LOT 1:VOL.6
TENDER FOR GENERATOR INSTALLATION AT PROPOSED ADMINISTRATION BLOCK FOR 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 1 - ADMINISTRATION BLOCK
(VOL. 5- GENERATOR 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

CONTRACTOR

SIGNATURE....................................
SIGNATURE....................................

DATE ............................................
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 to enable the correct meaning to 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.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>VOLUME 1</th>
<th>SIGNATURE PAGE AND SPECIAL NOTES</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>SECTION I</td>
<td>INVITATION FOR TENDERS</td>
<td>5</td>
</tr>
<tr>
<td>SECTION II</td>
<td>INSTRUCTIONS TO TENDERERS</td>
<td>6</td>
</tr>
<tr>
<td>SECTION III</td>
<td>SPECIFICATIONS, BILLS OF</td>
<td>23 - 43</td>
</tr>
<tr>
<td></td>
<td>QUANTITIES/SCHEDULE OF RATES</td>
<td></td>
</tr>
<tr>
<td>SECTION IV</td>
<td>STANDARD FORMS</td>
<td>47 - 68</td>
</tr>
<tr>
<td>SECTION V</td>
<td></td>
<td>69</td>
</tr>
</tbody>
</table>
SECTION I

INVITATION FOR TENDERS

TENDER REF. NO: KU/TNDR/W/047/GENI-MNUC/2018-2019

TENDER NAME: TENDER FOR GENERATOR INSTALLATION WORKS AT PROPOSED ADMINISTRATION BLOCK FOR MAMA NGINA UNIVERSITY COLLEGE, GATUNDU

1.1 Kenyatta University invites sealed tenders from eligible tenderers for the Generator Installation Works at Proposed Administration Block 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)** to be deposited in:-

Bank Name: National Bank of Kenya
Branch: RuIr
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](http://www.ku.ac.ke) or click on the link [http://www.ku.ac.ke/index.php/about-ku/procurement](http://www.ku.ac.ke/index.php/about-ku/procurement) OR [http://www.tenders.go.ke](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 is 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**

**TABLE OF CONTENTS**

<table>
<thead>
<tr>
<th>CLAUSE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GENERAL</td>
<td>7</td>
</tr>
<tr>
<td>2. TENDER DOCUMENTS</td>
<td>10</td>
</tr>
<tr>
<td>3. PREPARATION OF TENDERS</td>
<td>10-12</td>
</tr>
<tr>
<td>4. SUBMISSION OF TENDERS</td>
<td>13</td>
</tr>
<tr>
<td>5. TENDER OPENING AND EVALUATION</td>
<td>14-15</td>
</tr>
<tr>
<td>6. AWARD OF CONTRACT</td>
<td>16</td>
</tr>
<tr>
<td>7. CORRUPT AND FRAUDULENT PRACTICES</td>
<td>17</td>
</tr>
</tbody>
</table>
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 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;

(c) Priced Bill of Quantities/Schedule of Rates for lump-sum Contracts

(d) 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 “…………”. 

11
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 15th February 2019 at 10:00am</td>
</tr>
<tr>
<td>Site Visit</td>
<td>Tuesday 05th February, 2019 10:00 a.m, and Monday 11th 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 Generator Installation works at Proposed Administration Block for Mama Ngina University College-Gatundu.</td>
</tr>
</tbody>
</table>
# EVALUATION CRITERIA FOR GENERATOR INSTALLATION WORKS AT PROPOSED ADMINISTRATION WORKS AT MAMA NGINA UNIVERSITY COLLEGE, GATUNDU-LOT 1: VOL 6

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>SCORE</th>
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<tbody>
<tr>
<td>A</td>
<td>MANDATORY REQUIREMENTS</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>Provide copy of Company Registration Certificate/ certificate of incorporation.</td>
<td>√</td>
</tr>
<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>
<td>√</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>
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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>
<td>√</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>
</tr>
<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>
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<tr>
<td>B</td>
<td>GENERAL, FINANCIAL AND TECHNICAL REQUIREMENTS</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>FINANCIAL REQUIREMENTS</td>
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<tr>
<td>a)</td>
<td>Accumulated volume of business. Provide proof of performing/undertaking similar works (Generator 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>
<td>15</td>
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</tbody>
</table>

- Above Kshs 20 million……………………………………..15 marks
- Below Kshs. 20m and above ksh. 10 million…………10 marks
- Below Kshs.10 million and above Ksh.5 million……….5 marks
- Below Ksh 5 million……………………………………...0 mark
### 2. GENERAL REQUIREMENTS

**a)** Attach four letters of recommendation from referees two of whom must be current customers within 2016-2018.

- Four letters – (1 Mark 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 mechanical 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

### 5. Document Presentation

- Tape bound only
- Table of content
- Separators

### TOTAL

- 70

**NB:**

1) Bidders must meet all the mandatory requirements to qualify for general and technical evaluation

2) To qualify for price evaluation, the bidder must score a minimum of 70%

3) 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 bidder.
4) Any information provided by the bidder may be verified by the University. If information is found to be false, the company will be disqualified.

5) Site visit dates will be on **Tuesday 05th February, 2019 at 10.00 am and Monday 11th February 2019 at 10.00 am.**

6) List the equipment to be used in this project in the table provided below:-

7) **The Site is located adjacent to Mutomo Primary School near Gatundu Town, Gatundu South Constituency, Kiambu County, Kenya**

<table>
<thead>
<tr>
<th>Accumulated volume of business.</th>
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<tr>
<td>No.</td>
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**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>
</tr>
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<tbody>
<tr>
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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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<tr>
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TECHNICAL SPECIFICATIONS FOR A 250 KVA STANDBY GENERATOR SET INSTALLATIONS
### PART 2: TECHNICAL SPECIFICATIONS

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF A 250 KVA STANDBY GENERATOR SET**

<table>
<thead>
<tr>
<th>LIST OF CONTENTS</th>
<th>PAGE(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SCOPE</td>
<td>28</td>
</tr>
<tr>
<td>2. RELATED DOCUMENTS</td>
<td>28</td>
</tr>
<tr>
<td>3. REGULATIONS</td>
<td>28</td>
</tr>
<tr>
<td>4. STANDARDS</td>
<td>28</td>
</tr>
<tr>
<td>5. OPERATING CONDITIONS</td>
<td>28</td>
</tr>
<tr>
<td>6. FUNCTIONAL REQUIREMENTS</td>
<td>29</td>
</tr>
<tr>
<td>7. PERFORMANCE</td>
<td>29</td>
</tr>
<tr>
<td>8. SET ARRANGEMENT</td>
<td>30</td>
</tr>
<tr>
<td>9. DIESEL ENGINE</td>
<td>30</td>
</tr>
<tr>
<td>10. FUEL STORAGE TANK</td>
<td>32</td>
</tr>
<tr>
<td>11. ENGINE INSTRUMENTS</td>
<td>32</td>
</tr>
<tr>
<td>12. COOLING SYSTEM</td>
<td>32</td>
</tr>
<tr>
<td>13. AIR COOLING OF ENGINE</td>
<td>32</td>
</tr>
<tr>
<td>14. WATER COOLING OF ENGINE</td>
<td>33</td>
</tr>
<tr>
<td>15. ALTERNATOR AND EXCITER</td>
<td>34</td>
</tr>
<tr>
<td>16. EXCITATION</td>
<td>34</td>
</tr>
<tr>
<td>17. ELECTRICAL CONTROL PANELS</td>
<td>35</td>
</tr>
<tr>
<td>18. AUTOMATIC VOLTAGE REGULATOR</td>
<td>35</td>
</tr>
<tr>
<td>19. HANDFIELD REGULATOR</td>
<td>35</td>
</tr>
<tr>
<td>20. METERS</td>
<td>36</td>
</tr>
</tbody>
</table>
21. AUTOMATIC STARTING PANEL 36
22. AUTOMATIC CHANGEOVER CONTACTOR UNIT 37
23. LOCK-OUT 39
24. FAULT INDICATION 39
25. LOCK-OUT REMOTE INDICATION CIRCUIT 39
26. LOCK-OUT RESET 39
27. FIRE SERVICE TERMINALS 39
28. STARTING BATTERY AND CHARGER 40
29. WIRING 40
30. EARTHING AND EARTHFIELD 40
31. CONTACTORS 41
32. RELAYS 41
33. FUSES 41
34. RECTIFIERS AND CAPACITORS 41
35. ENCLOSURES FOR ELECTRICAL AND CONTROL EQUIPMENT 41
36. GUARDING 41
37. INFORMATION PLATES 42
38. DANGER PLATES 42
39. TROPICALISATION OF COMPONENTS 42
40. FINISH 42
41. MAINTENANCE MANUAL 43
42. DRAWINGS 43
43. WORK TESTS 44
44. COMMISSIONING 44
45. SPARE PARTS 46
46. TOOLS

47. MAINTENANCE
TECHNICAL SPECIFICATIONS

1. SCOPE OF WORKS AND SERVICES

1.1 The work covered by this specification includes the supply, delivery, installation, setting at work, commissioning to the satisfaction of the Project Manager/Engineer and maintenance for a period of twelve months, of one Diesel Engine Generating Set complete with all necessary auxiliary equipment and as indicated.

2. RELATED DOCUMENTS

2.1 The specification shall be read in conjunction with the Preliminaries, conditions of contract and any supplementary specification(s), schedule(s) and drawing(s) issued with it and enumerated in the invitation to tender. In the event of a discrepancy between this specification and any drawing issued with it or forming part of the contract the drawing shall be followed.

2.2 The words 'as indicated', 'where indicated', 'unless otherwise indicated' refer to items or requirements indicated elsewhere in the tender documents issued in connection with the contract e.g. on a drawing, in a supplementary specification or in Schedule 1.

3. REGULATIONS

3.1 The equipment shall comply with all relevant statutory standards and regulations current at the date of tender (unless otherwise indicated) and in particular the following:

2) Regulations under the Electrical Power Act.
3) Factories Act.
4) Any special regulations issued by the local Electricity or Water Undertakings.

4. STANDARDS

4.1 The equipment and all components shall comply with all relevant British Standards and Codes of Practice or other equal and approved standard specifications and codes. Where the equipment or part of it complies with other internationally recognized standards which are less stringent than British Standards or Codes or Practice, then the difference is to be stated in writing and must accompany the tender submission.

5. OPERATING CONDITIONS

5.1 The equipment and all components shall be suitable for operation in ambient conditions of 5° to 40° centigrade and up to 100% relative humidity in an unheated ventilated building.
5.2 All ratings of equipment and components shall be interpreted as site ratings and NOT sea level or other ratings. Details of the site are given in Schedule 1.

5.3 Sub Contractor is deemed to have visited the site and if unable to locate it to apply to Kenyatta University P.O. Box 43844 - 00100, Nairobi, for directions to enable him to do so. The Sub-Contractor is deemed to have acquainted himself therewith as its nature, position, means of access, etc., and no claim in this connection will be allowed. No claim will be allowed for travelling or other expenses which may be incurred by the Sub-Contractor in visiting the site or preparing a tender for the contract works, and subsequent site visits to be called by the Architect during the contract period.

5.4 The set shall be capable of operating continuously and satisfactorily in a medium dust laden atmosphere as defined in BS 1701 and in accordance with BS 5514.

6. FUNCTIONAL REQUIREMENTS

6.1 As specified in Schedule 1, the set shall be used for emergency operation (standby power operation). It shall be possible to start, operate and stop the set manually independently of any automatic features.

6.2 Within the operating conditions specified (Section 5) the set shall be capable of starting and accepting full load within the shortest possible time and in any case not more than 10 seconds. Any special features included to achieve this shall be stated in Schedule 2.

7. PERFORMANCE

7.1 The output rating of the set in kVA, the voltage, the number of phases and the frequency shall be as specified in Schedule 1.

7.2 Within the operating conditions specified, each set, equipped with its standard air intake filters, shall be capable of delivering its rated output continuously at rated voltage and 0.8 lagging power factor and of delivering 10% in excess of the continuous maximum for a period of one hour in any 12 hour period.

7.3 The steady state voltage shall be maintained within 2½% of the rated voltage under the control of the voltage regulator between the cold start ambient conditions and the maximum working temperatures, at any load from no load to 10% overload and from unity to 0.8 lagging power factor. After any change of load the voltage shall not vary by more than plus or minus 15% of the rated voltage and shall return to within plus/minus 3% within 3 seconds and to within plus/minus 2.5% of rated voltage within 15 seconds. On starting the voltage overshoot shall not exceed 15% and shall return to within 3% in not more than 3 seconds.

7.4 The governing of the set shall be such that the steady load speed band shall not exceed 1% of rated speed. Sudden removal of the full load at rated frequency shall not cause the frequency to rise above 10% of rated frequency and it shall return to within 5% of
rated frequency within 3 seconds. The resultant steady state frequency shall return to 4% within 15 seconds. If full load is then reimposed the frequency shall not fall below 94% of rated frequency and shall return to 99% within 3 seconds and to the rated frequency within 15 seconds.

7.5 The cyclic irregularity of the set at full load shall not be worse than 1/150.

7.6 The deviation of the waveform of the voltage output from a pure sine wave shall not exceed the limits specified in BS 2613.

7.7 Radiated interference shall be suppressed to the limits specified in B.S. 800 and B.S. 833.

8. SET ARRANGEMENT

8.1 The set and its auxiliaries shall be mounted on a sufficiently substantial under base. All items which must be held in correct relative alignment shall be located by means of dowels.

8.2 The set shall be designed and supplied for operation bolted to the floor on robust anti-vibration and shock absorbing devices. It shall have adjusting screws for optimum setting and levelling and be so designed and installed that no appreciable engine vibration shall be transmitted to the floor or to any surroundings.

8.3 A new generator house will be constructed. The Sub-Contractor shall provide early enough full details of fixing requirements, and any modifications that may be necessary for the proposed house and foundation. Particularly, the Sub-Contractor appointed to supply the generator must confirm if the proposed house is adequate for the generator in terms of height, length, width and provision of natural ventilation. The Sub-Contractor will be responsible for the cost of modifying the generator house if he fails to provide the above information immediately.

The Sub-Contractor shall however provide means for bolting down the set. If the plinth provided is not sufficient the Sub-Contractor shall arrange to extend it to the Architect's satisfaction.

8.4 Bearings shall be suitable for operation over long periods without the need for replacement of the lubricant. Oil lubricated bearings shall be fitted with a visible oil level gauge.

9. DIESEL ENGINE

9.1 The engine shall be designed for satisfactory operation on fuel oil complying with BS 2869 Class D and the lubricating oils stated in Schedule 2.

9.2 The governor shall control the frequency with the limits stated in Section 7.4. Manual speed adjustment shall be provided over a range ± 5% of the rated speed at any load.
9.3 The engine shall be totally enclosed, with forced lubrication from an integral pump having on the suction side a coarse strainer and on the delivery side a dual 'full flow' fine filter fitted with a changeover cock incorporating pressure by-passes, so that the oil flow to the engine is maintained if the filter should choke.

Alternatively a single filter of the self-cleaning type fitted with a by-pass relief valve and having the same filtration performance may be provided. The capacity of the lubricating oil system shall be sufficient to enable the engine to run continuously for 72 hours.

9.4 A filter fitted with by-pass relief shall be inserted in the fuel line immediately before the pump(s). The fuel filter element shall be incapable of passing particles larger than 5 micrometers. The fuel system shall be so arranged that fuel resulting from filter, pump or pipe spillage shall be incapable of entering the engine pump.

9.5 Air filters complying with BS 1701, Grade 'A' or Grade 'B' suitable for use in a medium atmosphere shall be fitted on the engine air intake(s).

9.6 No significant critical speed of the complete shaft system, including the generator, shall be within 15% of the rated speed.

9.7 A manually reset over speed trip shall be fitted to stop the engine if its speed exceeds the rated speed by 15%. A mechanical trip is preferred but an electrical over speed trip may be offered. Both types shall be equipped with a pair of contacts which close on operating of the trip. If the device is belt driven, at least two belts shall be provided and the drive shall be capable of carrying full load with one belt removed.

9.8 The set shall be arranged such that on shut-down the cooling water temperature shall not rise with residual heat so that the high water temperature lock-out operates (Section 23.1 (4) (a)).

9.9 The engine shall be naturally aspirated as indicated in Schedule No. 1.

9.10 Starting shall be by means of electricity supplied from a starter battery. The starter motor shall be of the axial type, de-energised by a device operated from the engine.

9.11 Suitable means shall be provided for turning by hand the engine main shaft and the associated generator to facilitate inspection and overhaul. A means of manual starting is to be provided as indicated in Schedule No. 1.

9.12 The engine shall be capable of being started from any crank position.

9.13 A thermostatically controlled 240 - volt immersion heater may be fitted in the engine lubricating oil sump to facilitate starting. The heating surface loading of any lubricating oil heater(s) shall not exceed 0.015 watt per sq. millimetre to avoid carbonisation of the oil.
9.14 An efficient exhaust silencer with adequate draining facilities shall be supplied, and as indicated in Schedule 1 shall be installed in the generator house with the exhaust discharge into the steel chimney. The exhaust silencer shall be so arranged that it may be readily relocated if required.

10. FUEL STORAGE TANK

10.1 The fuel storage tank shall be located close to the building and in the current Kenya laws relating to fuel storage close to buildings or be mounted on a plinth, which shall be properly fenced. Type of location is given in Schedule 1.

A minimum capacity of the tank shall be as per schedule 1. The tank shall be fitted with a hand operated fuel transfer pump and the necessary piping to allow the transfer of fuel from it to the daily service tank.

10.2 A three-way cock shall be fitted in the line from the tank to the engine to enable fuel to be supplied from a source other than the fuel tank. The position of the cock shall be clearly marked "TANK", "OFF" and "AUXILLARY".

10.3 The daily service fuel tank shall be equipped with a clearly visible plastic tube fixed vertical on its side to enable the level of the fuel in the tank to be seen readily. In addition to that it shall be supplied with drain, vent, overflow and inlet and outlet connections.

11. ENGINE INSTRUMENTS

11.1 The following instruments shall be provided:

1) A lubricating oil pressure gauge
2) A tachometer
3) A water thermometer
4) An exhaust gas pyrometer or thermometer mounted near the manifold.
5) Lubricating oil thermometers on the inlet to and outlet from the engine, when a lubricating oil cooler is fitted.

12. COOLING SYSTEM

12.1 The engine shall be both air cooled and water cooled as indicated in Schedule 1.

13. AIR COOLING OF ENGINE

13.1 Cooling air for the engine and lubricating oil shall be provided by fan(s) mechanically driven from the engine. The cooling system shall be adequate for the total requirements of the engine when running on continuous full load and on 10% overload for one hour in accordance with BS 5514 and under the conditions of Section 5.
13.2 The engine shall be so designed that the cooling air discharges into or is drawn through a reasonable airtight ducted assembly enclosing the lubricating oil cooler, the cylinder barrels and the cylinder heads of the engine.

This assembly shall terminate in a flanged outlet to which trunking shall be readily attached, to enable hot air from the cooling system to be ducted and discharged outside the building together with exhaust.

Belt driven fans shall have at least two belts and the drive shall be capable of transmitting the full load with one belt removed. The cooling air temperature shall be controlled so as to maintain a safe working temperature of the cylinder head(s) and the engine shall shut down if the maximum is exceeded (see section 22.1 (4) (b)).

14. WATER COOLING OF ENGINE

14.1 A radiator of the air blast type shall be provided. It shall either have separate section for water and for lubricating oil or be arranged for jacket water cooling only.

14.2 Belt driven fans shall be provided with at least two belts and the drive shall be capable of transmitting the full load with one belt removed.

14.3 Circulation of the jacket water and lubricating oil through the respective radiator sections and/or heat exchanger shall be by means of pumps mechanically driven by the engine. Belt driven pumps shall be provided with at least two belts and the drive shall be capable of transmitting the full load with one belt removed.

14.4 An easily visible flow indicator provided with contacts shall be fitted in the water outlet from the engine; the contacts shall close in the 'no-flow' condition and shut down the set.

Alternatively in thermosiphon systems and scaled or pressurised radiator systems the flow indicator may be dispensed with providing the engine shuts down by the operation of the high temperature or low oil pressure safety devices in accordance with Section 22.1.

14.5 A thermostatically controlled diverter valve shall be inserted in the engine water discharge pipe with a return to the circulating pump section, to maintain the circulating water at the optimum temperature irrespective of load. Alternatively a thermostatic by-pass will be accepted.

14.6 A radiator makeup/expansion tank, fitted with float control inlet shall be provided. If a sealed or pressurised unit is offered the tank may be dispensed with.

14.7 Where indicated in Schedule 1 provision shall be made on the radiator framework to permit the attachment of ducting for the discharged air.

14.8 A thermometer shall be mounted near the cylinder head(s) to indicate water temperature. Where a lubricating oil cooler is fitted, inlet thermometers shall be
mounted at the oil to and outlet from the engine. Alternatively, thermocouples may be provided at all thermometer positions and taken out to an instrument panel.

14.9 Adequate drains shall be provided at low points in the water and lubricating oil systems of the radiator and, where applicable, of the heat exchanger.

15. **ALTERNATOR AND EXCITER**

15.1 The alternator shall be directly coupled to the engine and be sized such that it will accept the maximum output of the engine including overload.

15.2 Where the alternator is of the rotating armature type a slip ring shall be provided for the neutral.

15.3 The alternator shall be capable of operating within the range of $\pm$ 5% of the nominal voltage according to the setting of the automatic voltage regulator.

15.4 Three-phase machines shall be star connected, and a diagram showing the terminal markings and phase rotation shall be provided in the terminal box. Cables connecting the machine winding and machine terminals shall not have a higher derating factor for temperature than the windings.

15.5 Machines shall be both clean protected and drip proof. Overall drip proof covers will be accepted.

15.6 The insulation shall comply with BS 2757 excluding Classes Y and A. The insulation shall have an oil, moisture and fungus proof finish, with a surface which will not retain dust or condensation, it shall be possible to put the set in service after long periods, in unheated storage without the necessity for drying up the insulation.

15.7 The alternator shall be capable of withstanding a short circuit for three seconds when under the control of the automatic voltage regulator.

16. **EXCITATION**

Alternators using exciters with commutators shall be designed for an excitation voltage of full load of not less than 50 volts unless prior approval is given.

16.2 Where rotary exciters are fitted they may be direct coupled or driven by Vee-belts or chains. The speed of belt or chain driven exciters shall not be within 5% of a multiple of the alternator speed. Vee belt drive shall have at least two belts and shall operate satisfactorily if one belt is removed. Special attention shall be given to ensure satisfactory commutation, brush life and freedom from voltage drift. The neutral and running, positions of the brushes shall be clearly marked.

16.3 If static excitation and/or control system are offered, a description of the equipment and method of operation shall be submitted for approval.
17. **ELECTRICAL CONTROL PANELS**

A control panel shall be provided to accommodate the following:

1) An automatic voltage regulator  
2) A hand field regulator and a 'HAND AUTO' switch  
3) An alternator field switch  
4) Meters (Section 21)  
5) A neutral earthing link  
6) A change - over - Contactor

18. **AUTOMATIC VOLTAGE REGULATOR**

The automatic voltage regulator shall be of a type which will maintain its adjustment for long period without attention. It shall be provided with an adjustment for setting the level of the controlled voltage to within $\pm 5\%$ of the nominal voltage.

19. **HAND FIELD REGULATOR**

19.1 The hand field regulator shall give stable control of the voltage from 90% of the normal voltage at no load when cold to normal voltage at 10% over-load when hot, under the specified operating conditions.

If a static excitation system is offered which does not permit the use of a hand field regulator this shall be stated in the Tender together with performance details.

19.2 If the hand field regulator must be left in a precise position when the set is under the control of the automatic voltage regulator then this position shall be clearly marked.
20. **METERS**

The following meters shall be provided. They shall comply with BS.89, Table 7.
1) One maximum demand ammeter in each line
2) One voltmeter, and a selector switch to read line to line and line to neutral voltages.
3) A frequency meter
4) A field ammeter
5) Maximum KVA meter and Kilowatt hour meter.

21. **AUTOMATIC STARTING PANEL**

21.1 Automatic starting panel shall be provided which shall contain all necessary equipment for controlling the automatic starting and stopping of the set, lubricating oil priming (if necessary), auxiliaries, fault warnings and shut-downs. All faults, warnings and shut-downs shall be separately indicated. There shall be test facilities for indication lamps etc., preferably by means of a single test button.

21.2 Means shall be provided for isolating all supplies to the starting panel either by an isolating switch or by withdrawable fuses. For external use, a 24 volt battery supply from fused outlet terminals shall be provided only when the engine is running and in service (see Section 28.3).

21.3 The starting and control circuits shall be rated at 2 amps at the control circuit voltage.

21.4 A selector switch shall be fitted having three positions as follows:
   1) 'Local' in this position it shall be possible to start and stop the set by push buttons mounted on the panel.
   2) 'Remote' in this position the set shall be capable of being started and stopped from a remote circuit.
   3) 'Off' in this position all the automatic features shall be inoperative.

21.5 When the set is stopped other than under lock-out conditions it shall be self resetting, ready for the next start.

21.6 In the 'Off' position (Section 2.4 (3)) or with the automatic equipment disconnected, the set shall be suitable for starting by manual means, e.g. by cranking or direct operation of the starter solenoid.

21.7 All switches and push buttons shall be clearly marked to indicate their function.

21.8 It shall be possible to operate the “Start and Stop” buttons and the three-position switch and to see the “Set Failure” indications without opening the panel doors.
22. AUTOMATIC CHANGEOVER CONTACTOR UNIT

22.1 Where the functional requirements (see Section 6) indicate the set is to be used for automatic standby or mains failure duty a contactor unit shall be provided which on failure of the normal electricity supply will automatically initiate the starting of and effect the transfer of load to the standby generator. The unit shall be incorporated in the Automatic Starting Panel (see Section 21).

22.2 Where failure of the normal supply is referred to, it shall be defined as the complete loss of voltage or the falling below 85% of the normal voltage between any two lines or line and neutral.

22.3 The power circuit shall consist of two contactors feeding the distribution branch to which the load will be directly connected. One contactor shall control the normal supply, the other the standby supply, and they shall be electrically and mechanically interlocked so that they cannot both be closed at the same time.

22.4 On the failure of the normal supply (Section 22.2) the unit shall operate in the following manner:

1) After a delay, adjustable from 0 to 5 seconds (to avoid operation by a transient dip in voltage) a signal shall be given to start the standby generating set.

2) On receipt of a signal from the standby generating set that it is ready to take the load, and providing that the failure of the normal supply still persists, the normal supply contactors shall open and the standby contactor shall close. If the normal supply has been restored before the changeover has taken place, the contactors shall not operate and the starting relay contacts shall open to initiate the shutting down of the standby generating set.

22.5 When the standby supply is in operation and the normal supply is restored and remains within 10% of rated voltage on all phases for a pre-set time (adjustable up to to 30 seconds) the standby contactor shall open and the normal supply contactor shall close; the starting relay contacts shall then open to shut down the standby generating set.

22.6 Provision shall be made so that automatic return to normal supply can be prevented if required (Section 22.9 (s).

22.7 Once a start signal has been sent to the standby generating set the engine starting sequence shall be allowed to continue until the set is ready to take the load before a stopping signal is sent.

22.8 By the additional external connections the following facilities shall be available:

1) Remote starting of the standby generating set and transfer of the load to it.
2) Restoration of the normal supply on failure of the standby generating set.

22.9 Each switch shall be labelled with its duty and each position shall be marked. The following switches shall be provided and fitted:

1) **A Contactor Control Switch** with make before break contacts and 'Hand' and 'Auto' positions. In the 'Hand' position the unit shall be controlled by the 'Contactor Hand Control Switch' (Section 23.9 (2). In the 'Auto' position the unit shall operate automatically irrespective of the position of the 'Contactor Hand Control Switch'.

2) **A Contactor Hand Control Switch** with 'Standby' and 'Normal' positions. This switch shall enable either contactor to be closed when the 'Contactor Control Switch' is in the 'Hand' position.

3) **An Auto Return Switch** having 'On' and 'Off' positions. In the 'On' position the return to normal supply shall be automatic when the normal supply is restored. In the 'Off' position the standby supply contactor shall remain closed when the normal supply is restored.

4) **Contactor By-Pass Switches** shall be provided to enable the essential load circuits to be served direct from the normal supply to enable the generator and/or the control equipment to be serviced. The by-pass switches shall be provided with a suitable and conspicuous label warning against leaving the generator in the disconnected position.

22.10 Indicating lamps or illuminated panels shall be provided on the front of the panel. They shall be appropriately labelled, easily visible and shall give the following information:

- 'Normal Supply Available'
- 'Standby Supply Available'
- 'Normal Supply in Use'
- 'Standby Supply in Use'

22.11 A push button labelled 'Test' shall be provided to enable a failure of normal supply to be simulated. If the button is pressed and released the equipment shall complete the starting sequence, and when the set is ready to take load it shall be shut down. If the button is held depressed the equipment shall change over to the stand-by supply when the set is ready to take load.

22.12 The control circuit supply will be either 12 volts d.c. or 24 volts d.c. depending upon the starting battery and charger (see section 28).

No current shall be drawn from the control supply when the unit is accepting the normal power supply.
23. **LOCK-OUT**

23.1 The set shall stop and lock out to prevent further starting when:

1) It fails to start when the electric starter motor has been in operation for 20 seconds under automatic start conditions;

2) The lubricating oil pressure falls to a value at which it would be unsafe to continue running the engine;

3) The cooling water does not flow, where the engine is fitted with a visible flow indicator on the cooling water system.

4) a. in water cooled engines the cooling water temperature exceeds a predetermined limit
   b. In air cooled engines the cylinder head temperature exceeds a safe maximum

5) The over speed trip has operated.

23.2 Failure of the circuits concerned in sub-sections 23.1(2) to 23.1(5) shall not cause a set to shut down.

24. **FAULT INDICATION**

Each lock-out detailed in Section 23.1 shall be indicated by a lamp on the panel together with an indication of the fault causing the shut-down. The fault warning lights shall be set to operate before the lock-out.

25. **LOCK-OUT REMOTE INDICATION CIRCUIT**

Where indicated in Schedule 1, an auxiliary circuit suitable for 2 amps 50 volts d.c. and 1 amp 250 volts a.c. shall be provided with a contact which is open when the set is available and closed when it is locked-out. This lock-out circuit shall be connected to terminals for the connection of external wires to provide remote indication of lock-out.

26. **LOCK-OUT RESET**

Reset of the lock-out shall be by hand.

27. **FIRE SERVICE TERMINALS**

27.1 Where indicated in Schedule 1 an emergency stop circuit shall be provided with terminals marked FS1 and FS2. These terminals shall be initially fitted with a link and are for optional connection to a remote fire switch. Opening of this circuit shall stop the set if it is running, and as long as the circuit remains open the set shall be incapable of being started by 'Hand' or 'Automatic' control. This circuit shall be self-resetting so that the set is available for automatic starting when the circuit is restored.
27.2 Terminals shall be provided in the battery circuit for optional connection to a fire service battery switch. Opening of this switch shall isolate the control circuits from their supply.

28. **STARTING BATTERY AND CHARGER**

28.1 The battery shall be either 12 or 24 volts and capable of withstanding the loads imposed upon it by its specified duties. It may be of lead-acid or alkaline type and shall be of sufficient capacity for four starts in succession once in an eight-hour period. Auxiliary circuits connected to the battery shall be protected by fuses.

28.2 The battery shall be used to supply any automatic starting and control equipment, and relay operation shall not be impaired when the battery is supplying current to the starter motor.

28.3 A single phase supply for battery charging shall be available from the set when it is in service, and where circumstances permit, from an external supply (Section 17(9)). A charger shall be provided which will recharge the battery after engine starting and maintain it in a charged condition when the set is standing or is in service. It shall also supply the load of any automatic starting and control equipment, and any additional load upto 24 volts level when the set is running and in service. An alternative quick charge rate shall be provided. The charger shall be fitted with an ammeter to measure the charge and discharge current excluding the starter motor current.

9. **WIRING**

Power cables and small wiring cables interconnecting major components shall be of the heat and oil resistant type and shall be metal sheathed or run in metal ducts or metal conduit, which shall be flexible where appropriate. All cabling and small wiring shall be coded and terminated with lugs or be soldered; the terminations shall be clearly marked with the numbers and letters of terminals to which they are connected. Terminals shall be numbered or lettered, easily accessible and fitted with individual insulating barriers or adequately spaced barriers shall be fitted to separate control terminals from power wiring terminals.

30 **EARTHING AND EARTH FIELD**

30.1 All metal work housing electrical equipment shall be bonded to a brass earthing terminal of not less than ISO bolt M10.

30.2 Where indicated in Schedule 1 an earth field is to be provided suitable for requirements.
31 CONTACTORS

Contactors shall have magnetic circuits designed for a.c. or d.c. operation and shall be rated in accordance with BS 775 for Uninterrupted Duty and Utilization Category AC4. Four-pole contactors shall be fitted for three-phase equipment and two-pole contactors for single phase equipment. Main and auxiliary contacts shall be silver faced or better.

32 RELAYS

32.1 Relays shall preferably be of the sealed type mounted in approved plug-in bases with spring loaded retainers but if this is not practicable they shall be mounted on individual sub-bases and wired so that easy access is obtained to soldered connections. Unsealed relays shall be enclosed in individual or common dust protecting cases.

32.2 Time delays, if of the pneumatic type, shall operate on filtered air. The thermal type of time delay relay will not be accepted.

33 FUSES

Fuses shall comply with BS 88, category of duty AC 46, fusing factor class A1. A spare fuse cartridge for each pole shall be mounted inside each equipment.

34 RECTIFIERS AND CAPACITORS

34.1 Rectifiers and capacitors shall be suitable for any transient voltages likely to be encountered during the operation of the equipment and for the internal operating temperature of the enclosures at the specified maximum external ambient temperature.

34.2 Electrolytic capacitors will not be accepted unless approved for a specified purpose.

35 ENCLOSURES FOR ELECTRICAL AND CONTROL EQUIPMENT

Enclosures for electrical and control equipment shall be drip proof and dust protecting, with adequate front and rear access as necessary for maintenance and repair. Special attention shall be given to the method of construction and to the mounting of the components to minimize the effect of vibration. Diagrams of connections in durable form shall be mounted inside the enclosures.

36 GUARDING

All live and moving parts shall be adequately guarded to prevent injury to personnel.
37. INFORMATION PLATES

A non-ferrous metal rating plate shall be fixed on the front of the alternator control panel door, giving the following information:

<table>
<thead>
<tr>
<th>Information</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous output</td>
<td>KVA at 0.8 p.f.</td>
</tr>
<tr>
<td>Voltage</td>
<td>V -phase - wire</td>
</tr>
<tr>
<td>Frequency</td>
<td>Hz</td>
</tr>
<tr>
<td>Speed</td>
<td>rev/min</td>
</tr>
<tr>
<td>Control Supply</td>
<td>V.d.c</td>
</tr>
<tr>
<td>Year of supply</td>
<td>Maker’s Serial Number</td>
</tr>
</tbody>
</table>

38. DANGER PLATES

Since this set is automatically started a reversible plate 400 x 250 mm shall be fixed by screws in a prominent position on each side of the set. One side of the plate shall be blank and painted the same colour as the set; the other side of each plate shall be signal red (BS 2660, colour 0-006) with the following inscription in white.

DANGER
THIS MACHINE IS AUTOMATICALLY CONTROLLED
DO NOT WORK ON IT UNTIL
STARTING EQUIPMENT IS ISOLATED
OR DISCONNECTED AND CAUTION
NOTICES ARE DISPLAYED

39. TROPICALISATION OF COMPONENTS

All components shall be fully tropicalised and protected against mould growth.

40. FINISH

40.1 All ferrous metal works shall be either painted or processed to give a rust proof coating.

40.2 Ferrous metal work to be painted shall first be either shot blasted or thoroughly wire brushed to remove all scale and oxide and immediately given one brushed coat or two sprayed coats of primer. After not less than 4 hours, one brushed or two sprayed undercoats followed by one brushed or two sprayed finishing coats of heat and oil resisting quality paint shall be applied.

40.3 Successive coats of paint shall be of slightly differing shades. Interior surfaces of electrical equipment enclosures shall be finished white and all external surfaces shall be finished grey (BS 2660, colour 9-097). Engine crank cases shall not be painted internally unless the paint is resistant to the lubricating oil.
41. MAINTENANCE MANUAL

41.1 Upon Practical completion of the Works the Sub-Contractor shall furnish to the Engineer four copies of a Maintenance Manual relating to the installation forming part of all of the Works.

41.2 The Manual shall contain full operating and maintenance instructions for each item of equipment, plant and apparatus set out in a form dealing systematically with each system. It shall include as may be applicable to the Sub-Contract Works the following and any other items listed in the text of the Specification hereinafter.

1) System Description
2) Plant
3) Valve Operation
4) Switch Operation
5) Procedure of Fault Finding
6) Emergency Procedure
7) Lubrication Requirements
8) Maintenance and Servicing Periods and Procedures
9) Colour coding Legend for all Services
10) Schematic and wiring Diagrams of Plant, Apparatus and switchgear.
11) Record Drawings, true to scale, reduced to International A4 size.
12) Lists of Primary and Secondary Spares.

41.3 The Manual is to be specially prepared for the Contract Works, and Manufacturers' standard descriptive literature and plant operating instruction cards will not be accepted for inclusion unless exceptionally approved by the Engineer. The Sub-Contractor shall, however, affix such cards, if suitable, adjacent to plant and apparatus. One spare set of all such cards shall be furnished to the Engineer.

41.4 Manuals shall be printed on good quality paper preferably International A4 size and shall have stiff covers of durable material. The maker's name and the rating of the set shall appear on the front covers.

42. DRAWINGS

The Sub-Contractor shall provide to the Architect four sets of the following drawings:-

1) Where indicated, a building drawing showing details of cable entries, pipe entries and ducts required, and the exhaust system.

2) A general arrangement drawing showing the principal dimension and weight of the set.

3) A general arrangement of the diesel engine.
4) A general arrangement of the alternator and exciter showing terminal markings, polarity and phase rotation.

5) A general arrangement of the electrical control panel(s).

6) A schematic and wiring diagram of the electrical control panel(s).

43. **WORK TESTS**

43.1 The set shall be tested as a unit at the manufacturers works (or else where by agreement) for output and performance generally in accordance with the requirements of BS 649 and BS 2613. The Engineer shall be given adequate notice in writing of the date and time of the works tests and he, or his representative shall if he so desires, he present at such tests and be given all reasonable facilities for his own inspections during the course of the tests.

43.2 Whether or not the Engineer or his representative attends the tests, he shall be furnished by the Sub-Contractor with copies of all relevant test certificates.

44. **COMMISSIONING**

44.1 The Sub-Contractor shall include for fully commissioning the set and its control equipment and, for the purpose of the required tests, shall provide all necessary instruments, tools, fuel and lubricating oil.

44.2 The following tests and checks as applicable shall be carried out by the Sub-Contractor in the presence of the Architect or his representative.

1) Check that the main frame is level in all directions, Engine and generator shafts are in proper alignment and the vibration absorbing devices are properly installed and located.

2) Check water and sump oil levels and that the water jacket and radiator heaters (if fitted) are in working order.

3) Check the battery electrolyte level and the specific gravity.

4) Examine the containers in which the fuel and lubricating oils were delivered and check that the types and grades of oils are as recommended for the units.

5) Ensure that sufficient fuel oil is in the tank for a two hours test run.

6) Check that all radiator and engine block water drain points are free from sludge and other blockages.

7) Check engine bolts, main drive coupling, valve clearances, fuel pump settings, governor settings, pipe line connections, water hose, exhaust couplings,
flexible pipework etc., and where a separate cooling water tank is fitted, that
the water level is satisfactory and the ball valve and over flow work.

8) Check all outgoing connections on the generator and at the control panel. All
lugs for principal connections shall have clean and bright contact surfaces. A
suitable abrasive material shall be used where necessary.

9) Check access panels and doors for proper opening and closing and for the
functioning of any interlocks fitted.

10) With the set isolated from the main supply and the selector switch in the
'manual' position, start the engine by means of the 'start' push button and allow
it to run up to normal speed. Check that during the time the engine starter
motor is in operation, the mains battery charger is automatically switched off
to avoid its being overloaded by the reduction in voltage across the battery.
Where a battery charging dynamo is fitted, check that the main battery
charger is disconnected by the operation of the auxiliary Sub-Contactor
during the time the engine is running.

11) Check instruments and gauges for normal operation and response and that the
generator voltage is being maintained within the prescribed limits, making due
allowance for no load conditions. Compare the reading of the frequency meter
with that of the engine tachometer, where both are fitted.

12) Stop engine by turning selector switch to 'off' position and verify that
generator contactor opens at between 95% and 85% of normal voltage.
Re-check water and oil levels.

13) Turn selector switch 'to auto' position. Disconnect the sensing circuit supply
and check that the set starts, the mains contactor opens, and the generator
contactor closes in correct order.
Reconnect the sensing circuit to verify that the Engine stops on the restoration
of the mains supply and the contactors operate correctly.

Check voltage sensing and time delays on each phase in turn and also that the
push buttons for mains failure simulation and Engine stopping operate
correctly.

NOTE: Running of the engine for any length of time under no-load conditions is
undesirable and tests calling for such operation should be carried out in as short
a time as possible consistent with thoroughness.

14) Operate the necessary isolators and switches to put the set on standby for the
essential services network with the selector switch in the 'Auto' position, and
using the mains failure simulation push, verify that the set operates correctly
with the appropriate time delay for taking up load and that the carrying of the
load and its distribution over the three phrases are satisfactory.
15) Run the set at various loads for periods totalling at least 30 minutes. Check the voltage and current in each phase in turn and that the voltage and frequency are being maintained within the required limits with large alterations of loads.

Note the rate of charge on the dynamo ammeter with the engine running (if a dynamo is fitted) and the rate of charge on the battery charging ammeter with the engine stopped. Check against manufacturer's recommendation and adjust charging rates if necessary.

16) Check the operation of the turbo-charger unit (if fitted) and the colour of the exhaust gas at various loads.

17) Check that the various engine safeguards operate satisfactorily.

18) Check the vibration absorbing devices for proper operation and that the performance of all flexible connections both mechanical and electrical, are satisfactory.

19) When all tests are satisfactory and agreed with the Architect or his representative, the lubricating oil and water levels shall be finally checked, the fuel oil tank replenished and the set left in normal operating order.

20) An initial supply of all lubricating oils and greases shall be provided by the Sub-Contractor.

21) Additional lubricating oil shall be provided for recharging the engine sump once together with a supply of lubricating oils and greases to cover the normal use and servicing of the set during the 12 months maintenance period referred to in section 47.

45. **SPARE PARTS**

The Sub-Contractor shall submit with his tender a separate priced list of spare parts, including any optional extras which he recommends should be purchased for the set and its control equipment and which are not supplied as standard with the unit.

46. **TOOLS**

A complete set of tools and general and special testing equipment shall be provided, including grease and oil guns, necessary for the normal maintenance of the set and its controls. The tools shall of the best quality, the spanners being of chrome vanadium steel and shall be contained in a suitable robust steel tool box with lid fitted with a lock and two keys. All tools and testing equipment may be used by the Sub-Contractor in the execution of the Contract works but will not be accepted as part of the Contract works unless they are handed over in clean and undamaged condition, in perfect working order and effectively in new condition.
47. MAINTENANCE

47.1 The Sub-Contractor shall maintain the complete set and associated control equipment forming the unit for a period of twelve of calendar months from the date that the unit is put into commission and regular use.

47.2 During the maintenance period, the Sub-Contractor shall at his own expenses:-

1) Make good any defects in the unit and replace any parts that fail or show signs of weakness or undue wear in consequence of faulty design, workmanship or materials on notification of the defect.

2) Visit the site and with all diligence attend to any such defect that arises within 48 hours of receiving notification of the defect.

3) Carry out regular examination and serving of the unit at the intervals laid down by the manufacturer or every three months, whichever is the sooner; the service examination to include all necessary adjustments, greasing, oiling, cleaning changing of lubricating oils to keep the unit in sound and efficient working order.

4) Instruct the maintenance personnel in the proper operation, care and maintenance of the set and its equipment.

47.3 If during the maintenance period the unit is or is likely to be out of use for a period greater that 48 hours, due to the unit or part thereof developing a defect attributable to faulty design, workmanship or materials, or due to neglect of maintenance by the Sub-Contractor, the Sub-Contractor shall at his own expense immediately provide and install on free loan a suitable temporary unit for use until the required repair or replacement has been satisfactorily undertaken and the original set (or its replacement) put into proper working order.

47.4 At the end of the twelve months period of maintenance the Sub-Contractor shall (in addition of the normal servicing work) carry out a comprehensive examination and test of the set and its auxiliaries, including the checking of the operation of controls and safeguards, to ensure that the unit is in proper working order and in satisfactory condition for handing over to the client whose representative shall be present at such examination and test.

Signed (as in form of Tender) _________________________________

Name of Sub-Contractor _________________________________

Official Stamp _________________________________

Date ____________

46
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDICES TO TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Appendix 1: Information to the Tenderer</td>
<td>49</td>
</tr>
<tr>
<td>2.</td>
<td>Appendix 2: Information to be supplied by the Tenderer</td>
<td>51</td>
</tr>
<tr>
<td>3.</td>
<td>Appendix 3: Data for the Tenderer</td>
<td>58</td>
</tr>
<tr>
<td>4.</td>
<td>Appendix 4: List of tools to be supplied with Each Set</td>
<td>59</td>
</tr>
<tr>
<td>5.</td>
<td>Appendix 5: List of Spare Parts and Lubricants to be supplied with Each Set</td>
<td>60</td>
</tr>
<tr>
<td>6.</td>
<td>Appendix 6: Earthing</td>
<td>61</td>
</tr>
<tr>
<td>7.</td>
<td>Appendix 7: Drawings, Literature, Manuals</td>
<td>62</td>
</tr>
<tr>
<td>8.</td>
<td>Appendix 8: Warranty of Set</td>
<td>63</td>
</tr>
<tr>
<td>9.</td>
<td>Appendix 9: Foreign Currency</td>
<td>64</td>
</tr>
<tr>
<td>10.</td>
<td>Appendix 10: Annual Maintenance</td>
<td>65</td>
</tr>
<tr>
<td>11.</td>
<td>Appendix 11: External Fuel Tank</td>
<td>66</td>
</tr>
<tr>
<td>12.</td>
<td>Appendix 12: Hot Air Ducting</td>
<td>67</td>
</tr>
</tbody>
</table>
# INFORMATION TO THE TENDERER

<table>
<thead>
<tr>
<th>Section</th>
<th>Item</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Operating Conditions:-</td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Site (address and details)</td>
<td>GATUNDU</td>
</tr>
<tr>
<td>5.2</td>
<td>Altitude</td>
<td>1800 asl</td>
</tr>
<tr>
<td>5.3</td>
<td>Temperature range humidity</td>
<td>As stated in Part 2, Technical Specifications to operate in Unheated building</td>
</tr>
<tr>
<td>5.4</td>
<td>Dust conditions if not as stated</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Functional requirements</td>
<td>Automatic Mains failure</td>
</tr>
<tr>
<td>7.</td>
<td>Performance</td>
<td>250KVA, 415/240V, 50hz, 3-Phase ON SITE.</td>
</tr>
<tr>
<td>8.1</td>
<td>Set arrangement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weather proof roof and Removable side panels</td>
<td>required</td>
</tr>
<tr>
<td>9.2</td>
<td>Remote governor control</td>
<td>Electronic governor required</td>
</tr>
<tr>
<td>9.9</td>
<td>Aspiration</td>
<td>Natural</td>
</tr>
<tr>
<td>9.11</td>
<td>Manual starting for sets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Larger than 35 kW</td>
<td>Required</td>
</tr>
<tr>
<td>9.15</td>
<td>Silencer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Details of additional pipework and fittings if required</td>
<td>Required</td>
</tr>
<tr>
<td>10.1</td>
<td>Daily service tank</td>
<td>required</td>
</tr>
<tr>
<td>Section</td>
<td>Item</td>
<td>Requirements</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>10.2</td>
<td>Manual transfer pump</td>
<td>Required</td>
</tr>
<tr>
<td>10.3</td>
<td>Fuel storage tank (external)</td>
<td>Required</td>
</tr>
<tr>
<td>10.4</td>
<td>Fuel jettison cock, fuel tank</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Engine Instruments</td>
<td>Required.</td>
</tr>
<tr>
<td></td>
<td>Details if not as stated</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Cooling system</td>
<td>Water/Air</td>
</tr>
<tr>
<td>14.2</td>
<td>Water cooling</td>
<td>On engine</td>
</tr>
<tr>
<td></td>
<td>Radiator mounting</td>
<td></td>
</tr>
<tr>
<td>14.8</td>
<td>Provision for hot air ducting</td>
<td>Required</td>
</tr>
<tr>
<td>17.</td>
<td>Electrical control panel</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>17(1) main switch</td>
<td>Circuit breaker</td>
</tr>
<tr>
<td></td>
<td>17(2) provision for parallel running</td>
<td>Not required</td>
</tr>
<tr>
<td></td>
<td>17(4) alternator field circuit</td>
<td>Switch</td>
</tr>
<tr>
<td></td>
<td>17(10) &quot;exciter&quot;</td>
<td>Not required</td>
</tr>
<tr>
<td>20(5)</td>
<td>Kilowatt meter</td>
<td>Required</td>
</tr>
<tr>
<td>25.</td>
<td>Lock-out remote indication circuit</td>
<td>Required</td>
</tr>
<tr>
<td>26.1</td>
<td>Service terminals</td>
<td>Required</td>
</tr>
<tr>
<td>30(2)</td>
<td>Earth field</td>
<td>Required</td>
</tr>
<tr>
<td>42(1)</td>
<td>Building drawings, as comments to issued</td>
<td>Required</td>
</tr>
<tr>
<td></td>
<td>drawings.</td>
<td></td>
</tr>
</tbody>
</table>
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 2

INFORMATION TO BE SUPPLIED BY THE TENDERER

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diesel Engine (Note that ONLY Perkins, Cummins and Caterpillar Engines will be acceptable)</td>
<td></td>
</tr>
<tr>
<td>Make and type</td>
<td></td>
</tr>
<tr>
<td>Bore</td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td></td>
</tr>
<tr>
<td>Net continuous rating in HP (B.S. 5574)</td>
<td></td>
</tr>
<tr>
<td>a) at sea level</td>
<td></td>
</tr>
<tr>
<td>b) on site</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td></td>
</tr>
<tr>
<td>Year this type put into service</td>
<td></td>
</tr>
<tr>
<td>Total number sold</td>
<td></td>
</tr>
<tr>
<td>a) World wide</td>
<td></td>
</tr>
<tr>
<td>b) in East Africa</td>
<td></td>
</tr>
<tr>
<td>c) in Kenya</td>
<td></td>
</tr>
<tr>
<td>Supercharger: make and type number in use</td>
<td></td>
</tr>
<tr>
<td>Thermometers: make and type</td>
<td></td>
</tr>
<tr>
<td>Air cooling:</td>
<td></td>
</tr>
<tr>
<td>Quantity of air required</td>
<td></td>
</tr>
</tbody>
</table>
details of ducting required

Water cooling:

details of water cooling circuits
## APPENDIX No. 2 (Contd)

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiator: make and type</td>
<td></td>
</tr>
<tr>
<td>length</td>
<td></td>
</tr>
<tr>
<td>breadth</td>
<td></td>
</tr>
<tr>
<td>height</td>
<td></td>
</tr>
<tr>
<td>Heat exchanger: make and type</td>
<td></td>
</tr>
<tr>
<td>Aspiration</td>
<td></td>
</tr>
<tr>
<td>Quantity of air required</td>
<td></td>
</tr>
</tbody>
</table>

2. **Auxiliaries**

- Lubricating oil circuits
- Filters
- Coolers
- Primary pumps
- Tachometer and drive
- Governor
- Special cold start devices
- Running hours meter
- Safety devices:
- High temperature
- Low pressure (lubricating oil)
- Cooling water flow trip
- Over speed trip
- Speed sensing devices
- Lubricating oil thermometers:
  - Number
  - Position
Water thermometer:

position

Starting battery and charger

3. **Lubrication**

Recommended oil(s)
<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Alternator and Exciter</td>
<td></td>
</tr>
<tr>
<td>Make and type</td>
<td></td>
</tr>
<tr>
<td>Bearings</td>
<td></td>
</tr>
<tr>
<td>Insulation (B.S. 2757)</td>
<td></td>
</tr>
<tr>
<td>Quantity of cooling air</td>
<td></td>
</tr>
<tr>
<td>5. Electrical Control Panel</td>
<td></td>
</tr>
<tr>
<td>Automatic voltage regulator:</td>
<td></td>
</tr>
<tr>
<td>Make and type</td>
<td></td>
</tr>
<tr>
<td>Where mounted (if not on panel)</td>
<td></td>
</tr>
<tr>
<td>Control circuits and wiring diagrams</td>
<td></td>
</tr>
<tr>
<td>Relays:-</td>
<td></td>
</tr>
<tr>
<td>Make and type</td>
<td></td>
</tr>
<tr>
<td>Method of delayed operation</td>
<td></td>
</tr>
<tr>
<td>Meters: make and type</td>
<td></td>
</tr>
<tr>
<td>Circuit Breaker: make and type</td>
<td></td>
</tr>
<tr>
<td>6. Automatic Changeover</td>
<td></td>
</tr>
<tr>
<td>Contactor Unit</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Type and control switches</td>
<td></td>
</tr>
<tr>
<td>Current drawn from</td>
<td></td>
</tr>
<tr>
<td>Control supply under</td>
<td></td>
</tr>
</tbody>
</table>
Standby conditions

Type of mounting

Contactor: make and type
Relays : make and type
Fuses : make and type
### APPENDIX No. 2 (Contd)

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. **Performance Data**

   Fuel consumption

<table>
<thead>
<tr>
<th>Rated Output %</th>
<th>Fuel Consumption L /hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

8. **Exhaust Fans**

   Type
   Rating

9. **Generator Set**

   Full Length | mm |
   Width       | mm |
   Height      | mm |
   Weight      | Kg |


SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 3

DATA FROM THE TENDERER

1. Initial sound level measured in accordance with the N.E.M.A. standards (Must be less than 60 dBA at 1m)

2. Means of vibrations dampers mounted on the generator set to prevent vibrations to be transferred from the generator set to the building
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 4

LIST OF TOOLS TO BE SUPPLIED WITH EACH SET

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>Price</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Metal tool box with lock and keys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Set of 8 No. Chrome vanadium ring spanners in sizes to suit the set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Set of 8 No. Chrome vanadium open-ended spanners in sizes to suit the set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Set of screwdrivers, 75 mm, 200 mm and 300 mm plus one 200 mm Philips type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>One set of feeler gauges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>One grease gun to suit greasing points</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>One oil can, trigger type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>One Hydrometer and Plastic Filler bottle with pouring spout</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total carried forward to Price Summary Schedule.

The tenderer shall give below details of any special tools which he recommends should be purchased as an optional extra.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signed: (as in Tender) _______________________________________________________

Date: ________________________________
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 5

LIST OF SPARE PARTS AND LUBRICANTS TO BE SUPPLIED WITH EACH SET

The following items shall be handed over to the Client or Engineer before completion of the contract.

These items shall not be used by the Sub-Contractor to carry out his normal maintenance.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Oil Filters - 3 Nos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Air Filters - 3 Nos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>One injector to suit the set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>One set of fan belts comprising...............</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>belts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>One set of indicator bulbs comprising.......</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bulbs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>One set of indicator lenses comprising......</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>One overhaul kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>One set of fuses comprising..................</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>One 50 litre drum of sump grade oil.........</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>One 2 kilogram tin of grease of grade......</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>One 30 litre Radiator coolants</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The tenderer shall give below details of any other spares which he recommends should be purchased as optional extra.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
<th>KShs.</th>
</tr>
</thead>
</table>

Signed: (as in Tender) ________________________________
Date: ________________________________________
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 6

EARTHING

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Supply and install, for each set, 4 No. steel cored copper earth rods, 1200 mm x 12 mm threaded for extension, connected by brass clamps to 30 metres of 25 mm x 3 mm copper earth tape laid in trenches of minimum depth 300 mm and fixed to the wall of the generator room with brass spacer bar saddles at 1 metre of intervals, connected to the station earth bar via a brass test clamp.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total carried forward to Price Summary

Note: The earthing must be carried our strictly as above.

Signed: (as in Tender) __________________________________________

Date: ________________________________________________________
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 7

DELIVERY PERIOD

1. Details of Drawings, Literature, manuals etc. included with tender documents.

2. Time in weeks from acceptance of tender to delivery of equipment on site. _______________Weeks

3. Time in weeks from acceptance of tender to commissioning of set(s). _______________Weeks

Signed: (as in Tender) _____________________________________________

Date: ______________________________________
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 8

WARRANTY

The warranty period for the set and all its auxiliaries, from the date of commissioning,
will be ________________ months

(Note: A minimum of 12 months is required).

Signed: (as in Tender) __________________________________________

Date: ____________________________________
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 9

FOREIGN CURRENCY

State Foreign currency used in the pricing and rate of exchange to the Kenya Shilling.

1 __________________________ (Foreign Currency) = _________________________ Shillings.

Signed: (as in Tender) ______________________________

Date: ________________________________________
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 10

ANNUAL MAINTENANCE (Every 3 months or 250 running hours)

Cost of Annual Maintenance shall be Ksh. _______________ per year.

Signed: (as in Tender) ______________________________________

Date: ____________________________________
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 11

EXTERNAL FUEL TANK

- 1200 litres (1.2 m$^3$) external diesel fuel tank made from 10 gauge galvanized pressed steel, external (welded) a suitable square steel-bar diagonal and vertical supports. Suitable steel stand and hollow steel tubes and the following:-

  - Internal stays
  - 18 gauge galvanized steel cover lid
  - Manual hand-operated fuel transfer pump with hose connection
  - Connection for 15mm diameter class B gms pipe with “CRANE” gave valve and union.
  - 6m long 15mm diameter class B gms pipe
  - 4 No. Galvanized malleable iron elbow
  - 20mm diameter drain pipe with “CRANE gate valve
  - Clear accurately-calibrated level indicating tubing connection on the outside.
  - All other accessories

(Note: Please ensure the supplied tank is a minimum capacity of 1.2 m$^3$, and comes with the right stands to adequately provide the desired support)

KSh. ____________________
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 250 KVA STANDBY GENERATOR SET

APPENDIX NO. 12

HOT AIR DUCTING

Hot air-duct comprising:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Galvanized mild steel sheet 3mm thickness</td>
<td>25m²</td>
</tr>
<tr>
<td>2.</td>
<td>Square hollow section tubes 50mm x 50mm, 3mm thickness</td>
<td>15m</td>
</tr>
<tr>
<td>3.</td>
<td>Heat resistant fibre glass</td>
<td>15m²</td>
</tr>
<tr>
<td>4.</td>
<td>Allow for welding the metal and applying prime coat of paint</td>
<td>Item</td>
</tr>
<tr>
<td>5.</td>
<td>50mm x 50mm x 3mm weldmesh infront of ventilation duct</td>
<td>3m²</td>
</tr>
</tbody>
</table>
BILLS OF QUANTITIES
# PART 4: BILLS OF QUANTITIES

<table>
<thead>
<tr>
<th>CLAUSE NO. PAGE</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>GENERAL NOTE TO TENDERERS</td>
<td>70</td>
</tr>
<tr>
<td>2.</td>
<td>STATEMENT OF COMPLIANCE</td>
<td>71</td>
</tr>
<tr>
<td>3.</td>
<td>BILL NO. 1, 220 KVA STANDBY GENERATOR</td>
<td>72</td>
</tr>
<tr>
<td>4.</td>
<td>BILL NO. 2, GENERAL ITEMS</td>
<td>76</td>
</tr>
<tr>
<td>5.</td>
<td>SUMMARY PAGE</td>
<td>80</td>
</tr>
</tbody>
</table>
1. **General Note to Tenderers**

1.1 The total of the prices in the summary of prices shall include for the whole of the Contract works in accordance with the specifications as defined before and shall be carried forward to Form of Tender.

1.2 Any prices omitted from any item, section or part of the price schedule shall be deemed to have included in another item, section or part.

1.3 The prices shall include for all obligations under the Contract including and not limited to:

   a) Supply of any materials, equipment, apparatus, fittings, spares and tools
   b) Insurance
   c) Clearing and forwarding
   d) Delivery, handling and storage at site
   e) Packing for storage
   f) Replacing any defective or damaged item
   g) Installation
   h) Testing
   i) Painting
   j) Commissioning
   k) Maintenance during the defects liability period
   l) All the certifications, local authority approvals/charges if any.

1.4 The unit rates shall include import duty and VAT where applicable, and shall be expressed in Kenya Shillings.

1.5 Any tenderer whose firm uses the title “Engineer” or “Engineering” must provide evidence of registration of at least one of the directors by the Engineers Registration Board of Kenya to avoid disqualification.

1.6 Any tenderer who fails to price the General items will be deemed to have allowed 5% of his tender price to cover these items.
2. **Statement of Compliance**

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

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

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

Date: ……………………….

Official Rubber Stamp: …………………………………………………………….
**PROPOSED MAMA NGINA UNIVERSITY, GATUNDU**

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF A 250 KVA STANDBY GENERATOR SET**

**BILLS OF QUANTITIES**

**BILL NO. 1: STANDBY GENERATOR AND ASSOCIATED WORKS**

<table>
<thead>
<tr>
<th>No</th>
<th>ITEM</th>
<th>ITEM DETAILS</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Supply of 1 No. 250 KVA* sound-Attenuated standby (Diesel) generating set(sound proof canopy), 415V/240V 3-phase,50hz, 1500 rpm, Max 60 dBA at 1 M. (*Site rating, to be achieved in Nairobi, which is at 1800 asl. Supplier to state actual sea-level rating as per appendices 1 and 2).</td>
<td>KShs .................</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Installation of the Generating set</td>
<td>KShs .................</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Supply of daily service tank</td>
<td>KShs .................</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Installation of daily service tank</td>
<td>KShs .................</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Supply of control panel(s), (complete with ov/uv relays)</td>
<td>KShs .................</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Installation of control panel(s)</td>
<td>KShs..................</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Supply of Automatic changeover contactor unit(s)</td>
<td>KShs..................</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Installation for Automatic changeover contactor unit(s)</td>
<td>KShs..................</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>315A TPN Manual by-pass system across the AMF panel to be complete with 3 No. 315A TPN Manual change over switch for bypassing both the mains and the generator, a firmly bonded enclosure in 12 gauge galvanized steel, and finished in stove enameled appropriately coloured paint, mounting rails, and sufficient space for cable termination and mounting of switches</td>
<td>1No KShs..................</td>
<td></td>
</tr>
</tbody>
</table>
10 The generator supplier to allow for the necessary liaison and attendance in connection with liaising with the electrical sub-contractor to connect, test and commission the set on a source KShs....................

11 Comprehensive and detailed testing/Commissioning of set as per full procedures set out in the Technical Specifications KShs.....................

Total C/F to Page


PROPOSED MAMA NGINA UNIVERSITY
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF A 250 KVA STANDBY
GENERATOR SET

BILLS OF QUANTITIES

BILL NO. 1: STANDBY GENERATOR AND ASSOCIATED WORKS

<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>ITEM DETAILS</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Total B/F from Page</strong></td>
<td></td>
</tr>
<tr>
<td>12a)</td>
<td>Supply of manual fuel transfer pump plus the necessary piping to interconnect the daily service tank and the fuel storage tank</td>
<td>KShs....................</td>
</tr>
<tr>
<td>12b)</td>
<td>Installation of the manual fuel transfer pump and all pipework</td>
<td>KShs....................</td>
</tr>
<tr>
<td>13</td>
<td>Cost of tools as per Appendix No. 4</td>
<td>KShs....................</td>
</tr>
<tr>
<td>14</td>
<td>Cost of spares as per Appendix No. 5</td>
<td>KShs....................</td>
</tr>
<tr>
<td>15</td>
<td>Cost of earthing as per Appendix No. 6</td>
<td>KShs....................</td>
</tr>
<tr>
<td>16</td>
<td>Industrial silencer for the generator</td>
<td>KShs....................</td>
</tr>
<tr>
<td>17</td>
<td>Dia. 50mm, 3mm thick galvanized stainless steel tube exhaust system for generator complete with brackets and black industrial (gloss paint), 20m</td>
<td>KShs....................</td>
</tr>
<tr>
<td>18</td>
<td>1200 lts (1.2m³) external fuel tank, as per details shown in Appendix No. 11</td>
<td>KShs....................</td>
</tr>
<tr>
<td>19</td>
<td>Any other items (to be detailed)</td>
<td>KShs....................</td>
</tr>
</tbody>
</table>

**Total C/F to Page**

|         |        |        |
PROPOSED MAMA NGINA UNIVERSITY
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF A 250 KVA STANDBY GENERATOR SET

BILL OF QUANTITIES

BILL NO. 1: STANDBY GENERATOR AND ASSOCIATED WORKS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM DETAILS</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Total B/F from Page</em></td>
<td></td>
</tr>
<tr>
<td>20a)</td>
<td>4C 150mm² PVC/SWA/PVC copper cable, lay on substation cable trench/ducts-18m</td>
<td>KShs.........................</td>
</tr>
<tr>
<td>20b)</td>
<td>Cable glands for the above cable, 2 No.</td>
<td>KShs.........................</td>
</tr>
<tr>
<td>20c)</td>
<td>Cable lugs for the above cable, Complete with crimping, 10 No.</td>
<td>KShs.........................</td>
</tr>
<tr>
<td>21a)</td>
<td>4C 2.5mm² PVC/SWA/PVC copper control cable, 18 m</td>
<td>KShs.........................</td>
</tr>
<tr>
<td>21b)</td>
<td>Cable glands for the above cable, 2 No.</td>
<td>KShs.........................</td>
</tr>
<tr>
<td>21c)</td>
<td>Cable lugs for the above cable, 8 No.</td>
<td>KShs.........................</td>
</tr>
<tr>
<td>22</td>
<td>4.5 Kg carbon dioxide gas fire extinguisher complete with pressure Gauge, initial charge and mounting brackets.</td>
<td>1 No  KShs....................</td>
</tr>
<tr>
<td>23</td>
<td>9 kg dry powder fire extinguisher complete with initial charge and Mounting brackets</td>
<td>1 No  KShs....................</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><em>Total C/F to Summary Page</em></th>
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</thead>
</table>
**PROPOSED MAMA NGINA UNIVERSITY**  
**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF A 250 KVA STANDBY GENERATOR SET**  

**BILLS OF QUANTITIES**

**BILL NO.2 – GENERAL ITEMS**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rate</th>
<th>Amount KSh.</th>
</tr>
</thead>
</table>
| 2.00     | Carry out comprehensive 24-hour power analysis, after installation of the Generator set and switch gear, with a digital power meter (with printer) to:  
  i) Record and print all the power system parameters.  
  ii) Submit 3 copies of the printouts.  

(Note: Parameters must be satisfactory before the generator set is switched on). |     |      |      | Item |
| 2.01     | Acquire and submit a Bank Guarantee for 10% of the sub-contract sum, as a Performance Guarantee.                                                                                                           |     |      |      | Item |
| 2.02     | Acquire and submit Insurance for the sub-contract work.                                                                                                                                                     |     |      |      | Item |
| 2.03     | Allow for presentation of all the required samples as per specifications, Bills of Quantities and Drawings.                                                                                                  |     |      |      | Item |
| 2.04     | Prepare and submit Working Drawings as follows:-  
  i) Draft soft copy in Archicad® and Autocad® 2000 in CD-RW.  
  ii) Amended soft copy in Archicad® and Autocad® 2000 in CD-RW.  
  iii) 5 Final soft copies in Archicad® and Autocad® 2000 in CD-RW to Architect, Client, Quantity Surveyor, and Engineer (2 copies)  
  iv) 3 Draft hard-copies of Working Drawings in Ao (Scales 1:50, 1:25) to Engineer, Architect and Main Contractor.  
  v) 2 Amended hard copies of Working Drawings in Ao (Scales 1:50 and 1:25) to Engineer, Architect and Main Contractor.  
  vi) 11 No. Final hard copies of working |     |      |      | Item |
drawings in Ao (Scales 1:50, 1:25) to Engineer (3 copies), Architect (1 copy), Quantity Surveyor (1 copy), Client (3 copies), Contractor (3 copies).

(Note: Full set of drawings to be presented as per drawing list).

<table>
<thead>
<tr>
<th>Item</th>
<th>2.05</th>
<th>As item no. 2.04, but for Record (As-Installed) Drawings comprising:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>i)</td>
<td>Fully dimensioned drawings of all plants and apparatus.</td>
</tr>
</tbody>
</table>

**Total C/F to Page**
PROPOSED MAMA NGINA UNIVERSITY  
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF A 250 KVA STANDBY GENERATOR SET  

BILLS OF QUANTITIES  

BILL NO.2 – GENERAL ITEMS  

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Qty</th>
<th>Unit</th>
<th>Rate</th>
<th>Amount KShs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total B/F from Page</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ii)</td>
<td>General arrangement drawings of equipment, plant etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii)</td>
<td>Routes – types and sizes and arrangement of all pipework.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>iv)</td>
<td>System schematics and trunking diagrams showing all salient information relating to control and instrumentation.</td>
<td></td>
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</tr>
<tr>
<td>v)</td>
<td>Grading charts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi)</td>
<td>Wiring and piping diagrams of plant and apparatus.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii)</td>
<td>Schematic diagram of individual plants and switch and control boards.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii)</td>
<td>All the required operating instructions for all panels, boards, control panels etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.06</td>
<td>Prepare and submit Maintenance Manuals for all items installed.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2.07</td>
<td>Provide a year’s (12 months’) initial maintenance upon expiry of the Defects Liability Period. The maintenance to be carried out every quarter (3 months) for a period of 12 months.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2.08</td>
<td>All other items of general preliminary to cover, but not limited to:-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i)</td>
<td>Attendance on all other sub-contractors, such as for Communication Services, Mechanical Installations, Security Installations, Sound Equipment/ Wiring Installations, Generator Installations, Lift Services, Solar Water Heating, V-Sat services etc.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ii) Hiring and keeping a Supervisor/Foreman on site</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>iii) Constant supervision of the works.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv) Provision of all the required spares.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v) Testing and Inspection of materials/works.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi) Provision of labour camps.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii) Storage of materials.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii) Initial maintenance (During Defects Liability)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ix) Providing water/electricity for the works.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x) Protection of the works/materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xi) Clearing away on completion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xii) Preparing Final Account.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>xiii) Providing all Test Certificates, etc.</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

| Total for Bill No. 2 C/F to Summary Page | Item |
PROPOSED MAMA NGINA UNIVERSITY
SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF A 250 KVA STANDBY
GENERATOR SET

BILLS OF QUANTITIES

SUMMARY PAGE

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>KSh.</th>
<th>Cts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sub Contract Preliminaries B/F from Page 1/12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Bill No. 1 Standby Generator Installations B/F from Page 4/7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bill No. 2 General Items B/F from Page 4/9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sub-Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Add 10% of the Sub-Total in Item No. 4 above as Contingency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Amount Carried to Form of Tender**

---

Our anticipated completion period from the date of receipt of Commencement Notice, to handing over the completed works, shall be ____________ weeks.

Tenderer’s Name and Stamp

Signature________________________ Date________________________
PIN No. _______________________________

VAT No. ______________________________

Witness ______________________________

Address ______________________________

Signature ______________________________

Date ________________________________
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]
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.

________________________________________________________________________
[signature of the Bank]

________________________________________________________________________
[seal]

________________________________________________________________________
[signature of the Bank]

________________________________________________________________________
[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

g_______________ 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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Currency</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
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</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>
<td></td>
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</tbody>
</table>
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>_______________ (etc.)</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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<tr>
<td>__________________</td>
<td></td>
<td>____________________________</td>
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<td>__________________</td>
<td></td>
<td>____________________________</td>
<td>_______________________________________</td>
</tr>
</tbody>
</table>

(etc.)

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

________________________________________________________________________

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

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

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

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

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

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

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

2 Joint Ventures

2.0 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>
<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(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

…………………………………RESPODENT (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
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