________________________________</td>
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<tr>
<td>__________ (etc.)</td>
<td>____________________________</td>
<td>__________________</td>
<td>__________________</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Years of experience (general)</th>
<th>Years of experience in proposed position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>__________________</td>
<td>__________________</td>
<td>__________________</td>
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<td>__________________</td>
<td>__________________</td>
<td>__________________</td>
<td>__________________</td>
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<tr>
<td>(etc.)</td>
<td>__________________</td>
<td>__________________</td>
<td>__________________</td>
</tr>
<tr>
<td>(etc.)</td>
<td>__________________</td>
<td>__________________</td>
<td>__________________</td>
</tr>
</tbody>
</table>

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

__________________________________________________________________________

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

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

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

____________________________________________________________________

____________________________________________________________________

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

____________________________________________________________________

____________________________________________________________________

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

2 Joint Ventures

2.0 The information listed in 1.1 – 2.0 above shall be provided for each partner of the joint venture.

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

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

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

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

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

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

Please fill in block letters.

1. Full names of tenderer……………………………………………………………………

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

3. Telephone number (s) of tenderer………………………………………………………………

4. Telex address of tenderer……………………………………………………………………

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

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

……………………………………………………………………………………

……………………………………………………………………………………

_______________________

Signature of Tenderer

Make copy and deliver to:___________________(Name of Employer)
X. CONFIDENTIAL BUSINESS QUESTIONNAIRE

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

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

Part 1 – General

Business Name .................................................................

Location of business premises; Country/Town............................

Plot No................................. Street/Road .........................

Postal Address.............................. Tel No..............................

Nature of Business..............................................................

Current Trade Licence No............... Expiring date....................

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

Name of your bankers..........................................................

Branch...............................................................

Part 2 (a) – Sole Proprietor

Your name in full........................................... Age..................

Nationality........................................... Country of Origin...........

*Citizenship details ........................................................
Part 2 (b) – Partnership

Give details of partners as follows:

<table>
<thead>
<tr>
<th>Name in full</th>
<th>Nationality</th>
<th>Citizenship Details</th>
<th>Shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
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<td>3</td>
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</tbody>
</table>

Part 2(c) – Registered Company:

Private or public……………………………………………………………

State the nominal and issued capital of the Company-

Nominal Kshs………………………………………………………………

Issued Kshs……………………………………………………………………

Give details of all directors as follows:

<table>
<thead>
<tr>
<th>Name in full</th>
<th>Nationality</th>
<th>Citizenship Details</th>
<th>Shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part 2(d) – Interest in the Firm:

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

I certify that the information given above is correct.

………………………  ………………………  …………………

(Title)  (Signature)  (Date)

- Attach proof of citizenship
FORM RB 1

REPUBLIC OF KENYA
PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD

APPLICATION NO…………….OF………….20……...

BETWEEN
…………………………………………….APPLICANT

AND

…………………………………………….RESPONDENT (Procuring Entity)

Request for review of the decision of
the…………… (Name of the Procuring Entity) of ………….dated
the…day of …………..20……….in the matter of Tender
No………. ….of …………..20…

REQUEST FOR REVIEW

I/We……………………………, the above named Applicant(s), of

address: Physical
dress: Physical
address…………….Fax

No…….Tel. No……..Email ……………, hereby request the

Public Procurement Administrative Review
Board to review the whole/part of the above mentioned decision on the following grounds,

namely:-

1.

2.

etc.

By this memorandum, the Applicant requests the Board for an order/orders that:

1.

2.

etc

SIGNED ……………….(Applicant)

Dated on…………….day of ………….20…

FOR OFFICIAL USE ONLY

Administrative Review Board on …………. day

Lodged with the Secretary Public Procurement of

……………20………..

SIGNED
Board Secretary
SECTION V

APPENDIX I: BILL OF QUANTITIES/ SCHEDULE OF RATES
The contactor shall supply deliver install, fix, connect, test, label and commission the following lighting points to every details as described below and in the related specifications and/or on the drawings to the satisfaction of the consulting engineers.

<table>
<thead>
<tr>
<th>Item no</th>
<th>Description</th>
<th>Qty</th>
<th>Units</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.01</td>
<td>1 way switching lighting points wired in 3 x 1.5mm PVC S/C CU cables drawn in 20mm HG PVC conduits running from the lighting DB to the individual lighting points</td>
<td>16</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.02</td>
<td>Ditto for the emergency lighting</td>
<td>4</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.03</td>
<td>Ditto for toilet</td>
<td>10</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.04</td>
<td>2 way switching lighting points wired in 3 x 1.5mm PVC S/C CU cables drawn in 20mm HG PVC conduits running from the DB to the individual lighting points</td>
<td>24</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.05</td>
<td>Intermediate switching lighting points for ramp and stairs wired in 20mm² HG conduits running from the DB to the individual lighting points floor to floor</td>
<td>2</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.06</td>
<td>Photocell/timer controlled wall lighting points for wall mount external security lights drawn in 3 x 1.5mm 2 PVC S/C CU cables drawn in 20mm HG PVC conduits running from the DB individual lighting points and control contactor</td>
<td>10</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total for internal lighting points & wiring c/f to ground floor price summary page
<table>
<thead>
<tr>
<th>Item no</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rates</th>
<th>Amount</th>
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<tbody>
<tr>
<td>1.08</td>
<td>Supply, install test, label and commission the following</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i 10A 1 gang 1 way plate switch</td>
<td>18</td>
<td>No</td>
<td></td>
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<tr>
<td></td>
<td>ii 10A 1 gang 2 way plate switch</td>
<td>4</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii 10A 2 gang 2 way plate switch</td>
<td>4</td>
<td>No</td>
<td></td>
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<tr>
<td>2</td>
<td>Lighting fittings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.01</td>
<td>Surface mount down lighters with circular opal diffuser and white stand-off ring LED-High level lights (STAGE)</td>
<td>4</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.02</td>
<td>Surface mount down lighters as thorn chalice complete with frosted glass splash proof, electronic ballast and compact fluorescent tube lamp (Washrooms)</td>
<td>11</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.03</td>
<td>Wall mounting luminaire with louvre/reflector and 18 watts compact fluorescent lamps as philips CAT no: FWG 230BK or approved equivalent</td>
<td>10</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.04</td>
<td>Maintained emergency exit luminaire illuminated by LEDs with 3hr NiCd battery backup with extrusion aluminium support rail enclosing LEDs on linear PCB, supported by chains, suspended from ABS injection moulded housing, enclosing battery and electronic control circuits type 'ET'</td>
<td>2</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.05</td>
<td>Self contained pendant double sided LED exit sign for non-maintained emergency lighting for 3 hours duration as OMS</td>
<td>2</td>
<td>No</td>
<td></td>
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</tr>
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</table>
### PROPOSED MAMA NGINA UNIVERSITY LECTURE THEATRE GROUND FLOOR

<table>
<thead>
<tr>
<th>Item no</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
</table>
| 2.06    | Light fittings (continuations)  
4ft Strip light mirror IP65 with T5 and electronic ballast/or LED as Phillips or approved equivalent (washroom-mirrors)  
Surface LED square body panel luminaires, 150x150 light With electronic gear ASP (stairs) | 2 No |      |       |        |
| 2.07    | 40Watts, 600X600watt led panel as philips for offices. | 16 No |      |       |        |
| 2.08    | 11watts, LED circular surface mount downlighters with electronic control gear ENTRANCE | 2 No |      |       |        |
| 2.09    | Internal studio wall mount luminaire(warm light)-30ways LED Flood light | 12 no |      |       |        |
| 2.1     | 50watts High level LED luminaires ASP | 12 NO |      |       |        |

Total for internal light fittings c/f to ground floor price summary page
<table>
<thead>
<tr>
<th>Item no</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>supply, install, test, label and commission the following</td>
<td></td>
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<tr>
<td>3.01</td>
<td>Fire alarm system Non-addressable system</td>
<td>6</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.02</td>
<td>Smoke detector complete with base as menvier or approved equivalent</td>
<td>4</td>
<td>No</td>
<td></td>
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<tr>
<td>3.03</td>
<td>Heat detector complete with base as menvier</td>
<td>6</td>
<td>No</td>
<td></td>
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</tr>
<tr>
<td>3.04</td>
<td>Fire alarm bell as menvier</td>
<td>1</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.05</td>
<td>Fire alarm flasher as menvier</td>
<td>1</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.06</td>
<td>2-loop fire alarm panel as menvier or approved equivalent complete with 12 AH nickel cadmium (24 hours) standby batteries and integrated battery charger</td>
<td>1</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.07</td>
<td>Fire alarm control panel outlet point wired in 3x2.5mm² fire resistance cables concealed in PVC conduits complete with 5A fused unswitched connection unit with neon light and all accessories</td>
<td>18</td>
<td>No</td>
<td></td>
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<tr>
<td>3.08</td>
<td>Outlet for CCTV alarm interlinked in concealed 32mm HG PVC conduits complete with wiring in 3x1.5 mm PVC S/C CU cables</td>
<td>4</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.09</td>
<td>Provision sum for programming and training</td>
<td>1</td>
<td>lot</td>
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Total for Fire alarm system c/f to ground floor prices collection page
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<th>Unit</th>
<th>Rates</th>
<th>Amount</th>
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<tbody>
<tr>
<td></td>
<td>install, test and commission the following</td>
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<tr>
<td>4</td>
<td>Trunking Installation and power points</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4.01</td>
<td>200x50mm, three compartment stove, enameled powder coated factory fabricated metallic trunking complete with angle bends, Tees and end caps to detail and approval, complete with covers, self tapping screws and all fixing accessories</td>
<td>60</td>
<td>LM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.02</td>
<td>Factory made powder coated trunking faceplates for twin sockets outlets</td>
<td>60</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.03</td>
<td>Factory made powder coated trunking faceplates for Data/telephone outlets</td>
<td>20</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.04</td>
<td>Carry out equibonding on the entire trunking length</td>
<td>1</td>
<td>lot</td>
<td></td>
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<tr>
<td></td>
<td><strong>Socket outlets and power points</strong></td>
<td></td>
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</tr>
<tr>
<td>4.05</td>
<td>Socket outlets points comprising of wiring in 3X2.5mm² SC-CU PVC insulated cables concealed in 25mm diameter HG PVC conduit and metallic trunking</td>
<td>60</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.06</td>
<td>Allow for cable ties at one meter interval along the cable trunking</td>
<td>1</td>
<td>Item</td>
<td></td>
<td></td>
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<tr>
<td>4.07</td>
<td>13A switched moulded double socket outlets plate as mk or approved equivalent</td>
<td>60</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item No</td>
<td>Description</td>
<td>Qty</td>
<td>Units</td>
<td>Rates</td>
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<tr>
<td></td>
<td><strong>Socket outlets and power points continuation</strong></td>
<td></td>
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<tr>
<td>4.08</td>
<td>Hand drier outlet points wired in 3 x 2.5mm PVc S/C CU cables in 20mm HG PVc conduits</td>
<td>2</td>
<td>No</td>
<td></td>
<td></td>
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<tr>
<td>4.09</td>
<td>20A double pole switch with neon indicator as mk or approved equivalent</td>
<td>2</td>
<td>No</td>
<td></td>
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<tr>
<td>4.1</td>
<td>TV co-axial socket plate</td>
<td>0</td>
<td>No</td>
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<td>4.11</td>
<td>Telephone socket plate as RJ 11</td>
<td>2</td>
<td>No</td>
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<tr>
<td>4.12</td>
<td>data socket plates as RJ45</td>
<td>30</td>
<td>No</td>
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<tr>
<td>4.13</td>
<td>Provision sum for floor box socket outlets</td>
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**Total for power points & trunking C/F**

Price summary page
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<thead>
<tr>
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<th>Description</th>
<th>Qty</th>
<th>Units</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supply, install, test, label and commission the following:</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>DISTRIBUTION BOARDS AND POWER INTAKE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.01</td>
<td>Distribution boards</td>
<td>1</td>
<td>lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 way TPN, flush mounted distribution board complete with 100A integral isolator as melin gerin or approved equivalent Complete with the following MCBs to source power from sub Lv Board within the building and distribute to the entire building except studio control room.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>i. 8no-10A sp mcb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. 4no-16A sp mcb</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>iii. 2no-20A sp mcb</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>iv. 1no-32A sp mcb</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>v. 2no-32A-TP mcb</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>v. 5no-blanking covers</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5.02</td>
<td>12 way TPN, flush mounted distribution board complete with 100A integral isolator as melin gerin or approved equivalent Complete with the following MCBs to be installed at studio control room to supply power to control room, special stage effect lightings, mortirised curtain control and any other appliances and equipment controled form the point.</td>
<td>1</td>
<td>lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. 12no-10A sp mcb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. 12no-20A sp mcb</td>
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<td></td>
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<tr>
<td></td>
<td>iii. 6no-20A sp mcb</td>
<td></td>
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<td></td>
<td>iv. 1no-32A sp mcb</td>
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<tr>
<td></td>
<td>v. 2no-32A-TP mcb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>v. 3no-blanking covers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item No</td>
<td>Description</td>
<td>Qty</td>
<td>Units</td>
<td>Rates</td>
<td>Amount</td>
</tr>
<tr>
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<tr>
<td><strong>POWER INTAKE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.03</td>
<td>Install, test, label and commission the following free standing metal clad modular 200A bus bar LV switchboard (to source power from substation Main Lv board and distribute to distribution boards above) with the following accessories: i. Main income MCCB:- 1NO-120A 4 pole MCCB ii. Outgoing:- 2no-63A TP MCCB provide standard earthing as required 2no-100A TP MCCB adjustable 0.75-1 of its capacity carry out standard earthing as required</td>
<td>1</td>
<td>lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.04</td>
<td>Supply, lay and terminate 4 core 35mm sq PVC/SWA/PVC cable from main LV switchroom (Substation) - through 150A TP-MCCB to the switchboard above</td>
<td>100</td>
<td>LM</td>
<td></td>
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</tr>
<tr>
<td>5.05</td>
<td>Trenching, laying of the cable / hatari tiles and back filling</td>
<td>100</td>
<td>LM</td>
<td></td>
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</tr>
<tr>
<td>5.06</td>
<td><strong>Sub-main power Distribution</strong></td>
<td>25</td>
<td>LM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supply, lay and terminate 5X25mm sq SC-CU cable in concealed 50mm sq HG PVC conduits to link the LV switchboard in Item: 3.5 above to the distribution board in the control room</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Item No</td>
<td>Description</td>
<td>Qty</td>
<td>Units</td>
<td>Rates</td>
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</tr>
<tr>
<td>5.07</td>
<td>Supply, lay and terminate 5X16mm sq SC-CU cable in concealed 50mm sq HG PVC conduits to link the lv switchboard in Item: 3.5 above to the distribution board in the serving the rest of the building</td>
<td>25</td>
<td>LM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.08</td>
<td>Provision sum for wiring and installation customised power isolators, switch controls for various studion actuators, equipments and machinery</td>
<td>1</td>
<td>LOT</td>
<td></td>
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</table>

Total for distribution board and power intake carried forward to ground floor summary page
<table>
<thead>
<tr>
<th>ITEM NO</th>
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<tr>
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<td>TOTAL BROUGHT FORWARD FROM:-</td>
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</tr>
<tr>
<td>I</td>
<td>LIGHTING POINTS AND WIRING</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>LIGHT FITTINGS</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>FIRE ALARM SYSTEMS</td>
<td></td>
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<tr>
<td>IV</td>
<td>POWER POINTS AND TRUNKING</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>DISTRIBUTION AND POWER INTAKE</td>
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</tr>
</tbody>
</table>

TOTAL FOR GROUND FLOOR CARRIED FORWARD TO SUMMARY PAGE
**PROPOSED MAMA NGINA UNIVERSITY LECTURE THEATRE FIRST FLOOR**

**INTERNAL LIGHTING POINTS & WIRING**

The contactor shall supply deliver install, fix, connect, test, label and commission the following lighting points to every details as described below and in the related specifications and/or on the drawings to the satisfaction of the consulting engineers.

<table>
<thead>
<tr>
<th>Item no</th>
<th>Description</th>
<th>Qty</th>
<th>Units</th>
<th>Rates</th>
<th>Amount</th>
</tr>
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<tr>
<td><strong>LIGHTING POINTS AND WIRING</strong></td>
<td></td>
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<tr>
<td>1.01</td>
<td>1 way switching lighting points wired in 3 x 1.5mm PVC S/C CU cables drawn in 20mm HG PVC conduits running from the lighting DB to the individual lighting points</td>
<td>15</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.02</td>
<td>2 way switching lighting points wired in 3x 1.5mm PVC S/C CU cables drawn in 20mm HG PVC conduits running from the DB to the individual lighting points</td>
<td>2</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.03</td>
<td>10A white moulded switch plates as powermarks or approved equivalent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. 10A 1 gang 1 way plate switch</td>
<td>18</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. 10A 1 gang 2 way plate switch</td>
<td>4</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii. 10 A 2 gang 2 way plate switch</td>
<td>4</td>
<td>No</td>
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<td></td>
</tr>
<tr>
<td><strong>LIGHTING FITTINGS</strong></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>1.04</td>
<td>40Watts, 600X600 watt led panel as philips for offices.</td>
<td>16</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.05</td>
<td>Surface LED square body panel luminaires, 150x150 light With electronic gear ASP (stairs)</td>
<td>1</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.06</td>
<td>11 watts, LED circular surface mount downlighters with electronic control gear (coridors)</td>
<td>2</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item no</td>
<td>Description</td>
<td>Qty</td>
<td>Units</td>
<td>Rates</td>
<td>Amount</td>
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</tr>
<tr>
<td>1.07</td>
<td>Socket outlets points comprising of wiring in 3X2.5mm² SC-CU PVC insulated cables concealed in 25mm diameter HG PVC conduit with switch boxes where socket will be mounted</td>
<td>10</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.08</td>
<td>13A switched moulded double socket outlets plate as mk or approved equivalent</td>
<td>10</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.09</td>
<td>Provide concealed 20mmsq diameter HG PVC conduiting with switch boxes where single data sockets will be mounted</td>
<td>8</td>
<td>NO</td>
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TOTAL FOR FIRST FLOOR CARRIED FORWARD SUMMARY PAGE
<table>
<thead>
<tr>
<th>Item No</th>
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<th>Units</th>
<th>Rates</th>
<th>Amount</th>
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<tbody>
<tr>
<td></td>
<td>Supply, install label where applicable and commission the following</td>
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<tr>
<td>1.01</td>
<td>15mm diameter multiple point copper air terminal as Furse</td>
<td>No</td>
<td>5</td>
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<tr>
<td>1.02</td>
<td>Copper air terminal base as Furse</td>
<td>NO</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.03</td>
<td>25mm x 3mm tinned copper tape as Furse</td>
<td>LM</td>
<td>50</td>
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</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.04</td>
<td>Tape clips as Furse</td>
<td>lot</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.05</td>
<td>25mm x 3mm tinned copper tape as Furse for down conductors</td>
<td>LM</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.06</td>
<td>Oblong test/junction clamp as furse</td>
<td>NO</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.07</td>
<td>15mm diameter, 1200mm long solid copper earth rod as Furse, complete with</td>
<td>No</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>driving stud and spike</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.08</td>
<td>Earth rod – to tape clamp</td>
<td>No</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.09</td>
<td>Concrete inspection earth pit as Furse</td>
<td>No</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bonding and clamping, to all metal work including pipes, gas pipes, hand</td>
<td>Item</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>– rails, air conditioning units, windows frames, cladding, metal roof etc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.11</td>
<td>Bonding of the lighting protection system to the main earthing system</td>
<td>Item</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>present in the proposed development</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

TOTAL LIGHTNING ARRESTORS CARRIED FORWARD TO THE THEATRE BLOCK COLLECTION PAGE
### Proposed Mama Ngina University Main Substation

<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
<th>Qty</th>
<th>Units</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td><strong>Power Intake for the Entire University</strong></td>
<td>1 lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.01</td>
<td>Free standing L.V switchboards as per attached schematics, fully type tested assembly form 3b type 2 cubicle pattern to IP54 protection and to specifications, comprising of merlin Gerin, Terasaki or ABB switchgear OR approved equivalent as follows</td>
<td>1 lot</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Busbars**
- 500 A rated TP copper busbars
- Appropriately sized Neutral bar
- Appropriately sized Earthing bar

**Incomer**
- 430 A rated 4P MCCB, with adjustable overcurrent ratings in a scale of 0.75 - 1

- Should have space for KPLC meter and ct, cut out complete with viewing glass.
  - 4 No. 125A rated TPN MCCBS adjustable on 0.75 – 1 scale
  - 4 No. 100a rated TPN MCCB
  - 6 No 63A rated TPN MCCB

**Surge Protection**
- Should include a furse surge arrestor or equivalents

**Instrumentation**
- Should include
  - Mains supply ON and Mains supply available indicator
  - 0.500A rated digital ammeter for both KPLC mains supply, complete with all necessary accessories
<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
<th>Qty</th>
<th>Units</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-500A rated digital voltmeter for both KPLC mains supply, complete with all necessary accessories</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mains phase and generator phase presence indicators complete with all necessary accessories</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power factor correction bank</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Should include:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>120 KVAR rated capacitor bank with 1x 50 KVAR, 3 x 20 KVAR and 1 x 10 KVAR rated capacitors, complete with appropriately sized fuses for capacitor protection and special contactors for capacitor switching</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 No 250A rated TPN MCCB for PFC protection adjustable on a 0.75 – 1 scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Earthing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item No</td>
<td>Description</td>
<td>Qty</td>
<td>Units</td>
<td>Rates</td>
<td>Amount</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----</td>
<td>-------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>6.02</td>
<td>Supply and install Earthing Matt lattice measuring 1m x 1m built in 25mm x 3mm thick pure electrolytic copper bars riveted with copper rivets. The earth matt to be treated by merchonite to obtain reading &lt;1.0ohms. NB Higher readings will NOT be accepted.</td>
<td>1</td>
<td>LOT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.03</td>
<td>Allow for provision of ducts and cable sleeves at the substation</td>
<td>1</td>
<td>lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.04</td>
<td>Allow for Testing and commissioning of the entire installations set complete with all accessories, interconnections, controls, BMS link &amp; activation and the necessary programming</td>
<td>1</td>
<td>Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.05</td>
<td>Completion documents comprising workshop drawings, manufacturers technical product catalogues, users manuals, maintenance manuals, as installed drawings, test certificates, etc</td>
<td>1</td>
<td>Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.06</td>
<td>12 months comprehensive maintenance from date of practical completion</td>
<td>1</td>
<td>Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.07</td>
<td>Allow sum for liason with the relevant authorities to facilitate the connections</td>
<td>1</td>
<td>Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.08</td>
<td>Allow sum for liason with KPLC on power supply upgrade, metering and associated items</td>
<td>1</td>
<td>Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.09</td>
<td>Allow sum for attendance to new generator supplier</td>
<td>1</td>
<td>Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Training of client personnel/users</td>
<td>1</td>
<td>Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROVISION KPLC Power transformer and connection</td>
<td>1</td>
<td>Item</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PROPOSED MAMA NGINA UNIVERSITY STREET LIGHTING AND PARKING LIGHT

Supply deliver install, fix, connect, test, label and commission the following to every detail as described below and in the related specifications and/or on the drawings to the satisfaction of the consulting engineers.

<table>
<thead>
<tr>
<th>Item no</th>
<th>Description</th>
<th>Units</th>
<th>Qty</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.01</td>
<td>7.6 Metres, Side entry, Galvanised steel streetlighting posts top entry with cut outs, glanding plates and watertight covers bolted on concrete base (1:2:4 ratio) This includes formwork, excavations, backfilling and disposal to engineer's details.</td>
<td>15</td>
<td>No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.02</td>
<td>Post top entry as THORN cat. No. QG 6, Streetlighting lantern with 125 Watts MBF lamp complete with integral control gear, cut-out, cable glands and all other necessary accessories, bolted on concrete base (1:2:4 ratio) This includes formwork, excavations, backfilling and disposal to engineer's details.</td>
<td>15</td>
<td>No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.03</td>
<td>2.9 Metres high and 0.8 Metres below the ground aluminium pole with 4 parallel square cross profile. Supplied for flange mounting as Thorn Avenue F700 column bolted on concrete base (1:2:4 ratio). This includes formwork, excavations, backfilling and disposal to engineer's details.</td>
<td>6</td>
<td>No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.04</td>
<td>Large aluminium bodied conical lantern for post top mounting with clear bowl, finished textured anthracite employing 70W HPS-E lamp as Thorn Avenue F, type H.</td>
<td>6</td>
<td>No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.05</td>
<td>200mm x 450mm x 600mm weather proof 14 SWG galvanised steel control pillar with hinged lockable door and capable to accommodate, 30 Amps Isolator, 30 Amps Earth leakage circuit breaker and 30 Amps SPN contactor mounted on concrete (1:2:4 ratio).</td>
<td>1</td>
<td>No.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Carried Forward to Next Page
# Proposed Mama Ngina University

## Street Lighting and Parking Light

<table>
<thead>
<tr>
<th>Item no</th>
<th>Description</th>
<th>Units</th>
<th>Qty</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brought Forward From Previous Page</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.05</td>
<td>Earthing of the lighting pole/feeder pillar comprising 1500mm, 12mm diameter earth electrode, 1 metres of 4.0mm sq. earth lead and 300x300x300mm earth pit as furse or equal and approved, complete with all accessories.</td>
<td>1</td>
<td>item</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.06</td>
<td>6 Ways SP&amp;N, flush mounted Consumer Unit complete with 63A integral isolator as HAGER or approved equivalent complete with all accessories but excluding MCBs installed in Control pillar</td>
<td>1</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 12.07  | MCB’s for item 1.05 above  
  a) 10A, SP mcb  
  b) Blanking plates  
  c) 20A sp mcb | 4 | No | | |
| 12.08  | 30A/30mA ELCB as HAGER or approved equivalent | 2 | No | | |
| 12.09  | Photo electric cell as THORN cat No. QPK or approved equivalent | 1 | No | | |
| 12.10  | 30 Amps. Triple pole contactor as TELEMECANIQUE or approved equivalent. | 1 | No | | |
| 12.11  | 6 Metres, top entry, Galvanised steel post for mounting the photocell above. | 1 | No | | |

**Total Carried Forward to Next Page**
## PROPOSED MAMA NGINA UNIVERSITY
### STREET LIGHTING AND PARKING LIGHT

<table>
<thead>
<tr>
<th>Item no</th>
<th>Description</th>
<th>Units</th>
<th>Qty</th>
<th>Rates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brought Forward From Previous Page</td>
<td>Supply, install, test and commission the following ;-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.12</td>
<td>2 core 6mm² for street lighting PVC/SWA/PVC copper cables drawn from the feeder pillar to the street/compound lighting column complete with appropriate cable glands and lugs.</td>
<td>200</td>
<td>Lm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.13</td>
<td>The following for items 1.11 above:-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Trenching to a depth of a minimum of 600mm</td>
<td>200</td>
<td>LM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Tiling with 'HATARI' tiles</td>
<td>600</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Back filling of the trenches</td>
<td>200</td>
<td>Lm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.14</td>
<td>100 mm diameter HG PVC ducts with 100 mm thick concrete surround under roads and plot entrances.</td>
<td>1</td>
<td>Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.15</td>
<td>2 core 10mm² for street lighting PVC/SWA/PVC copper cables complete with appropriate cable glands and lugs to source power from substation LV board to the feeder pillar</td>
<td>130</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.16</td>
<td>The following for items 1.14 above:-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Trenching to a depth of a minimum of 600mm</td>
<td>130</td>
<td>LM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Tiling with 'HATARI' tiles</td>
<td>390</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Back filling of the trenches</td>
<td>130</td>
<td>Lm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.17</td>
<td>Allow for Builders Works related to street lighting</td>
<td>1</td>
<td>Item</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.18</td>
<td>Contingency sum</td>
<td>1</td>
<td>lot</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Total Amount for Street and Compound Lighting
## ELECTRICAL WORKS

<table>
<thead>
<tr>
<th>ITEM NO</th>
<th>DESCRIPTION</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GRAND TOTALS BROUGHT FORWARD FROM:-</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>PRELIMINARY</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>GROUND FLOOR</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>FIRST FLOOR</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>LIGHTNING ARRESTORS FOR BLOCK</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>MAIN SUBSTATION LV BOARD</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>STREET LIGHTING</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONTIGENCY SUM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GRAND TOTAL FOR CARRIED TO FORM OF TENDER</td>
<td></td>
</tr>
</tbody>
</table>